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ALZHEIMER'S ASSISTANT using AI

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Abstract

Alzheimer's is a memory degenerative disease which affects a person in a gradual increasing severity. It is a type of dementia that affects the brain and it's behaviour, thinking and memory. Alzheimer'sis one of the leading causes of deaths in the older population all over the world.
Alzheimer's patients, as we know, have short term memory problems which leads to them having problems executing a plethora of day to day activities. Some of the well known issues include inability to recognise their family members or known people, forgetting about food and risk of wandering off due to forgetting locations and routes. They may even forget their own house or the doctors treating them. Hence a caretaker is assigned to them, to assist resolving the above issues. So we would like to use today's modern technology to implement similar assistance in terms of recognising people, reminders for medicine or food and so on, to the people affected by this so far incurable disease.
In order to achieve our proposed goal because it is optimal as our data consists of images. The proposed system is an Android application with built-in capabilities for face recognition, location tracking and timely alert system. With our project, we have made an attempt to help the patients suffering from Alzheimer's Disease by assisting them in their day-to-day activities using concepts of modern Computer Science and Artificial Intelligence.

Keywords: *Alzheimer's, dementia, patient, Face Recognition, Location Tracking, caretaker,Android application,Computer Science, Artificial Intelligence.*

1. Introduction

Dementia is actually quite common with more than 4 million cases in India as reported in 2015. Statistics suggest that these numbers are expected to be twice as much by the year 2040. India has the second most number of cases in the world. In 2015, all over the world the total number of cases can be estimated over 40 million.
Alzheimer's disease is one of the most common reasons contributing to dementia cases with estimated numbers suggesting that 60-70% of dementia cases. It is a chronic neurodegenerative disease that shows mild symptoms at first but the condition keeps getting worse eventually. Some of the early symptoms indicate difficulty in remembering recently occured events or short term memory.With our project, we have made an attempt to help the patients suffering from Alzheimer's Disease by assisting them in their day-to-day activities using concepts of modern Computer Science and Machine Learning. The main users of the system are people suffering from Alzheimer's disease with varying degrees of severity. The purpose of this project is to assist the patients and relive some load from the kind caretakers using the latest advancements in science and computer technologies.

Alzheimer's disease (AD) is a chronic neurodegenerative disease which affects memory and the Central Nervous System (CNS).People suffering from Alzheimer's disease require constant assistance.No previous digital solution has been able to make an impact.Hints or clues help patients recall memories.So, a Face Recognition and Location Tracking model is a proposed solution.

From the knowledge as we know, Alzheimer's disease is not a disease like high blood pressure or diabetes that can be recovered or maintained by just taking medicine on time without specific help from

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InMo: IoT based Industrial Safety and Monitoring System

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IoT, Raspberry Pi 3, framework, sensors, wireless, evacuation plan, safety

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Abstract

Internet of Things (IoT) is a quickly expanding innovation sector. The internet of things is an arrangement of interrelated figuring gadgets, mechanical and superior machines which can be supplied with one in all kind identifiers and the ability to move data over a device without looking forward to human-to-human or human-to-PC co-operation. This paper centers around building up a framework which will consequently screen the modern applications and produce cautions/alerts and show reports utilizing information got with the help of IoT. This framework utilizes Raspberry Pi 3 Model B and sensors for different parameters, for example, temperature, mugginess, smoke, and fire. Different alarms would be sounded depending on the type of situation. A beeping alarm will be raised, which will have a unique number of beeps for different types of alarms. Also, SMS/email alerts will be sent to the concerned people in any crisis circumstance which contains gathered qualities from the sensor. The person monitoring the system will have a complete view and control of all the sensors. The workers of the industry will be shown an evacuation plan to exit the premises safely in case of an emergency.

1. INTRODUCTION

Ecological consideration has gotten one of the prime worries for pretty much every nation. Despite the fact that an excessive number of modern mishaps have occurred over the most recent couple of decades, the present situations have not improved [1]. The vast majority of the enterprises are in serious danger of bursting into flames because of numerous reasons. Workers likewise, ordinarily have only general information about the apparatus. They are not prepared about how to respond if there should arise an occurrence of crises. The remote assessment will assist with taking out the perils related to the customary wiring frameworks to make information estimation and administering processes a lot simpler and practical. IoT based frameworks take a colossal jump towards observing frameworks by settling on smart choices from the web.

Industrial Internet of Things (IIoT) is the ideal method for associating mechanical apparatuses and sensors, to one another, over the web, permitting the approved client of the business to utilize data from these associated gadgets to process the acquired information in a valuable manner [2]. Normally IoT-associated frameworks empower information procurement, handling, examination, and representation. The IoT engineering incorporates most recent advances, for example, PCs, savvy gadgets, wired and remote correspondence, and distributed computing. Right now, propose a mix of continuous checking innovation with the sensors to keep an opportunity to time track of the different components which are perceived to cause a mishap on location.[3]

Beforehand, bluetooth and RF (radio frequency) innovations were utilized to control and screen the modern applications, however, they were constrained to short separation. The administrator must be in the scope of the Bluetooth network or in the Radio Recurrence region. Answer for the short separation correspondence is the IoT based industry mechanization [4].

2. LITERATURE SURVEY

At first, mechanization in industries was done using steam and water power. As the progression occurred, power was presented and was utilized in enterprises for large scale manufacturing. At the point when PCs were developed, it was intended to play out different capacities. As time went on, PCs have become less pricey, and afterward, almost all ventures commenced making use of it for monitoring when you consider that it diminished an important awesome mission at hand experienced by human beings and still it is taken into consideration as the high-quality preference to govern and screen an application [5]. In any case, numerous industries regularly have only a fundamental alert framework regardless of the sort which is turned on by squeezing a solitary catch. IoT is once in a while utilized, and regardless of whether they do have utilized IoT, just a few sensors are utilized, which is the reason the framework isn't bombed verification and accordingly

Personalized Secure E-Identity Locker Using Blockchain

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Abstract - ***Blockchain*** *technology is revolutionizing the society by empowering new types of* ***disintermediated*** *digital platforms. There is a critical demand for* ***secure*** *identity storage systems as there have been identity management challenges for example* ***security***, ***privacy***, *and* ***usability*** *since the dawn of the Internet. As identity cards include the personal information similarly Personalized Secure E-Identity locker will be a storage for all the documents of a person eg. Aadhar Card, Passport etc. The documents will be stored in a file which will be* ***encoded*** *using encryption methods.* ***Blockchain*** *technology may offer a solution to deal with this issue by delivering a* ***secure*** *system without the need for a trusted, central authority. It can be used for storing an identity on the blockchain, making it easier to manage for individuals, giving them greater control over who has their personal information and how they access it.*

1. Introduction

Blockchain is a decentralized and public ledger, which has introduced tremendous changes during the last few years with applicability on financial use cases (e.g. remittance) and nonfinancial use cases (e.g. documents).Users can trust the blockchain as it is leveraging consensus mechanisms to validate and gather the transactions in blocks. Blockchain is additionally considered as an open ledger where online transactions are recorded and users can connect, send and verify their transactions. In other words, it is a digitized system in order to account the records. These records are a set of mathematical rules which are incorporated to stop the illegal intrusion. In order to include the data into the blockchain, users and nodes, which obtain an authorize-able address from the blockchain, need to set up and communicate with smart contracts to send and retrieve data to/from the blockchain. Moreover, blockchain works on the subsequent rules; it represents decentralized, transparent and secure systems. Decentralized systems are basically user to user or peer to peer operations without involving any central hub or authority. Transparency can be ensured as the data is being embedded in the system publicly. Security provides the encryption technology supporting public and private keys. For example, in bitcoin, the public key represents the user as address and private key acts as a password to access the transaction.

As the current systems for storing documents are based on centralized servers, it implies that the owners of the system have direct access to the sensitive data of the users making it vulnerable for data theft and other corrupt practices. The system might also be vulnerable to hacking which may lead to serious threat to the data of the users. Moreover if there is a server damage in the current system , it would lead to a loss of user data which motivates to use blockchain and decentralized server systems in this project to safely store the sensitive data of the users. In the proposed system blockchain is used to store and retrieve the user ID. In order to contact the user, blocks can be retrieved and validated. Also, it is made secure and encrypted by implementing blockchain internally and externally; internally for accessing the list and externally to follow the identities. There are multiple ways of validation in order to retrieve documents from blockchain. Decentralized can also be called user to user or peer to peer operation without involving any central hub or authority. The system designed in this project has Transparency, which means the data is being embedded in the network publicly. Security offers the encryption technology supporting public and private keys. For example, in bitcoin, the public key represents the user as address and private key acts as a password to access the transaction.

2. Literature Survey

There are already several spectacular open-source Blockchain projects in the market however they have restricted functionality.

cloud storage has relied almost exclusively on large storage providers, who act as trusted third parties to transfer and store data. This model poses a number of issues including data availability, high operational cost, and data security. Hoang Giang Do, Wee Keong Ng proposed a system [1] that uses blockchain as the backbone for off-chain data storage access, permission grant and search token generation.

The private key generator has the ability to decrypt all data stored in the cloud server, which may bring serious

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Bird Species Identification and Prediction Analysis of Endangered Species

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Abstract - *Machine learning is an application of Artificial Intelligence that provides the system with the ability to automatically learn and improve from experience rather than explicit programming. Nowadays some bird species are being found rarely and if found classification of bird species prediction is difficult. Machine learning techniques can be used for identifying the birds using classification models. The paper highlights attributes which will reduce the risk of endangerment of such birds and predict the improvement in chances of their survival. This paper throws a light on the comprehensive survey on machine learning applications in bird identification and prediction analysis of endangered bird species.*

Key Words: Artificial-Intelligence, Endangered species, Deep Learning, Image Classification, TensorFlow.

1. INTRODUCTION

Biodiversity consists of many different species of birds and animals but people barely have any knowledge about them. There is a wide range of categories that they fall into like their colors, their chirping sound, appearance, location and many more. Thus the main aim is to identify the varieties of bird species and gain knowledge about them. Our system aims to employ the power of machine learning to help in identifying bird species through the images they capture and also analyze endangered species. The system not only detects the images of birds but also gives details like their scientific name, kingdom, location where they are mainly found, their status whether it is endangered or not, facts about the bird, ways to conserve them. Further it helps to detect the timeline of endangered species. Thus this paper presents an approach of CNN i.e. convolution neural network models for identifying birds. The automatic identification and classification of birds by making use of the modern artificial intelligence and machine learning motivates the development of the proposed model. A paper by Sefi Mekonen on "Birds as Biodiversity and Environmental Indicator" includes most of the points about identification and prediction of endangered species [29].

The idea aims to focus on predicting the time-span in which such endangered birds may go extinct and provide some valuable insight by adding other attributes to our prediction model. Also, analyze the positive effects of certain actions which can be taken by individuals or the government which can result in an increase of that remaining time span thus preventing the endangered and future birds . This will help users to gain information and knowledge about the importance of species and different small initiatives they can take in order to save biodiversity.

2. MOTIVATION

Identification of species requires the huge assistance and use of manual books. There is a huge variety of species in each bird with diverse color patterns, shapes, appearance, body organs and features. Thus, it becomes a difficult job for bird watchers and ornithologists who do scientific research study on birds to identify and study each species. Our systems aim to provide a solution to identify and do scientific study on birds along with providing all the details of each species like taxonomy, their chirping sound, geographic location, timeline, current threats and conservation actions.

3. LITERATURE SURVEY

The approach for the idea of using machine learning to analyze the patterns in biodiversity, for example using machine learning to forecast phenomena like migration, population growth, future presence etc is considered in our system. Practical applications of transfer learning methods are used to identify birds using images as input using TensorFlow. The process of detecting and identifying particular species is time-consuming and challenging.

The system Rajarshi Paul et. al. [21] proposed is about time series analysis, a machine learning approach is used for processing the time series data of birds, other features included were forecasting features like population growth, future presence and their migration. It was concluded that Polynomial interpolation is not suitable for analysis of population count. While the nearest neighbor interpolation method can be used to fill up the timeline (x-axis) of the time series carrying integer values along the y-axis. This can be useful to analyze dragonfly populations.

Madhuri Tayal [22] presents us the practical applications of using transfer learning methods to identify birds using images as input. The paper goes in detail about workings of the authors own system based on the idea using MATLAB. It was concluded

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u-FarmMart: Linking farmers to market

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Abstract - *The objective of our auction system is that the farmer can have better value for their products as well as the consumer can have better choice for investment. Our system is aimed to resolve the issues faced by farmers while selling agro products. This application removes the middle man so the farmer can directly connect with consumers and can get higher value for their products. One of the major advantages is that it is time saving for the customers also it helps companies to buy agro products in bulk without the interference of the middle man. In our system, customers will use their id and passwords to login to our system and will get access to various products that the farmer has produced. The customers who wish to buy the products will appear for auction where the product will be sold to the customer with the highest bid.*

Key Words: **Auctions, Bidders, Highest Bid, Farmers, Agriculture**

1. INTRODUCTION

Agriculture is one of the main occupations of India. It is one of the most important pillars of Indian Economy. Even though agriculture holds great importance in the overall economic development of our country, the share of agriculture in India's GDP is continuously declining. One of the reasons is that, farmer's can't sell their products at their own price because all commodities prices are fixed or governed by the market. Also the government is fixing the minimum price for some agri products which are yearly or season based. To overcome these flaws we are developing an android app in which the farmer will decide the price per kg for the products that he wants to sell and that value will be multiplied to the number of kgs a customer wants to buy.

The motivation for developing this project is to provide farmers a base where they can get their profits for their products. As in spite of working so hard farmers are attempting for suicide as they do not have enough money to survive. Also there are cases where a lot of farmers' production is wasted due to lack of storage measures taken for storing food. In such cases farmers sell their products at much lower prices then the original price in order to sell their products before they get spoiled. So, we thought of removing the middleman and providing direct buyers to the farmers through our app so that farmers can get all the profits of their product and also this can prevent wastage of food as the direct buyers will include companies who will buy the products in bulk.

The paper is organized as follows, Section II discusses Literature survey i.e research paper we have studied followed by proposed system architecture and Implementation details. Further section describes results we have obtained and conclusion of the paper.

2. LITERATURE SURVEY

In paper [1], various types of auction have been mentioned such as english auction, Dutch auction, first price sealed-bid auction, vickrey auction. It also describes the flow or steps of how an auction can be carried out. In addition to this cloud technology is used for hosting the website.. The author of paper [2], makes use of Big data analytics for the agricultural area. Through the concepts like big data analytics and cloud computing determining which type of agricultural product should be grown in which season and which agricultural field is suitable for which agricultural product, such analysis can be done which helps the farmer in maximum production of agricultural goods. The proposed Android application helps farmers to access wide market portals across the world. It shows how farmers can utilize this application to sell crops as a better option for sale. It gives a stage to the agriculturalist where they can know the cost of various markets and can offer their products at a better cost.

Paper [3], discusses a web based application. Through this paper, we understood the basic idea of how the bidding algorithm works. And the graph representation which shows how the application is useful for farmers instead of existing bidding. By reading the working module, we get the crystal clear idea about how the application is actually working. In this the admin will post the product for bidding. The bidding will have a specific time limit which will be set by the farmer. In future, they are trying to develop a chat room where if buyer or seller have any queries, they can ask their queries through this section also they will try to develop a payment module for the purpose of direct selling.

Paper [4], try to answer the following queries: How are farmers facing problems while selling their Agro products? How the existing auction system worked? How does online auction help the farmer to earn better? The above topics are explained in detail in the paper. This paper also covered 2 Modules of their application. The first module contains registration and sign-up phase. The second module contains a bidding system. Here the customer with the highest bid wins and the product is sold to that

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DEEP LEARNING MODEL FOR FACE MASK DETECTION ALERT SYSTEM AND AGE PREDICTION

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Abstract: **COVID-19 has had a negative impact around the whole world. Studies have proved that wearing a face mask is one of the precautions to reduce the risk of viral transmission. And many public places as well as public service providers require customers to use the service and place only if they wear mask correctly/ So, it is not possible to manually track the customer, whether they have the mask or not. That's why this technology holds the key here. In this paper, we propose face mask detection using image processing which is one of the high-accuracy and efficient face mask detector. This proposed system mainly consists of three stages i.e. Image pre-processing , Face detection and Face mask classifier. Our system is capable of detecting masked and unmasked faces and can be integrated with webcam cameras. This system will help to tack safety violations, promote the use of face masks and it ensure a safe working environment.**

Index Terms **-- Face Mask Detection, Convolutional Neural Network(CNN), Datasets, Object Detection**

I. INTRODUCTION

COVID-19 pandemic is the most life-changing event which has startled the world since the year began. In order to tackle the wrongdoings of people, this system will assist the authorities to identify people not wearing masks and thus creating a sense of awareness regarding the virus and to minimize the impact of virus. COVID-19 has called for strict measures to be followed in order to prevent the spread of disease. Face masks are one of the personal protective equipment.

To monitor that people are following this basic safety principle, a strategy should be developed. Because, some people are taking this pandemic very lightly and majority do not wear mask properly. Face mask detection and alert means to identify whether a person is wearing a mask or not. There are many detector systems developed around the world and being implemented. But these systems do not give any alert if the rules are broken and do not show if a person has worn a mask properly or not. In this project, we will be developing a face mask detector that is able to distinguish between faces with masks and faces without masks.

The objective of this study is to reduce the impact of covid-19 and to keep the virus in control, identification of people without masks in the most competent and efficient possible way using Artificial Intelligence (AI) and Machine learning(ML).

II. RELATED WORK

Wearing face masks has become very important to avoid Covid-19. But some people are not taking Covid seriously and are not wearing masks properly. To detect these people and to reduce the impact of covid-19.An architecture is built [1] to find whether people are wearing facemask in live streaming videos and even with human face images using Single Shot Detector (SSD) serves the purse of object detection. Concepts of transfer learning in neural networks used in finding presence or absence of facemask in video streams and in images. Experimental findings indicate that the model performs well with 100% accuracy and 99% precision and recall, respectively. Simplified app roach [2] towards detecting facial masks even in motion using basic machine learning packages such as Tensorflow, Keras and OpenCV. . An automated process [3] for finding whether individuals wear facemask in public. The model is built by fine-tuning the pretrained state-of-the-art deep learning models called InceptionV3. Simulated Face Mask Dataset (SMFD) dataset is used to train the dataset. Here, on the public face dataset mask is put and then it's simulated. This is used to better training and testing of the model.Facial masks form a basic prevention from the virus, hence, [4] hybrid model is built using classical and deep machine learning consisting of two components. The first component is for feature extraction is by using Resnet50 and the second is for classification processing of mask is using Support Vector Machine (SVM) algorithms and Decision tree . Uses three datasets after investigation. Simulated Masked Face Dataset (SMFD) is the first dataset , the second dataset is Labeled Faces in the Wild (LFW) and third one is the Real-World Masked Face Dataset (RMFD). SVM learning algorithm achieved 99.49% accuracy in SMFD. RMFD achieved 99.64% of accuracy, LFW achieved 100% of testing accuracy. Healthcare system is under crisis. List of precautionary measures is being taken care in order to reduce the spread of viruses in which wearing facemasks is one of

Smart drone imaging applications

Prashant Kanade[1], Pragya Choudhary[2], Ria Dharmani[3], Archana Bhatia[4], Mohini Bhave[5]

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Abstract - *This is a survey paper that highlights some of the interesting applications of the swarm of drones in various fields. The paper explains the need and challenges associated with various application areas of swarms.*

***Key Words*: drones, unmanned aerial vehicles, swarm, applications, search and rescue operations, pipeline maintenance, construction.**

1. INTRODUCTION

Drones, also known as Unmanned Aerial Vehicles (UAVs) or Remotely Piloted Aircraft (RPAs), are becoming increasingly popular in recent years. Be it their usage for delivering products, or media coverage, or simply their use for spending leisure time by an individual, they are coming into vogue everywhere.

Swarms of drones, instead of a single vehicle, is the next level of automation in drone technology. This paper provides the cumulative work from a survey that focused on identifying the potential applications of the swarm of drones in various fields by different researchers.

The subsequent sections are arranged as follows: Section 2, highlights the drone applications in the field of pipeline maintenance. Section 3, describes the usage in Search and Rescue (SAR) operations, along with providing the summary of an important algorithm proposed by other authors in 4. Section 5, gives the idea about the use of swarms in the construction industry.

2. APPLICATIONS IN PIPELINE MAINTENANCE

Oil pipelines cover vast infrastructures often in harsh terrains such as marshlands, hot deserts or frozen areas, or even areas of conflict. The length of pipelines in Russia exceeds 280 thousand kilometers while in America it exceeds 2.2 million kilometers. Vast layouts of the world's most essential resource make it vastly difficult to identify leaks. In case leaks/ damage goes undetected it not only results in loss of resources it causes irreparable damage to the natural environment [1]. Some traditional methods to detect pipeline leaks are as follows:

2.1 Physical Patrolling

Without appropriate equipment it is difficult to detect leaks visually, or by smell. Human inspections can have limitations when it comes to heights or confined spaces. These inspections are more often than not constrained to predetermined routes based on statistical sampling, leaving certain pipeline areas un-inspected.

2.2 Pressure control method

Difficult to detect small leaks whereas large ones can be administered.

2.3 Ultrasonic flow meters

Difficult to sense small leaks. Additionally, it can prove to be expensive.

2.4 Conductive cables

Difficult to detect small leaks, moreover it is an expensive method.

2.5 Helicopter or Plane

Manned aerial navigation flies higher and quicker and has to carry heavy and expensive monitoring equipment. Although, it still provides comparatively low-resolution images for the same money. The cost of the pilot is an additional expenditure.

2.6 Earth remote sensing data (Via satellites)

Low-resolution images are obtained that are difficult to analyze.

The conventional methods that are being used for pipeline maintenance are not only extremely time-consuming and economically unviable, but also dangerous to conduct. This can mainly be attributed to the widespread pipeline network, which is more often than not installed in places that are physically inaccessible. Unmanned Vehicles offer an ingenious solution to this problem. They are easily available, can navigate harsh terrains, and easy to operate.

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HANDWRITTEN CHARACTER RECOGNITION

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Abstract: The method of identifying the handwritten text using machine interface is known as handwritten character recognition. Handwritten characters present challenges because they differ from one writer to the other; even though the same author writes the same character, the form, size, and location of the character vary. Handwritten Character Recognition has been one of the challenging areas in the field of image processing. It has numerous applications which include, bank cheques and conversion of any handwritten document into digital text form. There is a prominent need for storing information to desktop storage from the information available in handwritten images to later reprocess this information utilizing computers. But to re-process this information, it would be very difficult to read the other information from these image files. Therefore, a technique to automatically resolve and store information, in particular text, from image files is needed. This paper aims to classify an individual handwritten word so that handwritten text for English alphabets can be translated to a typed or editable form. We used the Convolutional Neural Networks to accomplish this task. We used this architecture to train a model that can accurately predict words. Trends suggest that the market value for such applications is going to increase exponentially in the future.

Index Terms **- Convolutional Network Layer, Architecture of CNN, English Words, image files.**

I. INTRODUCTION

Many of us prefer to take our notes traditionally: with a pen. However, it's troublesome to store and consistently retrieve documents. Thus, heaps of necessary information gets lost or doesn't get reprocessed as a result of documents not getting transferred to editable text format. Thus, the main target of this project is to explore the task of classifying written text and changing written text into a digital format.

Handwritten Recognition refers to the ability to interpret the handwritten text or words and convert them to digital format. Offline handwriting recognition systems generally consist of four processes: collection, segmentation, recognition, and prediction. First, the handwritten text or words in image format or any noneditable format is collected. Second, the text or word is segmented into characters. Third, each character is recognized using Handwritten recognition techniques. Finally characters are merged together to reconstruct an entire word.

In recent years, handwriting recognition has emerged as a significant attention-grabbing and sophisticated research area in the fields of image processing and pattern recognition. It makes a significant contribution to the sequence of a mechanisation technique and improves the interface between humans and machines. Various research efforts are focusing on novel methods and schemes that can shorten the process time while ensuring the highest recognition accuracy.

The next section discusses the related work done by various authors followed by details of the planned system.

II. RELATED WORK

Word Recognition has been an effective area of research in the past and due to its diverse applications, there has been significant research when it comes to Optical Characters Recognition. Several researchers have implemented various algorithms for handwritten character recognition. *Mehmet Kaya [2], Deepak Kadam [1] and* R. *Francis [3]* have done a significant research on how the noise in the image can be reduced and implemented the different algorithms

The discussion is further continued in the following sub-points.

A. Handwritten *Optical Character Recognition (OCR): A Comprehensive Systematic Literature Review (SLR)*

The authors of this paper Jamshed Memon, Maira Sami, Rizwan Ahmed Khan and Mueen Uddin have explained various classification methods for digitizing Handwritten images. A comparative study is also shown for various datasets to be used in

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Policy Made Easy: An Intelligent Virtual Assistant for Life Insurance

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Abstract: In life, unplanned expenses are a harsh reality. Life Insurance policies therefore offer a semblance of support to minimize financial liability from unexpected circumstances like the pandemic era. The Covid-19 pandemic has reshaped the business world and also showed the value of digital operating models. It has not only compelled businesses to speed up their digital innovation and transformation but also accept the changing needs of its customers. Similar is the case for companies offering insurance policies. The world which has faced major multiple lockdowns owing to the pandemic has certainly started thinking of ways to work online and hence reinforce the need to rethink traditional processes. The current process of insurance claimants is conservative, extremely tedious and time consuming. In the era of Artificial Intelligence, an individual prefers the task to be done in an efficient & less dreary manner, so rather than navigating through the website or visiting the Office in person, it prefers an application that provides a unified interactive platform to manage their policies. Hence chatbot is a much optimized solution for automating the traditional life insurance process. By combining the fields of Web technologies like Node js and React js, Natural Language Processing and Facial recognition the chatbot would provide solutions for all policy related queries and operations.

Index Terms- Insurance claim, premium payment, chatbot, react js, natural language processing, facial recognition, electronic signature.

I. INTRODUCTION

Due to Covid-19 pandemic, the culture of work from home has come to trend. People prefer to do tasks sitting at home on their desk with just a few clicks. Nowadays people of all ages are getting used to technology. As opposed to standing in a queue for procuring an Aadhar Card or Passport they are looking for automated processes. It is seen that there is an increase in customer satisfaction who are using these automated processes. Even in the field of insurance [1], people tend to use online website services rather than physically paying premiums. To enhance this traditional system of life insurance we are automating the services of paying premiums and claiming insurance through a chatbot [2]. Instead of navigating through the website searching for any service or waiting for an unknown amount of days after they have put in a claim request through their agent, a user can just put his/her query into the chatbot [3] and avail its services hence not only saving time but also getting certainty about their task directly from the insurance company.

We are developing a chatbot using React js and Node js where the user can pay his policy premium, claim maturity and death claim amount, check his capability to get a loan against the policy and surrender the policy. The query put up by the user is processed by using Natural Language Processing algorithms [4]. The users and the policies are stored in the MongoDB database which is connected to the server. As a measure against fraudulent claims [5], there is a personalized desk verification. All the user activities can be seen at the admin website for verifying authenticity of any document or malpractices (if any) thus adding an admin-oriented authentication before the claim amount is actually transferred to the beneficiary's (nominee or policyholder's) bank account.

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BON APPETITE

ONLINE CANTEEN MANAGEMENT SYSTEM

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Abstract: ***It is has been observed that the canteen that we manifest in our day to day lives, while in an educational institution has many drawbacks such as long serpentine queues, congestion due to the rush in peak hours etc. We propose an automated system which would surpass the current hassle by an automated web based system which will maintain, manage and process orders of customers in a speedy way using a website and its stored database.The project Canteen Management system helps the users to book their food earlier. The users have to book their food on the e-menu card. As soon as they book their food the order will be sent to the chef for preparing it. The existing system consists of the manual system that involves the paper work of the billing system and maintaining the files too. In the proposed system the payment is online and the e-menu will be available for the users. The users will have the username and the password through which they can book. This project will help in demonstrating the route from adapting materials to developing an online environment. This brings all necessities in one place that benefits both the user and the canteen owner smartly. We apply principles and techniques of recommendation systems to develop a content-based filtering model with the help of customer ratings.***

Index Term:- e-menu, account, ordering, online payment, recommendation system.

1. INTRODUCTION

Lots of time is spent in queues at a college canteen. The proposed software is effective in cutting the amount of time spent in the queue to send orders straight into the kitchen, placing orders before and with the option to use a UPI payment system that reduces time spent in tendering changes. This time can be used for any other purpose that must be relevant.The online canteen system contains e-menu cards that contain the details of the food. The user initially has to create an account for the utilization of the service. It will provide the list of different canteens and their various items menu list. The customer can select the desired item and can pay the amount through an online payment gateway system. Immediately after booking the order, the canteen people will get the information of the order and they prepare the order. In the existing system there will be queues and the manual work load will be there. In the proposed system there is no need for the paper-work. The data can be stored in the database. The food will be ready in advance and the customers need not to wait near the delivery place. The digitalisation of the canteen system will be helpful in providing the better service to the users and the time consumption will be reduced. The languages used in this system are Django, SqLite database. Initially the menu will be entered by the admin to the site along with the price. The updation and deletion of any item can be done. Atlast the user's feedback will be taken to improve the service and to make it available to everyone. The online system will help be helpful for the food makers to prepare the food as early as possible. As a result there will be quick serving to the customers.

The aim is to automate its existing manual system by the help of computerized equipment and full-fledged computer software, fulfilling their requirements, so that their valuable data/information can be stored for a longer period with easy accessing and manipulation of the same. Basically, the project describes how to manage for good performance and better services for the clients.

The objective of the system is to automate all the activities of the canteen right from purchases to delivery of food/beverage items. The system should maintain a detailed account of all provisions bought and food served at the canteen. In addition to this, it should also maintain the daily expenses incurred by the staff. The system should provide an interface to payroll for deductions. Several inquiry facilities should also be provided to view the expenses incurred/ planned menus/cash payment etc.

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PUSTAKALAYA: BOOKABOOK

Digital Library Management System

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Abstract: ***Digital Libraries (DLs) play a central role in the way information is produced, accessed and used in the Internet era. पुस्तकालय–Book A Book is a computerized system that can accomplish the activities in the VESIT library by providing easy accessibility to library usage for librarians and users of the library. The automated library system support evacuates the problems encountered in the manual library. The system provides Student, Faculty and Admin login. Students can check availability of books, issue and reissue books using the system . Admin can avail all the facilities of student and book management .Along with these regular library activities additional features like recommendations of books, reminders and notifications to students and ebooks facilities are also provided . When books are out of stock alternatives like ebooks, similar books and claim request facilities are provided. Faculties of college can donate ebooks and hard copies of books to the library using this system . The design parameters are HTML,CSS,Javascript,PHP and Database MYSQL.***

Index Terms **- Computerized system, library management system, claim request, issue, reissue, return, notification, recommendation, rating**

I. INTRODUCTION

Library management system consists of a list of records about the student detail, book details and its regular transaction performance. Our project पुस्तकालय : BookAbook is an Automated Library System. It helps us in automating all the procedures of the library. It helps the librarian to manage the library with the computerized system, by use of this system he/she can record various transactions like issue of books, return of books, adding of new students and more. The existing system is not fully computerized and hence it consumes a lot of time of librarians as well as of students.

The system has modules namely the admin, the faculty and the student. Admin modules describe the content of the book and student details like adding the book, accepting the requested book and returning the book etc. Student module which describes the student act of daily work in the library like view book details, placing a request for the book and return book. The faculty module has an additional facility to donate books and update e-books into the system. The system reduces the time by preventing formation of long queues and provides efficiency to everyone.

II. LITERATURE SURVEY

Shubham Zunjar, Rahul Yadav, Rutuja Markad, Sneha Patil have discussed in their paper "Library Management System" about the importance of digital libraries. In this paper, they aim to develop a computerized library management system to help students, librarians and faculty and which also reduces the manual work.[1] A.Thendral Mary, S.Ramya, Mr.S.Krishna Murthy, Dr.A.Valarmathi proposed their paper "Enhanced Library System" which majorly focuses upon overcoming the issue of the current library system i.e. data loss and time consuming. They have developed a Windows application using Eclipse Neon IDE tool and MySQL which aims to provide fast access to libraries for the user.[2] Ms. Praveena Mathew, Ms. Bincy Kuriakose, Mr.Vinayak Hegde informed in their paper "Book Recommendation System through Content Based and Collaborative filtering method " about a book recommendation system which performs content based filtering on the dataset and recommends a book based on user's interest. They also perform Collaborative filtering which helps in predicting the best book with respect to the user's choice.[3]

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Facial Identity

A Facial Recognition System for Payment

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I. Abstract

Face recognition is an important application of the Image process in growing to its use in many fields. Identification of individuals in an organization for the purpose of Payment is one such application of face recognition. The prevalent techniques and methodologies for Payment involves Frauds and Handling of Cards and remembering long passwords. The proposed system aims to overcome the pitfalls of the existing systems and provides features such as detection of faces, a secure payment web application, a user-friendly system.

In our facial identity project, a computer system will be able to find and recognize human faces fast and precisely using Web Camera (i.e Live Detection). Numerous algorithms and techniques have been developed to improve facial identity performance, but the concept to be implemented here is Deep Learning. It helps detect the user's face by retracing it with the stored coordinates while doing the payment process. The details of images and personal details are stored in the database. Live Detection of Face is involved while storing and retrieving the face coordinates. Facial identification makes the Payment method very simple for users.

In addition, there will be two different portals in our system. The system includes the Admin portal and User portal. In Admin-portal, there is one admin from one particular bank (say ICICI). Admin has four different options, first to view the List of Customers, second to Add User, third to Update an existing user, and fourth to Delete any existing user. In add user, the admin has to provide all the necessary details of a user. In Update user, admin can update the details of the user. In Delete user, the user can be deleted by the admin. In User-portal, users can sign-up only if the admin has added the user to our system. During sign-up user has to fill in some necessary details and then OTP is sent on the registered email. After confirmation, the Facial Recognition part comes, where the user's Facial details are stored in our system. The user can now log in and make payments through our system.

Keywords- Facial Recognition, Payment, Banking System, Face Co-ordinates.

Website Link: https://smile-pay.herokuapp.com/

II. INTRODUCTION

The offline method for Payment is limited by many factors such as distance and acceptance of another party. Card frauds – All of us heard about the credit card and debit card fraud reports. So, we have tried to implement a facial identity live detection Payment system involving minimal frauds.

The current payment systems involve a lot of time and long procedures. Face biometrics is rapidly gaining acceptance with consumers and businesses alike as a convenient and secure method of identity verification because it is a one snap show.

A category of biometric software that maps and stores an individual's facial features mathematically is termed Facial Recognition. The objective is to propose a system that is the

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Deep Convolutional Neural Networks Approach for Classification of Lung Diseases using X-Rays: COVID-19, Pneumonia, and Tuberculosis

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PDF

9

Abstract

Abstract: In this study, we have proposed a model to identify pulmonary diseases such as COVID-19, pneumonia, and tuberculosis from X-ray images. Identifying and differentiating among these diseases is already a hard task for doctors. Recent findings obtained using radiology imaging techniques suggest that X-ray images contain salient information about these diseases. Application of deep convolutional neural networks coupled with radiological imaging can be beneficial for the accurate diagnosis of these diseases, and it can also be assistive to overcome the problem of shortage of healthcare experts in remote villages. We have implemented eight deep convolutional neural network (Deep CNN) models: AlexNet, VGG16, VGG19, DenseNet201, Xception, ResNet50, Sequential, and InceptionV3. Comparative analysis of the implemented models suggests that deep learning with X-ray imaging extracts significant biomarkers related to these diseases, while the best accuracy and least loss is obtained while training our model with VGG16. The training accuracy, precision, and false-positive obtained for VGG16 is 99.66%, 97.56%, and 2.24%, respectively.

Key words: deep CNN, feature extraction, multiclass classification, healthcare

References

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COVID Saarthi

A Real-time Dashboard for COVID and generating alerts

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Abstract: We are in the middle of a COVID pandemic to achieve the most understandable and accurate display of information. The visualization is done using interactive maps. Improving existing platforms and designing user-friendly and interactive are among the important tasks to perform an accurate visualization of the information. Furthermore, the necessary resources of people living in India according to the district are implemented with the existing API. Hardware has been developed which alerts the user whenever new cases, deaths and recovery occur. The visibility of the data will be made transparent globally. It would help people of different sectors to analyze the data better, take quick action, identify patterns in the data, identify errors, understand the story in every region, and last but not the least, grasp the latest trends. It would help leaders as well as decision makers leverage data to drive their crisis response. This would help the government authorities to impose a curfew or impose specific restrictions on the concerned region. We plan to reduce the spread of rum ours and need to find contacts that can be done by providing the necessary and important contacts such as helpline numbers.

IndexTerms **- Internet of Things, Visualization, Real-time systems, styling, electronic mail, Data visualization, User interfaces, Application programming interfaces**

I. INTRODUCTION

The Novel Corona virus is a new virus that was first discovered in Wuhan, China. It was named as such because it had previously not been identified. The exact origin of COVID-19 has not been discovered presently. The virus has a substantial family of viruses, which are responsible for illness among human beings as well as animals. Some evidence made relations with the seafood and animal market in Wuhan, China, where initially many patients were found. This relationship gives an indication that the corona virus has emerged from an animal source.

The symptoms of patients with the corona virus include acute fever, cough, and problems with respiration. Since it is a unique virus, the spread of transmission of the virus is not clear. The animal source is the main reason behind corona virus, but the transmission is from one human to another. It occurs when a person is infected with the corona virus, coughs, or sneezes. The national helpline numbers that are functional 24*7 were set up by the Government. Additionally, a dedicated WhatsApp group to spread awareness regarding the deadly corona virus has been set up by the government.

The government is constantly updating the latest information related to corona virus such as the number of people infected, deaths, etc. on its official website [1].

No treatment, vaccine available or synthesized medicine is ready that can fight this virus completely. There are no specific treatments approved by the World Health Organization (WHO) available to cure the novel corona virus, but the infected people should make sure to take supportive care and improve their immunity power to get relief from the symptoms. Unnecessary travelling must be cancelled. Washing your hands in regular intervals with soap and covering your mouth with a handkerchief while coughing and sneezing must be followed. Observing clean hygiene is recommended. In case a person has contact with a person who has a positive case of corona virus, then your health is constantly checked for 4 weeks running from the last day of the occurrence of symptoms [2]. One must observe oneself for symptoms such as coughing, fever, dry throat, shortness of breath or difficulty in breathing and other breathing-related problems. The nearest health facility must be visited for any of these symptoms to arise.

Those who come into contact with the virus are quarantined and monitored even if they are not ill but might be infected, which means that the person who encountered contact with the medically affected patient or disease is either quarantined at home or at the centre to stop the spread. Right away, the person's well-being is monitored constantly [3]. WHO recommends a quarantine period of 2 weeks right from the time for the person who was subjected to contact of the Novel corona virus patient. If home quarantine is selected or ordered, the person should be allotted a separate uncrowded room, or if a single room is not feasible, maintaining a space of 1 meter from other family members or social distancing, reducing the usage of commonly used spaces such as cutlery, kitchen, washroom and bathroom if used should be well-ventilated and sanitized [4].

To understand and discover the findings from the data, the picture would mean thousands of words [5]. The brain processes 90% of the visual information. Within 13 milliseconds, an image is processed by the human brain. Image processing in humans is 60,000 times quicker than text. 80% of people are able to recollect what they see, compared to 10% of what they listen and 20% of what they read. In reply to the analysis of the questionnaire, 95% of B2B buyers responded that they required short-lived and beautiful visual blends of content. Normally, publishers whose matter consists of visual features have the potential to enjoy 12 times more customer traffic, 12 times quicker than those who do not follow these principles. Most of the time, people generally do not prefer text. The general populace only read 20-28% of the words on a given page. 80% of individuals will prefer to opt for video, but only 20% of individuals will indulge in reading textual content. 55% of web surfers stay active for less than 15 seconds to read. Many people surely are not great listeners. People generally recall only 10% of the details after three days of consumption [6]. If a related image is coupled with similar information, people's attention was retained by 65% of the information three days later. People genuinely feed pictures, infographics, and videos to their brains to entertain themselves. In the case of Instagram, close to 95 million infographics pictures are uploaded daily. Elsewhere on Twitter, tweets consisting of pictures and videos usually acquire 150% more retweets as compared to tweets without them. Functions of the brain related to visual processing are allocated 50-80% of the human brain's usage [7].

Tele-Medical Application for Remote Locations

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Abstract: *Numerous patients with hard to analyze infections visit clinics for clinical assistance, but expenses of voyaging and convenience are generally high for them, particularly, for poor people or rural places In this regards, Telemedicine can be an alternative cheaper substitute as it is characterized as the conveyance of medical services and sharing of clinical information over a distance utilizing telecom means. Telemedicine gives clinical data trade a good ways off, to help operations, with a definitive objective of improving local area medical care. In these tests, coordinated capacities like the transmission of clinical pictures, joint effort, and video conferencing, and gave magnificent human interfaces to telemedicine. As rapid broadband organizations spread, telemedicine support capacities and zones where telemedicine administrations are accessible will increment. In the clinical field, the development of another configuration for medication is normal, to incorporate leveling of freedoms to progress clinical therapy, and giving demanding clinical consideration by connecting emergency clinics and centers.*

Keywords: Telemedicine, Healthcare, Rural

1. INTRODUCTION

In India several attempts are being made to come up with solutions to the medical problems faced by its remote citizens due to the lack of healthcare facilities in remote villages. Among various solution, Telemedicine is one the most viable option. According to Census 2011, the medical examiner to populace ratio in India is 3.80 and skewed toward city areas (where this ratio is 6.60)[1]. That telemedicine an attractive solution to provide essential medical services to widest part of the country. For this purpose, an exhaustive medical service framework is needed for the government assistance as it could be exceptionally useful to cover the majority of the population and at the same time a viable clinical business model. Keeping these points in view, the present study aims to achieve the development of a remote healthcare system to provide service right from the patient's end to the complete term of medication as prescribed by the doctor. Therefore, the study takes into account of setting up of medical centers set up in different parts of the country focusing primarily on those rural or remote areas where good medical services are not available or where the people are too poor to harness the medical facilities.

Using Digital drive, which is currently pursued in the country, attempts are being made in this study to come up with a solution that could harness innovation in the wireless space along with cloud computing and pervasive technologies to come up with medical care conveyance to drastically improve the medical services administration in provincial regions.

2. Ideology and Approach

In the present study, one of the main aims is to target rural areas of the country where only low speed internet connections are available. In the present, therefore, mainly store and forward systems are used, as it has been found that this system for telemedicine has produced

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"Blood Bank Management System"

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Abstract -*This paper proposes a Blood Bank Management System (BMMS) which can be used by laboratories, clinics, hospitals, or anyone who is in need of blood. The proposed system would be able to connect the requester and donor through a safe web-based platform with a simple registration process. This improper management of blood leads to wastage of the available blood inventory. The methodology that has been chosen to develop BMMS is the Rational Unified Process (RUP). The methodology consists of four phases namely Inception, Elaboration, Construction, and Transition. Some important modifications to this methodology include admin access to registered user's data and a personal notification alert system. This study found out that this system puts an end to the fear caused during an emergency period and reduces the hassle of manual paper-based data entries. GPS tracking via registration and Cloud Storage for scalability can further improve the feasibility and Data processing of the presented system.*

Key Words: **Rational Unified Process (RUP), XAMPP, PHPMYADMIN, Donor, Recipient**

1. INTRODUCTION

India suffers from an annual deficit of two million units, as only 1% of the Indian population donates blood as stated by the World Health Organization (WHO). Due to substandard medical facilities and practices in many parts of the country, there have been cases of transmission of infectious diseases like AIDS. The need for blood is increasing along with its importance for treating various medical conditions. There are three main components of blood; plasma, platelet, and RBC/WBC. Especially during this covid pandemic, we're seeing a huge spike in the requirement of blood plasma from the patients who were recovered from covid-19 as their Convalescent Plasma now contains covid-19 antibodies.

There is a dire need for a software management tool for synchronization between the blood donors, hospital admins, and the blood banks. Improper communication, lack of synchronization in the blood banks leads to wastage of the available blood and loss of life. From registration to donation, a high-end, efficient, highly available, and scalable system has to be developed for easy registration of donors, recipients as well as an automated management system for blood bank desk admins. Thus, reducing the efforts required to search for blood donors as well as their data management.

1.1 Proposed System

The proposed Blood Bank Management System helps the Blood Bank Admin to easily monitor the blood requests and users database. The proposed system takes a systematic approach of how to bridge the gap between Recipients, Donors, and Blood Banks. It improves the existing system by providing a common ground to ease the process of blood donation and reception.

The Blood Bank admin uses Donors Registered Phone Number and Email-Id to verify the request so as to confirm the booking. While requesting the blood, the registered recipient can also check the availability of the required blood type as displayed by the admin. A direct messaging feature for inquiries is also available to the registered user.

The database mainly consists of the registered donor's information and inquiries managed by an Admin. It also comprises the records of available blood group samples. The database is currently hosted on a localhost server using 'xampp 'and managed using 'phpmyadmin'.

2. LITERATURE REVIEW

In "Blood Bank Management Information System in India" Vikas Kulshrestha and Dr. SharadMaheshwari [1] investigates the conditions laid by the Blood Bank for the donor in order to donate blood. The study describes the comparison of five existing web-based blood banks. The first, Blood Bank India provides the basis of city-wise and blood group-wise search for blood. The second, Bharat Blood Bank provides state-wise, area-wise and blood-group-wise searches of blood. It fails to provide a tool where a patient can ask for blood online. The third, e-Blood Donors provides gender-wise, city-wise, and blood-group-wise searches for blood but fails to provide blood on online request. The fourth, Lions Blood Bank & Research Foundation provides the current status of availability of blood, frozen plasma, platelets, and packed cells. The fifth, Web Blood Bank provides Rh factor-wise

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"IOT based Smart Switchboard using Self-Designed Programmer Device"

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Abstract - *Modern era can be compared to the smart era where everything is getting smart. Traditional devices are getting replaced by the smart devices. Similarly, old switch board needs to be replaced with such a device that uses the latest technology to do the same work but more efficiently, more quickly and we get motivated by this fact which has forced us to come up with a smart switch board. Now-a-days people look for things that are not only different but also efficient. So, considering the integration of smart grid technologies and to let people get accustomed to a bit of a different lifestyle, we have been motivated to develop smart switch board. The switchboard module fits behind the existing switchboard panel, without changing any electrical wiring or interior decor. Hence, it can be easily implemented to all houses. We have made a custom PCB which can be programmed by a programmable device for switches connected to different power appliances, sensors and motors. The previously happened research has been also included in it. Our aim is to provide a detail view of our system which is not just a proof of concept but a product.*

Key Words: **IoT, Programmers device, Smart Switchboard, Automation**

1. INTRODUCTION

The 'Thing' in IoT can be any device with any kind of built-in-sensors with the ability to collect and transfer data over a network without manual intervention. The embedded technology in the object helps them to interact with internal states and the external environment, which in turn helps in decisions making process. IOT Tutorial: What is IoT? In a nutshell, IoT is a concept that connects all the devices to the internet and let them communicate with each other over the internet. IoT is a giant network of connected devices – all of which gather and share data about how they are used and the environments in which they are operated. By doing so, each of your devices will be learning from the experience of other devices, as humans do. IoT is trying to expand the interdependence in human-i.e., interact, contribute and collaborate to things. I know this sounds a bit complicated, let's understand this with an example. A developer submits the application with a document containing the standards, logic, errors & exceptions handled by him to the tester. Again, if there are any issues Tester communicates it back to the Developer. It takes multiple iterations & in this manner a smart application is created. Similarly, a room temperature sensor gathers the data and send it across the network, which is then used by multiple device sensors to adjust their temperatures accordingly. For example, refrigerator's sensor can gather the data regarding the outside temperature and accordingly adjust the refrigerator's temperature. Similarly, your air conditioners can also adjust its temperature accordingly. This is how devices can interact, contribute & collaborate.

1.1 Proposed Home Automation System

The end individual can utilize their mobile phone or PC to sign into the machine. A fundamental test is accomplished for whether the equipment instrument is ON or not. handiest on the off chance that the equipment is approved and ON, at that point the individual is verified. when the confirmation is done accurately, individual is then equipped for send the control alarms to the equipment machine. at the equipment device the SL intention power program will always follow for the change inside the distinction and will thusly transport the markers to the Circuit. while a client chooses an exchange inside the notoriety for any of the instrument [I. e. ON or Off], the records from the hand-held is sent to the web Server in a string design, wherein the web – site is the host. At the server the status is spared in the database of their non-open device field at the equipment end, the circuit power program a web website page is utilized to rescue the notoriety of the contraptions in a reasonable example [for each 10sec]. those changes come quite close to treats [which are transitory web files] from the web server and are spared at the PC inside the name of the net site on the web. thusly every 10 sec on the grounds that the site page is revived and the new treat esteems are modernized.

1.2 Proposed Home Automation System Functions

The foreseen home automation structure can control the ongoing with activities in customer's home. It can likewise

Agritech: Smart Farming System using Robotics and IoT

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Abstract: *Farming is an occupation that is playing the ultimate role in the survival of this world. It supplies maximum needs to the human being to live in this world. The advancements in technology have driven a force to replace traditional methodologies with modern techniques. Now we are in the phase of automation, where the up-gradation of modern technologies is improving tremendously in sectors starting from smart homes, garbage, vehicles, industries, farming, health, grids, and so on. In the farming sector, the implementation of automation has commenced with the invention of Internet of Things. The process of applying robotics, automatic control, and artificial intelligence techniques at all levels of agricultural production, including farm-bots and farm-drones, creates a noticeable impact in the farming industry. Smart Farming applications are not limited to large, conventional farming exploitations, they also boost other common or growing trends in agricultural exploitations, such as family farming. The main idea of this paper is to focus on the integrated farming system consisting of multitasking robots and drones. The paper includes hardware and software descriptions of the website, robot, and drone built by us while developing this system.*

Keywords: automation, robots, drones, modern techniques.

1. INTRODUCTION

Smart farming is an emerging concept of modern technologies for shifting from sophisticated, tedious traditional operations to continuously automated processes. Smart farms can produce more yields with higher productivity at lower expenses in a sustainable way that is less dependent on the manual force. Agricultural scientists, farmers, and growers are facing the challenge of producing more food from less land in a sustainable way to meet the demands of the predicted 9.8 billion populations in 2050. That is the equivalent of

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Intelligent Traffic Routing and Congestion Relief

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***ABSTRACT* — Traffic is a major problem mainly in metropolitan cities leading to a waste of resources and time. Countering traffic is in the best interest of everyone. With this paper, we propose a plan to tackle traffic through traffic light modulation. The duration of the signals is modified based on the real-time data obtained and processed at junctions. Thus, an informed decision is taken and this has the potential to limit traffic caused due to lengthy signals. The system uses powerful image & video processing algorithms in order to process data. The anticipated outcome of the system was met satisfactorily. The system proposed in the paper can be considered as a simplified system upon which other features can be designed. It has ample of scope to improve in future. Image processing can help empower signals to identify accidents and emergency vehicles too. The system has the potential to solve a plethora of problems related to traffic.**

KEYWORDS — traffic, signal, intelligent traffic, traffic routing system, image processing

1. INTRODUCTION

In metropolitan cities, traffic is a major issue. Millions of people worldwide spend extensive amounts of time in traffic. Even though traffic signals and stop signs have been optimized in order to alleviate traffic, the problem still persists. We believe that the main reason why traffic persists is the inability of the established systems to take into account real-time data. Although systems might have been designed for a specific purpose, they should have the ability to adapt. Traffic can be majorly caused due to improper management by signals. Therefore, we aim to target signals and make them intelligent enough to adjust according to traffic. Powered by real-time data and powerful algorithms, the problem of congestion can be resolved to an extent. With sensors and systems monitoring the situation at every instant, the enormous data collected will be useful in better predictions and problem-solving techniques by the algorithms. Through the power of image processing, virtually every part of a road can be monitored.

This project sets out to solve the problem of traffic at stoplights and the countless issues caused by it. The problem will be solved by modulation of the traffic lights at intersections.

1.1 Plan of Implementation

The system is designed in demarcated phases. The first phase dealt with the design of the processing part of the system. The processing part involves image and video processing in order to determine valuable data. The first phase mainly involved software. Image and video processing comprise of the crux of this system and will require dedicated systems that are resilient. It is also necessary to extensively test this software in order to determine the accuracy of it.

The second and the final phase of the project dealt with the interfacing of the software routines developed in first phase with relevant hardware. Mechanisms responsible for the modulation of the signal duration is integrated with the processing part of the system. Dedicated microprocessor is used to integrate the hardware with the software.

2. LITERATURE SURVEY

In the paper [1] highlight an approach for vehicle detection and tracking entirely based on the Block Matching Algorithm (BMA). BMA is a standard matching algorithm used in MPEG compression. In order to estimate blocks displacement (between two successive frames), the small BMA partitions and fixed size blocks are matched from the previous frame. BMA is a common and rudimentary algorithm to detect vehicles that has its fair share of drawbacks. The assumption that the inter-frame motion is small characterizes BMAs. So, in case the inter-frame motion is large, or fast, it will virtually be undetectable. The margin for errors and introduction of redundancies is also significant. Computational load appears to be the worst drawback with BMA.

In the paper [2] the authors describe how MATLAB and ATMEGA 328 can be used to create a traffic system control using Image Processing. This paper highlights use of "Low Level process" and "Segmentation". A low-level cycle is portrayed by the way that the information and yield are pictures. The primitive operations are image processing to reduce noise, contrast enhancement and image shaping. Segmentation involves separating an image into two regions corresponding to objects. MATLAB uses C/C++ language for computation. But in near future Python will dominate the programming field so using OpenCV was the better option.

The main objective of the paper [3] was to develop an OpenCV/Python code using Haar Cascade algorithm for object and face detection. Cascade object detector function and vision is used by the algorithm. To train the algorithm Train function is used. Reduced processing time is the main advantage of this code. The Python code was tried with the assistance of accessible information based on video and pictures, the output was confirmed. OpenCV provides libraries like cvBlob or OpenCV BlobsLib which helps in easier detection of vehicles.

In the paper [4] the authors proposed to design a vehicle tracking system that works utilizing GPS and GSM technology, which could be a fairly cheap source of vehicle tracking and it would work as anti-theft system using AT89C51 microcontroller.

3. SYSTEM OVERVIEW

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MODULAR GARBAGE COLLECTOR ROBOT

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Abstract: Nowadays due to the fast increase in population as well as physical resources, collecting and disposing of garbage has turned into a challenging task and solid waste management has become a crucial challenge for the community. Focusing on human health and hygiene, as well as the cleanliness of the environment, the effectiveness of garbage disposal has become very significant. So we have come up with a 'Modular Garbage Collector Robot'. This is a WiFi controlled garbage collector robotic vehicle. Its main objective is to reduce manual labour and contact of humans with the toxic or hazardous waste like syringes, broken glass, etc. It is an app controlled robotic vehicle and it has four motor driven wheels for locomotion. This robot is designed keeping the perspective of automatic cleaning in our mind.

Index Terms **- IoT, Raspberry Pi, Modular garbage collector.**

I. INTRODUCTION

Now-a-days efficient waste collection is very important considering the fact that cleaning large areas is a tedious task. The robots which are available in the market are very expensive as they are designed to clean a large amount of area in a single stroke. This Modular Garbage Collector Robot is comparatively a lot cheaper than that version and being equipped with four wheels for locomotion helps this robot to move around freely in distant areas to collect garbage. This robot is supported with a Raspberry Pi camera which acts as the eyes of the user and makes it easier for the robot to identify and detect the garbage. The action of sweeping the garbage into the bin attached to the robot will be done by the robot as and when instructed to do so by the user through the app. With the help of a collection mechanism, the robot will be able to lift the garbage using the pulley system attached to motors. The user will also be able to control the robot from anywhere in the world with the help of a user-friendly app and the Raspberry Pi camera attached to it. This design is very flexible and it can be used for multiple cleaning purposes like household chores, cleaning areas after concerts, cleaning open grounds, hospitals, malls, schools, restaurants, beaches, offices, hotels, etc. This will be possible with the help of the Internet of Things (IoT). It helps in creating and streamlining productive, responsive, and affordable system architecture and thus it plays a key role in the automation industry.

II. LITERATURE SURVEY

In order to get the concrete idea of a scaled system and architecture of our proposed model we went through similar research papers . There have been a great number of various working designs of waste management systems, solar power based garbage collector machines and waste segregators . In this part, the first technical paper we referred is *Garbage Collection Robot on the beach using wireless communications* in which the garbage collection robot is controlled by the user via Bluetooth with the help of images from an IP wireless camera whose purpose is to collect garbage from the beach. The next paper which we came across is *Autonomous Garbage Collector Robot* in which the operation of the robot includes motion control of the robot, garbage collection and disposal of garbage to overcome the major issue of waste collection.

A. Garbage Collection Robot on the beach using wireless communications**[1]*:*** Sirichai Watanasophon and Sarinee Ouitrakul present this article of garbage collection robot on the beach using wireless communications. The main objective of this robot is to clean up waste materials on the beach. The garbage collection robot uses bluetooth and the movement of the robot is controlled by the user by looking at the images captured from the IP wireless camera. The controller used is a basic picture microcontroller. The bot is completely controlled by the user(not self-ruled), with buttons being made for COM transport connection, the four translational 5 directions, as well as the upright motion of the tray. It can collect huge amounts of waste like plastic bottles, small parcels, and so on. The robot chassis is built with tank wheels which makes it right not only for use in the sand, but also in other

Social Distancing System for Public Spaces

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Abstract - *As the world struggles with the devastating effects of the SARS-CoV-2, our country witnesses' new horrors each day, it all boils down to taking efforts on an individual level to ensure the well-being of ourselves. Our project aims at alleviating the effects of this pandemic by putting forth a model that helps curb minuscule issues which when put together has the potential to solve a colossal problem. Social Distancing during COVID-19 encompasses four parts. In the first part "Automatic queue monitoring system" we have designed a model that monitors the entry and exit of the people entering and leaving the area in perspective. The second part, "Contactless Temperature Sensing" enables recording the temperature of the people without any human intervention. The third part "Mask detection system" is instrumental in ensuring that everyone in the designated area wears a mask all the time and finally the last part "Social distance monitoring system" is the model that works on maintaining a constant distance of 1 ft. (as mentioned by the health authorities of the country) between the people at all costs. Through this project, we aim at demonstrating the best of our technical skills to help our community and the nation at large to tackle this life-threatening virus.*

Keywords— Social distancing system, Mask Detection system, Queue Monitoring, Temperature Sensing

1. INTRODUCTION

Coronavirus or novel coronavirus which is taxonomically termed as SARS-CoV-2 and named by the World Health Organization (WHO) as COVID-19 which emerged from Wuhan city, Hubei Province of China by the end of 2019 has caused unprecedented panic across the world. The rapid transmission of this virus from human to human-made the World Health Organization (WHO) declare this as a public health emergency of international concern and called it a global pandemic. As of May 14, 2020, globally 42,48,389 COVID-19 cases have been reported and caused 2,92,046 deaths. The highest human casualty reported was from the USA with 1,09,121 deaths.[1]

The second wave did not do any favours to the prevalent devastations of the virus. Despite many measures being undertaken such as travel bans, curfews, and even the nascent vaccinations, the impediment of this virus did not subside. The world once again witnessed the horror of lack of medication and vaccines, hospitals, and the increase in the average mortality rate of the disease. India has had some of the worst repercussions of this second wave. India ranked first in the highest number of cases daily and third in the number of deaths.[2].

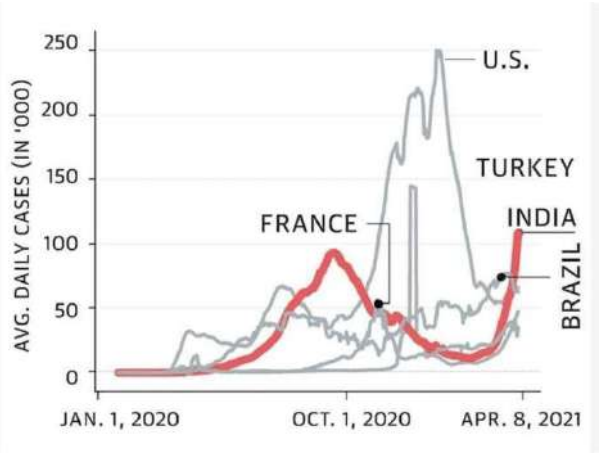

Fig. 1 Average daily cases in highly affected countries. [2]

Building upon the preceding point, we figured that in our capacity we could ameliorate the problem of mass mobility. With cases of violation of the social distance rule by more than half the population of India, it seemed necessary to take efforts in the direction of social distancing. The lax attitude of the general public in particular the lack of social distancing and lack of wearing masks has only exacerbated the situation. Thus we aim at making a model that counteracts this impediment and ensures that no matter what, people should maintain a minimum safe distance amongst themselves and wear masks. In the succeeding chapters, we talk about the research, execution, and prospects of our product.

2. LITERATURE REVIEW

We referred to the work of researchers who worked on a similar aim. In June 2020, Rucha Visal and her co-authors proposed a system for Monitoring Social Distancing for Covid19 using OpenCV and Deep Learning, their survey paper emphasizes a surveillance method that is designed to keep a track of the pedestrians and avoid overcrowding.[3] A concept called Visual Social Distancing (VSD) problem was introduced, It is defined as the automatic estimation of the interpersonal distance from an image, and the characterization of related people

Heart Rate Detection System

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Abstract - *A non-contact method of measuring heart rate could be advantageous for sensitive inhabitants, and the ability to calculate pulse using a phone camera or a simple webcam could be useful in telemedicine. In this paper a method for detecting heart rate using a camera is demonstrated which is also known as Photoplethysmography Imaging. The RGB color of the human face is obtained using pulse related signals from using a high quality camera under proper light conditions. Readings have been recorded under different conditions of humans and compared with other technologies.*

Keywords **– Photoplethysmography, ECG, Butter BandPass Filter, Signal and Image Processing Techniques, Heart Rate Detection.**

I. INTRODUCTION

In today's world there are many ways in which heart rate are measured such as manually, by using smart bands, by using chest traps, etc. ECG is also used to measure the heart rate, which is the best in providing accuracy but all these methods involve the machine to contact the skin. There are electrodes used in these methods which cause harm to the skin if it is in contact with the skin for a longer time. Monitoring HR i.e Heart Rate is used to state the physiological aspect of the person and hence is very essential to monitor. Heart Rate is measured at a very high cost nowadays and involves usage of many sensors. In the last decade there have been researches focusing more on cost efficient,effective to use and easy to use non contact based applications. Thus we have proposed a system which does not have any contact with the skin and is very much easy to use and flexible for the users.

In our project the HR can be monitored using a webcam which is present on a laptop or a camera attached to a computer in real time. The heart rate is monitored by focusing on the color variation in facial skin caused due to circulation of blood in various regions of the face.

II. METHODOLOGY

A. Measurement Principle

Whenever light hits a floor it is either absorbed, transmitted, or reflected. In PPGI technology, image acquisition systems are used to detect light components reflected from upper tissue layers. Instead of using single photodiodes, other technology of detector arrays can be adopted, CCD cameras being a good example. Fig. 1 shows the reflected light portion in upper layers. The absorption capacity of hemoglobin is much more in perfused tissue than the inner tissues which leads to significant absorption of light. As the blood content changes, optical attenuation of the skin is observed[6]. The blue-colored layer, slowly fluctuating part (~0.25 Hz) adds up to 10% of the entire signal containing details about venous blood volume changes. Changes in thoracic pressure that are respiration-dependent affects the blood from veins returning to heart. Thus, signal components can be used to acquire respiratory parameters. The arterial blood volume changes corresponding to the rapidly fluctuating part (~1 Hz) constitutes only 0.1% of the total signal. Measurement of the human heart rhythms is done with these signals [6].

Pharmaledger - An Improved Solution to identify counterfeit drugs in Supply Chain

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***Abstract*-- According to an analysis of drug samples done by WHO it was found that around 10.5 percent of pharmaceutical drugs in low and middle-income countries were fake or substandard[1].Counterfeit drugs can potentially cause problems for populous regions like India and China as they are two of the biggest drug manufacturers[2].Attributed to issues like these, pharmaceutical supply chain which is one of the biggest business verticals is at a threat. Solutions to battle these issues and to make drug supply chains secure are constantly under development. Our aim is to propose a possible solution for achieving the goals of making the pharmaceutical supply chain more secure and free it from counterfeit drugs or frauds which introduce subpar quality of drugs in the chain. Blockchain and IoT can be used to develop a solution which fulfills this aim as blockchain is an immutable distributed ledger which will guarantee transparency thus preventing frauds and IoT can help monitor status and environment of the drugs so that subpar quality drugs can be eliminated.**

***Keywords*-- BlockChain, IoT, Supply Chain, Pharmaceutical Supply chain, Information Security, Counterfeiting.**

I. INTRODUCTION

The presence and use of understandard and falsified medical products in countries by patients is threatening to undermine progress towards achieving the Sustainable Development Goals. Such goods can be of low quality, unhealthy or ineffective, posing a threat to the safety of those who take them.As globalized manufacturing and distribution systems grow ever more complex, the problem of understandard and falsified medical products continues to rise. That complexity increases the risk of factory-consumer production errors, or medicines degrading demand for pharmaceutical products, vaccines and other medicines in nearly every country, In addition to weak supply chain management and the rise of e-commerce, it also creates incentives for the introduction of counterfeit drugs into the supply chain.

Our aim is to solve the problem of Drug Manufacturers as they are struggling to find an effective way to securely, transparently, and rapidly track the origin of these drugs, or access data required to combat counterfeit drug sales. Any fraud in the Drug Industry may lead to catastrophic effects damaging several lives. Centralized database to store the information of the drug supply chain is highly susceptible to unauthorized modifications which might lead to loss of all the stakeholders. Thus there is a need for high transparency and distribution in the system.

Our Application that is Pharmaledger is a supply chain monitoring software for drugs.Our objective is to reduce counterfeit drugs from the supply chain which costs the life of people and ensure goals such as End to End Visibility of drug , Inferred trust between stakeholders, fraud detection and cost effectiveness.Problems with existing supply chains are that they use Centralized database to store the information of the drug supply chain which is highly susceptible to unauthorized modifications and might lead to loss of all the stakeholders and cannot ensure the transparency between stakeholders , traceability of drugs, maintain privacy and most importantly they are not able to detect counterfeit drugs in the supply chain.

Intelligent Media Player

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Abstract - *This paper aims to propose a desktop application that will able to recognize the user's face and hand, and according to that the video will be played or paused on a player. With the advancement in technology, now we can develop an application where the user just has to do eye or face movements or hand gestures and according to that player will act. We can develop this project by using a popularly adopted domain by researchers - Artificial Intelligence (AI). Artificial Intelligence gives birth to several applications where a system can be used to work as a human expert. This application can be developed using various algorithms such as Haar Cascade Classifier. Nowadays everything is online. This player will play a major role in all the platforms as it will play and pause depending upon the user actions.*

***Key Words*: artificial intelligence, desktop application, face movements, haar cascade classifier, hand gestures, human expert**

1. INTRODUCTION

Intelligent Media player is a player which is designed for time-saving as well as for the handicapped people who are not able to do the movement of the hands. This player will play an essential role as it includes eye, face, and hand gestures according to which player will be able to play and pause the video. Usually, when you are watching a video and someone calls you, you have to look somewhere else or go away from the screen for some time so you miss some part of the video. Then need to drag back the video from where you left it.

To overcome this problem, we will try to develop a look-based media player that pauses itself when the user is not looking at it. The player will play the video after the user looks at the screen again. For this, we need the camera or webcam on top of the computer. As long as the camera detects the user's face, eyes or hand gestures the video will be played. The player will pause as soon as the user's face, eye, or hand gestures is not completely recognized.

This paper is organized as follows: Section 2 explains the need and scope of the project. Section 3 has the literature survey. Methodology in Section 4 followed by the flow diagram in Section 5. Section 6 talks about the result analysis followed by conclusions drawn from it in section 7.

2. NEED AND SCOPE

Following is the need and scope of the project:

- It will be useful for people with certain disabilities who can play and pause the video by eyes and face.
- Due to the pandemic; from nursery to big industries everything became online.
- This player will play a major role in all the platforms as it will play and pause depending upon the user actions.
- It will also be useful for watching recorded lectures for students, workshops, and meetings for employees.

3. LITERATURE SURVEY:

3.1. MP-FEG: Media Player controlled by Facial Expressions and Gestures. [1]

This paper helped us to understand a new technique to interact with the computer in a non-tangible way. This Media Player system controller is designed for Facial Expressions and Gestures (MP-FEG). They have used Tangible devices like keyboard and mouse to give instructions to the computer for a long time. The next step in the development of human-computer interaction (HCI) is a non-tangible way of communication between humans and computers. This system is to be built using a perspective user interface in the type of HCI system. The main purpose is to find a non-tangible way to interact with the computer and for this, they have experimented to verify whether the facial expressions and the hand gestures can be used to give a command to the computer, specifically for controlling a media player system in the real-time situation. For facial expression, they extracted landmark points using an efficient discriminative deformable model. This discriminating model gives 49 landmark points on the face region. To handle different positions, rotations, and scales of the face in the image in

BLOCKCHAIN BASED INSURANCE PROCESS

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ABSTRACT

Blockchain is a fast disruptive technology becoming a key instrument in the shared economy. In recent years, Blockchain has not only received a considerable amount of attention from many research and government institutions but also from academy and industry. Since it is considered a breakthrough technology, it could bring benefits to many different sectors. Insurance is one of the sectors that, among others, which started to carefully examine the possibility of blockchain. The field of Insurance has taken a giant leap at the threshold of the twentieth century. Over time insurance has become an integral part of the life of man all over the world.

Claim management is one of the most challenging business processes in the insurance sector. With the number of stakeholders involved, the dependencies and the logistics, there is a need to eliminate manual involvements
Insurance process is an expert system which generates the rules and regulations for the assessment of general damage using the key information in the medical report, surveyor report, loss accessor's report. The insurance process regulates the payment of general damages also payment of the loss of future earnings.
The objective of the paper is to give a gist about how the insurance company settles the claims, the procedure that is followed, which does not involve any intermediate.

Keywords : Blockchain ;Insurance

I. Introduction :

A. Blockchain introduction

Blockchain technology has been one of the emerging and trustworthy technologies .A blockchain originally means **block chain**, which is a growing list of records called blocks which are linked together using cryptography. Each growing block in the chain consists of a cryptographic hash of the prior block along with the timestamp and the data.It is a decentralized ,distributed public ledger service that is used to record transactions across many computers.By design ,all the blocks are resistant to the modification of data.Once the data is recorded, it cannot be retroactively altered without alteration of all subsequent blocks, which requires a agreement from network majority. Under blockchain block becomes validated only when it has been verified by multiple nodes. A blockchain database is managed autonomously using a peer-to-peer network and a distributed timestamping server. Blockchain has been implemented in well known cryptocurrency Bitcoin.

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Personalised Music Recommendation System

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ABSTRACT

As an important marketing tool, recommendation systems for information sites offer an opportunity for merchants to discover potential consumption tendencies and also increase the user engagement on information sites. This project puts forward a novel recommendation algorithm to make the recommendation system more accurate, personalized and intelligent. As online music streaming becomes the dominant medium for people to listen to their favorite songs, music streaming services are now able to collect large amounts of data on the listening habits of their customers. These streaming services, like Spotify, Apple Music or Pandora, are using this data to provide recommendations to their listeners. These music recommendation systems are part of a broader class of recommendation systems, which filter information to predict a user's preferences when it comes to a certain item.

Keywords: Sentiment analysis , Natural language processing , Facebook Graph API , Machine Learning

INTRODUCTION

Nowadays, recommendation of personalized content is becoming the most popular area for many researchers. The main aim of recommendation is to provide meaningful suggestions to users for particular items based on users interest and behaviors towards items. Music has become an integral part of human life. There is a tremendous increase in volume of digital content and the choice for people to listen to diverse types of music has also increased significantly. Thus there is a need for a system that will accurately give suggestions to the user depending on its interest. Current music recommender systems face issues of cold start. Cold start problems occur when a new user registers to the system and the system does not have sufficient data associated with these users. Thus there is a need to reduce the cold start problem by analysing user's interest which can be extracted from Facebook feeds, smart questionnaires , emotion detection. Thus by this project we are aiming to build an effective music recommendation system which will accurately suggest music to the user and which will reduce the problem of cold start.

Objectives

- Design cost effective music player which automatically generates a sentiment based playlist .
- Understanding the emotional state of user for a particular song.
- Identifying the correlation between listener and type of music.
- Understanding user's and music's traits.
- Finding out patterns from many user's preferences.
- To eliminate cold start problems that occurs in the current music recommendation system.

REVIEW OF LITERATURE

Paper :1

Paper Name: Current Challenges and Visions in Music Recommendation System

Source : International Journal of Multimedia Information Retrieval

Summary :Markus Schedl, Hamed Zamani, Ching-Wei Chen, Yashar Deldjoo, Mehdi Elahi in Current Challenges and Visions in Music Recommendation System Research an International Journal of Multimedia Information Retrieval, 2018

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Agro Basket App: Prediction System Using Data Mining

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ABSTRACT

Agriculture is a major contributor to the Indian economy. The mainstream Indian population depends either explicitly or implicitly on agriculture for their livelihood. The common problem existing among the Indian farmers is they don't choose the right crop based on their soil requirements and weather conditions. Over the years due to globalization, agriculture has evolved by adapting the latest technologies and techniques for a better standard of living. This paper aims to develop a mobile application for farmers and website portal for companies. The application also aims to develop supply chains between farmers and companies. In order to improve crop productivity and to increase the yield of crops, minimize the cost and automate the inputs for processing the farmer will harvest the crops according to predicted results. The number of parameters on which the prediction can be done are, 12 months, seasons which will indicate which crop is suitable in which season, soil pH value, soil type and rainfall and which will predict among the 12 crops selected. The prediction is done using three algorithms Support Vector Machine, K - Nearest Neighbor, Linear Regression and Decision Tree. Companies will post the requirements for the yield. Once the farmer accepts a portion of the quantity to grow there would be an agreement between them.

Keywords: Crop prediction, K - Nearest Neighbor, Linear Regression, Decision Tree, Support Vector Machine, Supply chain, Globalization, Mobile application

INTRODUCTION

India is one among the oldest countries which is still practicing agriculture. But in recent times the trends in agriculture have drastically evolved due to globalization [1]. Various factors have affected the health of agriculture inIndia. Many new technologies havebeen evolvedtoregain health. So, choosing a suitable crop and prevention of those crops hold an equal priority. It is vital as well as challenging as there are many factors that decide the crop that is suitable for growing [2]. Indian farmers tend to choose unsuitable crop for their soil and this problem can be solved by prediction agriculture where the characteristics like soil type, pH value, minimum-maximum rainfall etc are used for detecting which crop is suitable for cultivation in that soil. This minimizes the risk of cultivating inexact crops which collectively results in better crop yield from a particular land holding [2]. Starting with collecting data for dataset as dataset was not publicly available. We research crops that can be grown on parameters like soil and climate and with the help of government databases we retrieve the crops which were in which state at which period of time for the past few years.

We saw the data on the government website and downloaded the CSV for 12 different crops. We did the analysis which crop can be grown on which type of soil, and some weather conditions. Then eliminated the same where some conditions were blank, except temperature. Where the temperature was blank, we filled the mean value of that area. After cleaning government records, we had a final map of the attributes for a crop to be predicted. As a dataset was ready, we worked toward the prediction model. We trained the model using algorithms like linear regression, KNN, decision tree, SVM technique to predict the crop on the basis of farmer's input on the dataset we created.

Now on our app the farmer will register by giving his location, ph. value of the soil and soil type which are necessary for prediction and will go to our prediction model and will return the predicted crop he can grow. Meanwhile the company can post any of its requirements to grow with minimum seller price for that crop per unit, total quantity needed and the time duration of it. As any company posts the requirements, it would be displayed on the dashboard of the application which is designed for the farmers. Based on the parameters entered by the farmers, they can view only that particular crop posted by the company. The farmers will grow the crops according to his land size from the total number of crops according to the company's requirement.

As the farmer accepts the terms and conditions, pre - defined by the company the agreement will be made, farmers need to regularly update the status like sowing of seeds in the prepared land, irrigation and fertilization, maintenance at different stages (onset of any pests on plants), harvested, ready for delivery. Also, the company can track the progress stages of their order in its post side dashboard. The company can accept or reject the crop status. Also, the company can view the number of pests. After the crop has been delivered the company can close the deal with that farmer for a

Personalized Health News Recommendation Based on User Interests

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Abstract – *Online news reading has become very popular these days because the web provides access to various news articles from thousands of sources all around the world with variety of regional, local, national and international news in all the languages. A key challenge of these news applications is to help users find the articles that are interesting to read which differ from user to user. In this paper, we present our research on developing personalized news recommendation system based on user's interests regarding health related topics. Based on the predefined interests that we ask from users, we developed a Bayesian system for predicting users' current news interests from the activities of that particular user and the news trends. We combine the information filtering mechanism using learned user profiles to generate personalized health news recommendations.*

***Keywords*: Keyword Extraction, Health News Recommendation, News Scraping, Information Filtering, YAKE! Algorithm, News Personalisation**

1. INTRODUCTION

News reading has changed with the advance of the World Wide Web, from the traditional model of news reading via physical newspaper subscription to access to thousands of articles/sources via the internet. News aggregation websites, like Google News and Yahoo! News, collect news from various sources and provide an collected view of news from around the world. A critical and major problem with news service websites is that the never-ending volumes of articles can be overwhelming to the users. The challenge is to help users find news articles that are interesting to read based on their particular interest. This technique is known as Information Filtering. Based on profiles of each and every user with their interests and preferences, system recommends news articles that maybe of interest or value to the user. So, our main task is to aggregate news articles according to user interests and creating a "personal newspaper" for each user.

Nowadays, recommendation of personalized content is becoming the most popular area for many researchers. The main aim of recommendation is to provide meaningful suggestions to users for particular items based on the user's interest and the profile. News is the important part in day to day life. There is a tremendous increase in volume of digital news, articles and the choice for people to read news as per his/her interests has also increased significantly. Thus there is a need for a system that will accurately give suggestions to the user depending on its interest.

An accurate profile of users' current interests is very important for the success of information filtering systems. Some systems do it manually for every user to create and update profiles. Sometimes users don't like this and it takes a burden sometimes and only very few are willing to do it. Instead, some systems construct profiles automatically from users' interaction and activity with the system.

In this paper, we describe our research on developing a personalized heath news recommendation for every user based on user profile learned from user's activity on the system. For our system, we are scraping news from various websites and also gathering news using newsapi in the domain of health. After getting news from our scrapers, we are extracting summary from the article. And from that summary, we are generating keywords from every article using YAKE! algorithm. After doing so, we are checking users' activity based on the news clicked and the keyword extracted from that certain news article. Based on their activities, we are recommending news to each and every user with the help of keyword extraction associated with clustering of interested keywords which acts as interests.

This paper is organized as follows. Section 2 explains the purpose of the proposed plan. Then the Literature Survey in Section 3. Then the three main functions of the proposed program are described which tells us of text preparation, corpus clustering and news recommendation in Section 4, 5 and 6 respectively. The flow diagram is made in Section 7 where the working is explained. Finally, a conclusion is made in section 8.

2. OBJECTIVES

Following are the main objectives:

- Developing the recommendation model.
- Improving the accuracy of the model.
- Providing the health news to the readers based on the language and interests.
- Recommending the health news to the readers as per their profile, interests, user activity, etc.

3. LITERATURE SURVEY

Multiple papers were studied and their findings are summarized in this section. This section includes papers studied before and during the development of the project.

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INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

HealthyHeart: ML based Analysis and Predictionof Cardiovascluar Diseases

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***Abstract*—Electrocardiogram or ECG waveform is one of the most common names that comes up in the healthcare sector. It is often the foremost step that is taken by the healthcare professionals when it comes to dealing with any cardiovascular issues. The signals from the ECG waveform are a reflection of how the heart functions. Any abnormalities encountered in the waveform are a reflection of underlying problems that a person may be suffering from. Using technology, especially Machine Learning and Artificial Intelligence in the healthcare industry can open up new doors and provide valuable assistance in the treatment of diseases. HealthyHeart is our proposed way that classifies CVD by using Random Forest Algorithm on the data obtained from the ECG signals. An accuracy of 97.7% was achieved by training the developed model over 979273 data entries. The accuracy rate indicates that HealthyHeart is a good fit for producing accurate results.**

***Index Terms*—ECG, Machine Learning, Healthcare industry, Cardiovascular diseases (CVD), Random Forest (RF)**

I. INTRODUCTION

Early detection and proper medication are the two pillars that can help a person tackle any health complications. There have been many unfortunate incidents where late detection of a disease cost a person their life.

As the technology is growing, its benefits can be seen in the healthcare industry too. The most promising breakthrough in recent times has been the levels that ML and AI have reached. Some work about the same has already been carried out and researchers and scientists are optimistic about ML and AIbeing the next most promising thing in the healthcare industry.When it comes to CVD or Cardiovascular diseases, usingML and AI based solutions for early detection and diagnosiscan be helpful. As per the surveys conducted globally, CVDshave the highest death rates; contributing to 31% of the deathsacross the globe. Around 85% of CVD affected patients die ofheart attacks and strokes that block their arteries and prevent proper blood flow throughout their body.

Categories that the CVDs can be classified into depend on each patient's condition and the symptoms that they show. Some of the categories of the CVDs include the following;

- Coronary heart disease
- Congenital heart disease
- Cerebrovascular disease
- Rheumatic heart disease
- Peripheral Arterial disease, etc.

Multiple methods in the medical field can help to detect CVDs by carrying out expensive and complicated tests. How- ever, irregular heartbeat is the most easily detectable and alarming symptom for it. ECG is known for recording the pattern in which the heart beats. It keeps a track of the rhythm and the rate at which the heart is beating. It is crucial to determine if there is any abnormality in the functioning of a person's heart. It is the fastest and the easiest way of detecting irregular heartbeats.

Any difference encountered in the ECG data can be a sign of an underlying cause. It is necessary to analyze and determine the cause of the encountered abnormality before the situation goes out of hand. Analyzing the ECG signals can help to understand if there are any narrowed or blocked arteries that can lead to chest pains or a heart attack.

Using ML and AI algorithms for this process can help to not only speed up the detection process but also to increase the precision of CVD diagnosis. By using data from the ECG wave forms with an efficient Machine Learning algorithm, time-efficient results that have an increased performance can be successfully determined.

The aim of the proposed system is to be of assistance in the early detection of CVD. The objective of choosing this project is to develop a ML based model that uses ECG data, analyse it, and gives accurate prediction about whether a person is at a risk of CVD.

II. BACKGROUND

The proposed system aims to work for benefiting the healthcare industry by using ML based algorithms to deliver a system that can make the CVD detection process faster. ECG and the data that can be analysed from it is the most importantfactor in this system.

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INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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Studentchain: Digitizing and Authenticating Student Portfolios using Decentralization

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Abstract: Education is a sector where the introduction of blockchain will bring a revolution to the way any organization perceives trust factor in the ecosystem. StudentChain is a pilot project for implementing blockchain ecosystem at the Institute level for Student Portfolio Management. The documents of students that they generate in their educational phase are approved by colleges before they are handed over to them. We can shift this process over to blockchain and capture these documents using Ethereum Network for data related storage and by using IPFS for file related storage. A Digital Signature by the appropriate authorities added after proof of consensus by means of biometrics will enhance the trust level among the stakeholders of the ecosystem.

Index Terms: Blockchain, education, IPFS, cryptography, contracts, consensus, ethereum, decentralization, recommendation

1 Introduction

Education is a sector which has lots of areas that could be improved using technology. The market for the edtech industry is growing considerably, and it is predicted to reach $93.76 billion in the following years globally [1]. A blockchain is a growing list of records, in an informal sense, called blocks, which are connected using cryptography. Each block stores a cryptographic hash of the block before it, some transaction data and the timestamp.

Blockchain technology in the education sector brings forth the advantage of making it possible to dematerialize documents. It can also aid in avoiding the risk of losing or falsification of documents. Higher education, academic certificates and course certificates are prone to getting lost as they have hard copies. If all this data is stored onto the blockchain, there would be no possibility of losing the information and the documents. Also, the data can be shared with others with the owner's consent. Uploading information from educational documents onto the blockchain would remove the uncertainty for employers about an employee's level of knowledge. Also, if blockchain is used, storing information about one's education would make faking a diploma impossible.

Generic methods of document submissions like photocopies and pdfs are most prone to manipulation and thus require more amount of manual work to verify & attest them. External Authorities cannot verify the student portfolio except believing in photocopies or directly contacting the college as existing solutions for verifying the integrity are slow, expensive, and inefficient. The cost wasted over paperwork and the manpower wastage for repetitive tasks can be saved considerably by using such a platform.

1.1 Features of Blockchain

1. **Immutability**: Records cannot be tampered with once committed to the shared ledger, thereby making all information trustworthy.
2. **Consensus**: A transaction is committed only when all the parties agree to a network verified transaction.
3. **Transparency/Cost & Time Saving**: Entire student portfolio is available, and External Entity can verify the authenticity saving their time and cost
4. **Redundancy control**: Repetitive tedious tasks can be avoided by storing approval and verification statuses which persists on the blockchain secured by cryptography.

ANALYSIS OF DEEP LEARNING TECHNIQUES FOR RUMOR DETECTION

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Abstract: *As the endless development in web 2.0 and ease of access methods, devices upcoming new technologies like Social Media, Mobile, Analytics and Cloud-generates infinite stream of data. Some misinformation can spread widely and rapidly in online social networks. Due to potential harm this circulate may bring to public, so false rumor detection is required. To detect rumor, existing machine learning based approaches have relied on handcrafted features. The objective of our research is to train different models of Deep learning algorithms.*

Text data converted to vector form by Glove Vector pretrained embedding technique. Deep Learning Models like Long Short Term Memory (LSTM), Convolutional Neural Network (CNN), CNN-LSTM, Bidirectional LSTM (BiLSTM) and CuDNNLSTM(layer with BiLSTM) on textual data are performed and analysis has been done. These models perform binary classification of tweets into rumors and non-rumors. Comparative Analysis has been done with results on same dataset by existing machine learning algorithms and our deep learning models. Our deep learning models outperforms the baseline machine learning algorithms.

Keywords: Rumor, Non-rumor, CNN, LSTM, BiLSTM, CuDNNLSTM, GloveVe Embedding.

1 INTRODUCTION

Rumors are the statements about some incidents, peoples, things, event which are not true. They are harmful as it can hurt feelings, sentiments of people, it can spread misinformation, stress, anxiety, fear among the people. That is why accurate detection of rumors is necessary. Twitter has changed the way of communication and getting news for people's daily life in recent years. Meanwhile, due to the popularity of Twitter, along with sharing genuine information it also becomes a main target for spreading rumors.

With the rapid growth in the popularity of social media, propagation of rumor is also increasing. Rumors can spread among thousands of users immediately without verification and can cause serious damage.

There are some rumor debunking websites are available like emergent.info, politfact.com, sina reporting center, but these are based on manual investigating techniques, so there is need to automate this, hence various machine learning and deep learning techniques are used.

The field of artificial intelligence is essentially when machines can do tasks that typically require human intelligence. It encompasses machine learning, where machines can learn by experience and acquire skills without human involvement. Deep learning is a subset of machine learning where artificial neural networks, algorithms inspired by the human brain, learn from large amounts of data. Similarly, to how we learn from experience, the deep

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Brief paper

Robust output tracking for the non-minimum phase over-actuated systems☆

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ABSTRACT

Typically, if the system is right-invertible only, then this implies that the number of inputs is more than that of outputs as well as states of the system. Over-actuated systems belong to such class. In this paper, a systematic design of a reduced-order super-twisting control is proposed to track arbitrary reference signals for uncertain non-minimum phase over-actuated systems. The proposed method involves the transformation that resolves the redundancy in the control inputs so that system can be represented as a normally-actuated system with virtual control inputs. Further, unstable zero dynamics are virtually stabilized through one more transformation so that stable and virtually stable zero dynamic states can be excluded from the super-twisting control design. Finally, the computed virtual control magnitude is spread across all the actuators via a redistributed pseud-inverse type of control allocation so that the system can be operated within the actuator saturation limits.

1. Introduction

In a safety-critical system, malfunctions in the actuators, sensors or other system components may result in ill-performance of the system and in some applications such as aircraft, spacecraft, nuclear power plants, or hazardous chemical plants it may be catastrophic. In order to tolerate component malfunctioning, the system can be controlled through more actuators than the number of states so that the system can tolerate a fault in some control channel. Such systems that use more control effectors or actuators than axes or states to control may be called as over-actuated or redundant input system. For an over-actuated system to be fault-tolerant, dynamic allocation of the computed control among the effectors is necessary in order to maintain the desired performance. Numerous literature are available on control allocation for fault-tolerant systems, see Oppenheimer, Doman, and Bolender (2006), Zhang and Jiang (2008) and references therein. The dynamic control allocation problem using the generalized (pseudo) inverse technique has been solved in Harkegard (2004), Harkegard and Glad (2005) and Zaccarian (2009). For a nonlinear over-actuated system, optimal control allocation method based on Lyapunov design has been discussed in Liao, Lum, Wang, and Benosman (2007) and for non-minimum phase systems in Benosman, Liao, Lum, and Wang (2009).

Control allocation problem is the distribution of control demand, which is the designed virtual control input, among the available set of actuators. However, if the system is uncertain, then designed virtual control should be robust so that the system will perform even in the presence of disturbances. Sliding mode control (Edwards & Spurgeon, 1998; Shtessel, Edwards, Fridman, & Levant, 2014) is quite a popular choice among researchers for its ability to eliminate the disturbances in input channels.

A fault-tolerant sliding mode control scheme via weighted pseudo inverse allocation has been discussed in Alwi and Edwards (2006). Design of integral sliding mode control for a fault-tolerant system that ensures the robustness from initial time has been addressed in Hamayun, Edwards, and Alwi (2010) and the output feedback based integral sliding mode fault-tolerant control for the linear parameter varying (LPV) plants has been discussed in Hamayun, Ijaz, and Bajodah (2017). In Li, Hu, Yang, and Postolache (2019), a disturbance observer has been employed to reconstruct the synthetic uncertainty derived from actuator failure and disturbances; then integral sliding mode based finite-time fault-tolerant attitude control has been designed. Fault-tolerant high-performance sliding mode control design, based on the nonlinear sliding surface, has been discussed in Khimani and Patil (2014).

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Prediction on Hard Disk Failure using Machine Learning

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Abstract— *A hard disk failure may be difficult to recover or may be unrecoverable. A place like data centre may have great number of disks as their storage devices and it may be a challenging task to maintain the reliability over these disks. These disks may be different dependency over other hard disks. Failure of such dependant hard disk can cause catastrophic consequences. Failure prediction for hard disk is an effective way to improve reliability on Storage systems. In large data centres, almost every hard disk are kind of reliable on different hard disk with different work load patterns. So this project is about Predicting Hard disk failure with the help of S.M.A.R.T attributes. With the help of attributes, we will use different set of machine learning techniques to provide the best accuracy for hard disk failures. We are going to use real-world dataset containing 380,079 different hard disk with same model of S.M.A.R.T attributes.*
Our goal is to generate a hard disk failure prediction model with the best accuracy to prevent loss of data. So in case if we predict the Hard disk is going to fail we can take certain measures to prevent the Hard disk or backup. This project is going to use different set of machine leaning models such as Random Forest, Gradient Boost Modelling, etc. which will help us out for achieving our objectives. It's also going to use h2o ensemble to achieve and gather the best predictive results which could be obtained using the above mentioned machine learning algorithms. It is going to use 20 different combinations of the above mentioned models with the help of different parameters or attributes of those models. With the help of this project, we can save massive amount of data to prevent from data corruption and prevent from catastrophic incident. Not only for small scale departments, it's going to help large data centres as well.

I. INTRODUCTION

For Companies which rely heavily on data might have more data and monitoring this huge data is going to be challenging for them. If a Hard disk fails, it might lead to a serious problem and can be a big loss to companies. If they kept copies in the system, it is going to cost more to keep backup all the time. If there are large data centres then it means multiple drives, which means huge dependencies. It's difficult to maintain so many thresholds in such data centres. Hard disk failure may be difficult to recover valuable data or even unrecoverable. To prevent from such big disaster, we are predicting hard disk failure. If we predict that the disk is going to fail then we can think of alternate solutions such as backup or coming with different solutions to stop hard disk to fail. We can ask the system to take the back up once we get the signal. We can also replace the disk with a new one if we predict that this hard disk is going to corrupt.

Basically there are two types of Hard disk failures, Unpredictable failures which can happen without warning. This mainly occurs due to improper handling of hard disk drives. The other disk failure is Predictable failure are resultant of slow processes such as gradual degradation and wear of storage surfaces. [1]. Every disk has S.M.A.R.T. i.e. Self-Monitoring, Analysis and Reporting Technology. This monitoring system provides various information related to hard drive reliability. With the attributes provided by S.M.A.R.T., we got this dataset from Kaggle website. The information about our dataset is below.
Our Dataset has 105 columns and 380079 rows. It means we have all together information of 380079 hard drives with failures and working. After pre-processing and removing columns and rows, we have 380062 rows with 24 columns. There are altogether 12594 hard disk in our dataset which are failed and remaining working. Our dataset consisted from 1st of January 2018 to 31st of December 2018 with first five columns namely date, serial_number, model, capacity and failure. Date consist of date, serial number consist different serial numbers on the hard drive whereas model is the model of the hard drive. We have choose the same model which is ST4000DM000. Capacity of the hard disk is also same. Failure is the fifth column where they mean if the hard disk failed or not. It's a binary column where there are 2 values which are 1 and 0. 1 being failed and 0 being working. Rest of all remaining columns are S.M.A.R.T attributes. We have pre-processed the dataset by removing near zero variance, removing columns which are not required, removing any NA or missing values eventually distributing the data in training and testing parts. We will discuss all these things in below chapters.

As said earlier, our project's objective is to develop a powerful hard disk failure method by identifying soon-to-fail drives using different classification rules.
We are going to clean the raw data and use the data and particular columns which will be used for prediction.

We are going to use the models such as Gradient boost modelling, Gradient Linear modelling, Random Forest and Deep Learning to produce the best accuracy results. We are also going to use h2o ensemble. H2o ensemble is a supervised ensemble machine learning algorithm which allows combination of different algorithms to produce better predictive results for these models. So h2o will work along with the above mentioned models to get better predictive performance which will provide the best results.

How UX design influences user's decision making

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Abstract: User Experience design is an important part throughout the lifecycle of a software product, enhancing human-computer interaction is the main objective. To fulfil this objective software engineers have gone far into the study of neuroscience and the best possible utilization of computer parts to interact with the user. These engineering practices have been standardized by the experts and now businesses are using such standards to earn high profits by exploiting the passive usage brain patterns of the users.

1. INTRODUCTION

As soon as personal computers got hand-held and pocket-sized their demand and usage has gone up like anything. Everyone wants to get the feel of using a portable, speedy and beautifully designed devices. This got redoubled with the introduction of smartphones, which are fully featured and capable of having n number of applications. And now not only the devices but also the applications are part of the experience.

People spend hours and hours of a day using these amazing apps as they offer great functionalities and high level of interaction. Hence, companies invest high amounts in the development of such application to make them more engaging.

This is an emerging market where businesses sell apps or create app having in-app purchase (user can buy more functionalities inside the app) and there is a very high competition among business of same and cross niche. In this cut-throat competition, creators have started using concepts of cognitive science, started studying human behaviour like how user interacts and what stimulates them, for designing more user-friendly designs.

This study is called as User Experience (UX) design which was earlier known as Human computer Interaction design or Usability design which know are concepts of UX Design.

The UX designing has gone so far and now companies use it not only to make there app more usage and attractive but also, they fulfil their business needs by manipulating their user. They exploit the human behaviour to make user click on that desired link or button or make purchases inside application. This is all done by evenly following design rules defined in UX design and understanding the User experience. So now let's understand what User Experience and its concepts is.

2. WHAT IS USER EXPERIENCE

The overall experience of an individual utilizing a product, for example, a site or application, particularly regarding how simple or satisfying it is to utilize.

Data Analysis on Suicides in India

Its Causes, Statistics, Ratios and Prevention Solutions

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Abstract: *The suicide rate in India is 10.3. Over the past three decades, the suicide rate has increased by 43% but the proportion of women remains stable at 1.4: 1. The majority (71%) suicide in India by people under the age of 44 has led to greater social, emotional and economic burden. A total of 54 articles on "suicide" have been published in the IJP. Numerous studies indicate that suicide rates are much higher than officially reported. Poisoning, hanging and hiding (especially women) were suicides. Physical and mental illness, relationship problems, and economic hardship were major causes of suicide. Weak people are found as women, students, farmers etc. The public and private health response in addition to the mental health response is important in preventing suicidal behavior in India.*

Key Words: Suicide, India, Risk Factors, Accidents

Introduction:

Suicide is considered a major public health problem. The WHO acknowledges that suicide is a global problem affecting all nations, especially low-income countries. Suicide has a devastating effect not only on those who commit suicide but also on families, communities, and communities. The WHO recognizes that most deaths are serious and require effective, comprehensive, diverse responses, and national prevention strategies. WHO supports restricting access to means that include pesticides, guns, and certain prescription drugs. We recognize the need to manage mental health concerns including alcohol and drug abuse. It supports the need to exclude mental illness and mental health care from the community. It emphasizes the need to participate in suicide prevention as an integral part of health and early intervention.

The WHO's Mental Health Gap Action Program (mhGAP) includes identifying the risk of suicide as a health priority. It has developed an intervention guide for the diagnosis and management of mental illness, substance abuse and suicidal ideation and programs, and history of intentional self-harm. The WHO Mental Health Action Plan 2013-2020 prioritizes suicide prevention and includes indicators that measure progress. These include (i) reducing suicide rates; (ii) the number of successful suicide prevention interventions; and (iii) a decrease in the number of suicide attempts at the hospital. The plan aims to reduce suicide by 10% by 2020.

The WHO is also launching a variety of intervention studies, which seek to raise awareness of the problems. It leads to reduced discrimination and impact on national policies. It includes suicide monitoring, international technical support, regional and national workshops, production and distribution of resources, the promotion, and randomized clinical trial of suicide prevention interventions.

However, suicide is sometimes on the minds of Indians, especially when the National Crime Records Bureau (NCRB) releases statistics. The country has an annual practice of discussing suicide, controversy, criticism of current methods, gaining political points, and highlighting certain solutions. A short period of public attention and media flexibility means that suicide is a normal part of the media cycle.

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Named Entity Recognition using Word2vec

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Abstract - *Food recipe data is very important for preparing new dishes and these data is available in the various online platform but in unstructured form and no relationship between them. To solve this problem, the model is developed for recipe data using the word2vec model. This model trying to extract ingredient names and quantity from phrases or sentences and is also find most similar or identical ingredient names. This is only based on word2vec and natural language processing.*

Key Words: Natural language Processing, Food recipes data, Information retreival,Word2vec.

1. INTRODUCTION

Food recipes are very essential for individuals and millions of data available on the internet which is submitted by different users of different countries. These data contain recipes name, ingredient name, quantities with units and some extra comments but in unstructured form. There are some algorithms which are CRF(Conditional Random Feilds) based which has got success in extracting and structuring recipes data, but it can't find similarities between them. The system which is built on them is also very useful to the developed recommendation system.

So we developed a model with help of word2vec and some rule based tagging to find ingredient name inside phrases or sentences and also similarities between ingredient name with other words inside phrases or sentences. Which helps to determine the relationship between the words.

2. Technology Used

Natural language processing now a days very important for text mining. NLP provides libraries like Nltk and SpaCy which is very useful. Most of, I used Spacy libraries in this model for identification of noun and part of speech tagging. Nltk is also good for auto-tagging. Rule Based approach also gives advantage at many stages of coding.

Web Scrapping very essential for extracting data from websites. For recipes related data I used recipe_Wikia[3] website. Extracting data from websites with the help of web scraping and clean that data Using Rule Based Approach. After this step push into PostgreSQL relational Tables. This is all for preparing Dataset. We are using the Word2vec model which is a neural network based So Dataset Size must be large for a more accurate result.

Word2vec is a technique for natural language processing that uses a neural network model. It requires a large corpus of Text data. This model can detect synonyms word or suggest additional words for words or Phrases. In this model, word is converted into vectors so we can easily perform any vector operation. It uses cosine similarity for detecting similar words. It produces word embedding. In our model after extracting a noun from sentences or Phrases using Rule based approach and Spacy library word2vec try to predict is that noun is an ingredient name or not. If got an ingredient name than trying to predict cosine similarities between other words inside the sentence. In that way, context is going to be determined.

For this word2vec uses two types of architecture. Basically first is CBOW(Continuous Bag of words) and another is Skip-Gram.

In the CBOW architecture, the model is going to predict the current word from a window of surrounding context words. In continuous skip-gram architecture, the model trying to predict context words with uses of the current word in the given window.

Programming language uses python which best suitable for this type of work.

3. Proposed Solution

The other models also extract all recipes details and also converts it into a structured format, but it won't specify the relationship between words precisely the reason why we have used Word2vec model. With the use of Word2vec model context words can predict the target word easily.

With the use of our model ingredient name and quantity can be extracted from the sentence also with the ingredient name we can find out the best context. Other different words with the ingredient name can be predicted with the use of word2vec model.

4. Ingredient Details Extractions

Word2vec in Named Entity Recognition is very useful. Our model used part of speech tagging with word2vec for getting accurate target word.

Test data for model:-
2 tablespoons unflavored gelatin, dissolved in 1/2 cup water

Our model uses training Dataset and produce the result:-
{2 tablespoons, quantity},

Survey on Novel Corona Virus (COVID-19): World Pandemic

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Abstract: *This article is in depth review concerning the novel corona virus disease (nCOVID) or corona virus disease -19 (COVID-19) and its impact over the world. It's generally deals with the impact in numerous countries with the comparative study of confirmed cases, recovery ratio and death ratio of COVID-19. This disease affects the breathing system and it transmits through the droplets of spittle, cough and sneeze of nose of infected people COVID-19 was 1st time reported in city town of Hubei Province of china in Dec 2019 that is afterward 11 March 2020 becomes pandemic declared by World Health Organization (WHO). The COVID-19 pandemic, conjointly called the coronavirus pandemic, is currently ongoing pandemic of coronavirus disease 2019 (COVID 19), caused by severe acute respiration process syndrome coronavirus 2 (SARS CoV 2). The 1st case of the virus was reported at Wuhan city, China, in Dec 2019. As of 1st June 2020, quite 6.15 million cases of COVID-19 are reported in greater than 188 countries and territories, leading to quite 371,000 deaths; about 2.63 million patients have recovered.*

Key Words: **Corona virus, COVID-19, Comparative Study**

1. INTRODUCTION

The 1st case of Corona Virus (COVID-19) was reported in China's Hubei's Wuhan city in December-2019 and has infected millions of people till date.With 106,241 deaths in United States of America alone, it has now become an epicentre of the deadly virus On December 1, the symptom onset date of the first patient identified.5 days after the person was unwell, his fifty-three year old wife who had no exposure to the city market was also detected with pneumonia and was quarantined in isolation ward in the hospital. By the 2nd week of December the number of people infected with virus rose, at this moment the Wuhan doctors indicated that the virus is spreading through human contact and is Contagious. On 25th December, the medical staff in two medical facilities in China's Hubei's Wuhan city were suspected of carrying the viral pneumonia and were put into the isolation ward. In late December 2019 the hospitals in Wuhan detected an exponential spike in the number of cases which cannot be anyhow linking back to the Huanan Seafood Wholesale Market which was consider to be the first source of virus breakthrough. Later, Chinese officials ruled out the possibility that this was a recurrence of the severe acute respiratory syndrome (SARS) virus - an illness that originated in China and killed more than thousands of people around the world between 2002-2003. On 7th January 2020, according to WHO the officials in china had announced that they had identified a new deadly virus.

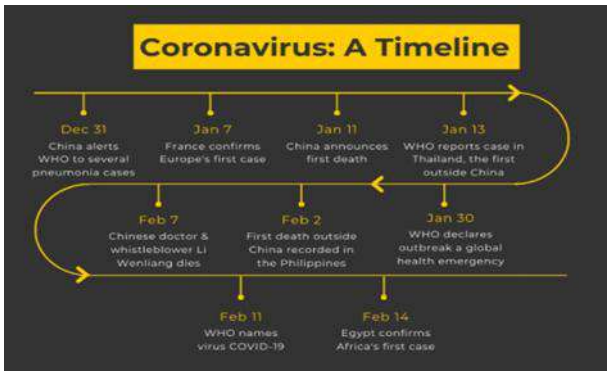

Fig-1: Corona virus Timeline

The new virus was given the name 2019nCoV and was classified to be belonging to the coronavirus family, which consists of common cold and SARS. Primarily, it had an outbreak in China because of human to human transmission. Form china later it exported to japan and Thailand. After couple of week COVID-19 outbreak has moved to Europe, United States and other Asian countries rapidly. To date mostly affected countries are America, Russia and from Europe because they make mistake of not locked down at early stage. To date, most of the countries in the world have reported the spread of COVID-19 as per WHO. Around a 29.7 million population is infected by this disease in which around 940,285 deaths reported as of 16th September 2020. Worst affected part of the world for this outbreak is USA where around 27.45% cases of the world get affected as of 16th September 2020. Among all countries around the world united states, India, Brazil, Russia are in the top list of affected countries.

What are the Symptoms?

WHO has analyzed some sign of infection which include cough, fever, shortness of breath and difficulty in breathing. Some other signs include muscle aches as well as loss of taste or smell. In some cases which are more severe, it can even lead to pneumonia, multiple organ failure and even death.

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Security in SSO

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Abstract - *Single sign-on (SSO) is a centralized user authentication and session service in which one set of login credentials can be used to access multiple applications. [1] Single sign-on (SSO) is an important element in the complex structure of an effective security program. It is a service that gives a user access to multiple network destinations by entering only one username, one login and one password. It simplifies the login process streamlines workflow and adds a layer of safety by reducing the likelihood of error. For example, if a user typically accesses two or more applications during a work session, going through multiple login routines multiplies the possibility of mistakes which consumes more time. While SSO enhances ease of access, however it also presents some risk.*

For example, there are many applications and websites that provide the option to login with your google, google+ and Facebook accounts. The user does not have to register for a new account for each website. Which makes the process easy and it saves a lot of time too but there comes so many security risks with that single click.

Key Words: Authentication, Security risks, Single sign-on, phishing, data breaching

1. INTRODUCTION

Without SSO how does authentication works?

Each website maintains its own database of users and user credentials.

1. Website checks if you have already been authenticated. If you are already authenticated it gives you the access of their site.
2. If you are not authenticated then it checks your username and password in their database.
3. The site passes the authentication data to verify that you are authenticated every time you go to the new page after you login.[9]

Figure 1- Without SSO authentication [8]

How does authentication work with SSO?

Web development teams usually face one problem during implementing the SSO. You have developed a website or application at one domain D1 and now you want to deploy on a new domain D2 to use the same login details or information as the other domain. Or you want users who are already registered and logged in at domain D1 to be already logged in at domain D2.
So, this is solved by sharing the session information across different domains. And for its security, browsers enforce a "same origin policy". The same origin policy dictates that cookies and other stored local data can be accessed by its creator or user only.
There are many SSO protocols and different SSO protocols share session information in different ways. But the concept is the same which is the central domain through which authentication process is performed and then session is shared between domains.

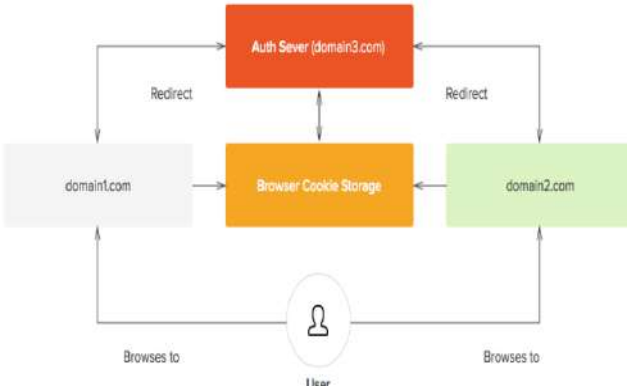

Figure 2- Using a central authentication domain [7]

Whenever users go to a domain that requires authentication, they are redirected to the authentication domain. As users are already logged-in at that domain, they can be immediately redirected to the original domain with the necessary authentication token.

The future of digital currency

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Abstract : *Cryptography is the critical aspect of todays never ending evolving internet world. Information technology is being criticised in its privacy aspect. Technology breaches makes its users critical on relying on things like digital currency or cryptocurrency. This study shows the positive side and how the cryptocurrency is being used worldwide. Bitcoin is one of the successful cryptocurrencies and by understanding the current world conditions and considering bitcoin as an example it would be easier to answer questions about how secure and trustworthy the cryptography is.*

Keywords : **digital currency, crypto, data mining, blockchain**

1. INTRODUCTION

In today's world everything connected by the internet has changed the nature of financial transactions. And with modernization in technology banking social media computing we have seen business going beyond traditional cash payments country specific money and barter systems.

Whenever we think of crypto, the first thing that comes to our mind is encryption. In cryptography there are two types of encryption Symmetric and Asymmetric. The asymmetric cryptography technique, such as RSA that relies on prime factorization is hard to be tempered. It is claimed that even if some of the utility numbers are compromised, the encryption is still intact. However, there is also an algorithm that gives disclosure to a decryption key that attempts to compromise the ciphertext, such as the Las Vegas algorithm that provides a quicker factorization to break RSA.

Key is the important part of any encryption key size or key6 length is the size in bits of the key used in an encryption. Keys are used to control the operation of a cipher so that only the correct key can convert the encrypted text or ciphertext to plaintext. A key should, therefore, be large enough so that an attack on it can take a long time to decrypt.

In the last ten years there is a new boom in the banking and investment sector, the new way of keeping records safe and fast access time which is Blockchain. the record-keeping technology behind the Bitcoin network. And there's a good chance that it only makes so much sense. In trying to find out more about blockchain, you've probably encountered a definition like this: "blockchain may be a distributed, decentralized, public ledger."

1.1. What is blockchain?

This is a technology which is so complex. At the most basic level we can think of it as a chain of

blocks but not in physical format these blocks are virtual. When we break the work into block and chain and then put this into context then we start to understand that we are talking about digital information (BLOCK) stored in a public database (CHAIN).

Blocks on the blockchain are made from digital pieces of data . Specifically, they are divides into these parts:

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Analysis on YouTube Trending Videos

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Abstract - *Online video streaming platforms are heavily used nowadays. Websites such as YouTube offers content creators a great platform to share their knowledge, ideas and interesting information to their viewers. For a video to reach to maximum people, YouTube offers a trending page on website that shows videos which are trending at that particular time. Other than few viral videos that achieve high view count which are predictable to end up in trending section, rest of the videos cannot be predicted. Corporate companies are using social media for improving their businesses, the data mining and analysis are very important in these days. This paper deals with analysis of YouTube Data on Trending Videos. The analysis is done using user features such as Views, Comments, Likes, and Dislikes. Analysis can be performed using algorithms like Linear Regression, classification and other Machine learning models and python libraries like pandas, matplot library to classify the YouTube Data and obtain useful information.*

Key Words*: *Data Analysis, YouTube, Trending, Python, Linear Regression, Big data, Data mining, Machine Learning, popular, social media, Views, pandas

1. INTRODUCTION

YouTube is a widely used and famous online video platform in the world today. YouTube has a list of trending videos that is updated constantly. Analyzing these trending videos can give content creators greater perspective and knowledge for increasing their popularity and brand of their channels. Companies and businesses using social media and digital platform can also use this analysis to boost their growth in business by publishing videos or sponsoring appropriate channels at right time.

This paper can help in finding, measuring, analyzing, and comparing key aspects of YouTube trending videos.

1.1 Objectives

- To understand characteristics that makes a video end up in trending section on YouTube.
- To grasp knowledge about YouTube's algorithm and extract key aspects that can be used to improve growth of YouTube channels.
- Provide content creators and other digital businesses with information about features required to make a video that trends and reaches to maximum people.
- To accelerate a channels growth and increase their subscriber count by making trending videos.
- By increasing subscriber count and views this can help you youtuber's to earn more money, sponsorships and opportunities to excel in their social media carrier

2. METHODS OF ANALYSIS

Analysis for this paper is done by using 3 different ways of analysis.

2.1 Analyzing the Basic Statistics of Trending Section videos.

One of the methods is by obtaining all the data associated with trending videos for example statistics such as number of views for each trending videos, time taken for video to end up in trending section, number of likes, comments and description for that videos etc. These statistics will help in understanding basic conditions for a video to appear in trending section of YouTube page. This data can be extracted by using YouTube API provided by YouTube. It offers lot of services such as downloading video content, description, titles, thumbnails and other basic statistics**.** [1]

2.2 Studying the Difference between Trending and Non Trending Videos.

Comparing the statistics of both, trending and non-trending videos on YouTube can be another method for performing this analysis. By comparing certain attributes such as number of views, likes, comments, shares count for each hour or time interval after the video is uploaded, for both the type of videos, can help in understanding how a particular video navigates through YouTube's algorithm steps and ends up in trending section while other does not appear in trending section. For this type of analysis equal amount of data about trending and non-trending videos will make the results more accurate and form better conclusion. [1]

Application Performance Monitoring Using Log File on ELK Stack

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Abstract: *Log monitoring of an application is an important step to manage any of the applications. Details related to the application state and situation can be collected with the help of device monitoring for the developers to give decisions related to appeared events. Logs of application can be important information to track application thoroughly. Developer needs to centralize the logs of the application so that the developer can manage, receive and analyze the logs. APM agent is used for tracking the application using specific language like ELK provides java APM agent for monitoring. The further step of this is the creation of software and the application. The last procedure is the testing of the system and managing the log of application. The output shows that collecting the logs and processing that logs into the information on the ELK dashboards utilizing ELK application effectively implemented. The dashboard came about by ELK Application will be created on the application utilizing Java language. The test outcomes show that the framework can get logs and based on that log file it will help to understand the efficiency and performance of product application.*

Keywords — Monitoring; log; ELK Stack; Java; APM Agent; Kibana; Logstash

1. INTRODUCTION

Application performance monitoring APM is the branch of information technology that guarantees systems are proceeding true to form. Application monitoring systems and tools of ELK stack keep up the application checking. The final aim of the performance monitoring of software is to provide good quality experience to end user. Application observing systems provide developers the data they have to rapidly discover the issues that seriously influence an application's performance [1].

These types of systems could be concrete to the selected software application and monitor various applications on the network, grouping information concerning customer CPU utilization memory required yield information and total bandwidth.when user perform the troubleshooting the performance issues we see a service or operation that is or a many of the machines that are eased back down and arriving at high-CPU usage. This may imply that it's less number of resources because of high burden of resources, but most of the time means that there is high chance of bugs or error in the coding part, or there might be error that uses high CPU utilization [9].

ELK Stack is the open source application which is the combination of Elasticsearch Logstash and Kibana to gather and envision or visualize logs of any application [2]. Elasticsearch is utilized for storing all the logs generated from various network devices. Logstash is the open source tool for gathering and parsing the logs and saving at the Elasticsearch. Kibana is the user interface which is used for visualizing logs in the graphical or in other visualization structure form. [3].

In this paper, developer need to develop the Application Performance Monitoring (APM) by using the java APM agent that involves the log file of the application or any project that will manage and represent the application based on the ELK Stack to combine various logs from server of the project that is used by developer and analyze data form the every log file of application to provide administrator to provide solution based on the error occurred in the application.[4]

2. RESEARCH METHODOLOGY

Research methodology process definition, specifications and configuration of system, log evaluation, and results dependent on log records.

The first step of this research is the definition of system. This step characterizes the system that will be made that include the system definition, recognizing the requirement of the system and the all components and it also include the reason and advantage of the application, how it performs its operation and the programming language utilized for the APM agents [9].

The subsequent step is definitions of system. The requirement specification process and the definition of the application will be portrayed in the starting system design by finding the specification of the system requirement that will implies the definition of system and requirement of application.

The following stage is configuration of the system. In this step, specification of the predefined requirement will be implemented according to the system or application design and requirement and applied as the progression of

COMPARATIVE STUDY ON VARIOUS ALGORTHMS FOR DETECTION OF FAKE JOB POSTINGS

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ABSTRACT: We are living in such a situations where the unemployment rates is as high as it could be in anytime in near future. Thousands of employees have been removed on a daily basis creating a global effect on dependencies between the company and their employees.

In these frantic occasions, when thousands and a huge number of individuals are keeping watch for a vocation, it gives an ideal chance to online con artists to exploit their distress. The aim of this study is to compare of the most popular models available for detecting the accuracy, which helps to identify the jobs which are true or fake. Choosing an analysis model is necessary and can be difficult given the surplus of choices for this study, as it is used more than one model at a time to take advantage hide disadvantage of some models.

The selection of a good Analysis model will provide effortless performance of models in the system to deliver the best result. In this paper, we will see the various aspects of these seven models for analysing their ROC AUC and accuracy of the models. The comparison between the seven models will be done based on various parameters that can help analyse and decide which model will be better suited for different aspects.

Keywords: **Fake Job Postings, Logistic Regression, Support Vector Classifier, MultiLayer Perceptron Classifier, KNN Classifier, Decision Tree Classifier, XGBoost Classifier, Random Forest Classifier, ROC AUC and Accuracy.**

INTRODUCTION:

In order to have a high-quality model which predicts the highest accuracy, it's important that proper cleaning of the text have been done. The data I will be using for this analysis is a dataset of 18K job descriptions compiled by the University of the Aegean, Laboratory of Information & Communication Systems Security (http://emscad.samos.aegean.gr/). This dataset contains records which were manually annotated and classified into two categories. More specifically, the dataset contains 17,014 legitimate and 866 fake job descriptions.

THE PROBLEM STATEMENT:

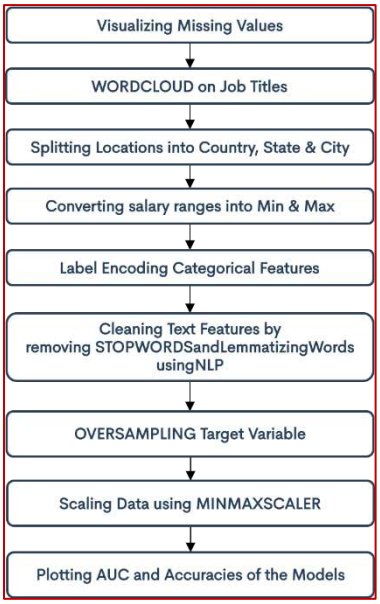
We see a day by day ascend in these phony employment postings where the posting appears to be really sensible, frequently these organizations will have a site also, and they will have an enlistment procedure that is like different organizations in the industry.

If one looks sufficiently hard, they can recognize the contrasts between these phony postings and real ones. More often than not these postings don't have an organization logo on these postings, the underlying reaction from the organization is from an informal email account, or during a meeting they may approach you for individual secret data, for example, your charge card subtleties by saying they need it for work force check.

In typical financial conditions, all these are obvious indications that there something dubious about the organization, yet these are not ordinary monetary conditions. These are the most exceedingly awful occasions we as a whole have found in the course of our lives, and as of now, frantic people simply need an occupation, and by this, these people are straightforwardly giving way to the schemes of these tricksters.

PROPOSED MODEL ARCHITECTURE:

The architecture is shown as in the below:



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Improving GUI Standards with Human-Computer Interactions

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Abstract - *Today's Computers framework for the most part utilizes graphical user interfaces, which permits clients to connect with electronic devices utilizing graphical pictures or representations .The most critical parts of this study is because of expansion the inspiration originates from designers office, home, stimulation applications, innovative, community oriented interfaces, and mechanical and business frameworks. This paper concentrates on UI flaws that we regularly come across in today's GUI. It also explains the GUI design essentials and the process of designing a GUI.*

Keywords: GUI, UI, Design process, Design essentials.

I. Introduction

Right when sketching out a Graphical User Interface, it is fundamental that the necessities, needs, and restrictions of the end customers (who finally use the venture) are given expansive thought. Client Interface is an interface between the client and the computer. The main client interfaces were order line interfaces where client could collaborate with the PC by writing summons on the console. Graphical User Interfaces utilizes pictures and design rather than just words to speak to the information and yield of the project. The system shows certain symbols, catches, dialog boxes and so on the screen and the client controls the project mostly by moving a pointer on the screen and pressing so as to select certain items catches, and so on. The limit of a Graphical User Interface is to support the treatment of an application by technique for graphical parts. It takes a ton of innovativeness to make a gorgeous site. In any case, it takes extra learning to turn that site, into a client driven and agreeable interface. This learning is referred to a large portion of us as UI or UX (User Interface/User Experience) outline. The facts may confirm that numerous associations have given a lot of time and studies into which UI truly work, however to others – it is entirely judgment skills. The improvement of UI frameworks has grieved with the security of work area processing. Future frameworks, notwithstanding, that are off the work area, traveling or physical in nature will include new gadgets and new programming frameworks for making intelligentapplications.

II. Methodology

The methodology adapted for this research paper was an structured approach to do a descriptive research. This paper focuses on describing what is prevalent regarding standard interface designs, which would create a higher customer satisfaction rate. Thus studying and discovering the common setbacks found in a GUI were conducted with descriptive feedback.

III. Discussion

As a UI fashioner, you should know just all the normal – and not all that basic – flaws made on different outlines with the goal that you can better help your customer meet objectives. The off chance that you recognize what to remember while outlining, you'll earn a great deal staying more inclined to make a site that matches your customer's depiction of "simple to utilize", however makes an enormous impression and leaves viewers with the right impression of our business so they invest in our system. Furthermore, if your customer demands include any of the UI outline flaws recorded underneath, you can make a legitimate present your creations and feedback so that he would be satisfied and be made well aware of what would want and select from the displayed options.

IV. Create a good user experience

User experience (UX) focuses on having a deep understanding of users, what they need, what they value, their abilities, and also their limitations. It also takes into account the business goals and objectives of the group managing the project. UX best practices promote improving the quality of the user's interaction with and perceptions of your product and any related services.

Creating a good user interface is a step by step process, we first discuss the requirements with the client and find out what exactly he is looking for and how we can help him improve his idea thus making us a guide for future references to other clients. We as a whole have a place with various foundation and in this manner have various personalities which think contrastingly and consequently will have various needs, so this turns into a test while building up a UI that will be amiable by all foundations.

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Detection and Tracking Infected using IoT in Covid-19 Pandemic

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Abstract - *The unprecedented outbreak of the 2019 novel coronavirus, which the World Health Organization (WHO) has called COVID-19, has placed various governments around the world in a precarious position. The impact of the outbreak of COVID-19, which had previously been observed solely among Chinese citizens, has now become a serious matter. Precisely every nation in the world is concerned. The lack of resources for control of the outbreak of COVID-19, in combination with the fear of overburdened healthcare systems, a number of these countries have switched to a partial or complete lockout situation. Digital technologies such as Artificial Intelligence, Big Data Analytics, and the Internet of Things (IoT) will play an important role in preventing and blocking the transmission of COVID-19. In this research, we proposed a smart edge surveillance system that would be effective in remote monitoring, warning, and identification of a person's pulse, heart rate, cardiac condition, and some of the radiological features to identify an infectious (suspected) person using wearable smart gadgets. The proposed system offers an up-to-date map/pattern of the contact chain of infected COVID-19 individuals that may be present in our country's population. Research is designed to help public health officials, researchers, and clinicians control and manage this disease through the smart edge*

***Key Words*: CoVID-19, IoT, Tracking, Cloud Computing, Distributed Computing, Edge Computing.**

1. INTRODUCTION

The COVID-19, the acronym for Corona Virus- 2019 is a respiratory disease caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), a contagious virus that belongs to a family of single-stranded, positive-sense RNA viruses known as coronavirus. SARS-CoV-2 affects the respiratory system similar to the influenza virus, causing symptoms such as cough, fever, weakness, and breath-lessens. Although the exact source of the virus is unidentified, scientists mapped the SARS-CoV-2 genome sequence and found it to be a member of the coronavirus family's β-CoV genera, which usually derives its gene sources from a bat. In December 2019, the COVID- 19 was first reported to affect a person's life in Wuhan City, in China's Hubei province. The COVID-19 has since spread like wildfire all over the world, marking its existence in 213 countries and separate territories. The official global count of confirmed cases of coronavirus stands at 26,198,238 while the death toll has reached 867,755, according to WHO as of August 2020. This pandemic disease prevails in the human body for up to 14 days, according to the World Health Organization. In addition to this, there were no clear coronaviruses (Covid19) in its preliminary stage[1], which is the most challenging task. Therefore we need to monitor the person's condition up to 14 days to identify the person suspected to be CoVID19 and also to ensure the person is restricted during a quarantine period in self-isolation. Social distance, home isolation, and home quarantine might slow the infection's spread, disrupt transmission, and reduce cases to a low level[2]. Terminologies such as the Internet of Things (IoT)[3][4], Edge Computing[5][6], and Artificial Intelligence (AI)[7]) have been taken into account to mitigate the gigantic impact of this massacre tragedy. By implementing these vital concepts, we can track, monitor, and analyze the suspicious human-to-human (H2H) chain. This monitoring process could be made more efficient by using parallel computing technologies[8],[9] as well. Also, the suspected virus of the infected person is one of the key problems in the current situation. As this deadliest virus often spreads from H2H, so today's prime concern is to keep the virus away from healthy people.

IoT is one of the most efficient paradigms in the smart world. With this idea, we can link billions of devices to one another with the help of internet architecture[10]. Also, the edge computing system enhances to reduce the total energy consumption of the device's power and back up resources. It also uses virtual data storage anywhere in the world. Instead of storing all the data on the central cloud, we can create numerous edge servers inside the cloud to get a faster and more robust response. It also reduces total cloud computing by distributing activities around multiple edges. The health and social effects of our research are to help public health agencies, researchers, and clinicians control this disease by designing smart edge surveillance systems. Our intended research approach is a five-step monitoring and surveillance system for suspected persons with an infection through which we examine the specific person CoVID'19 tentative symptoms right from the beginning of the journey to the destination point and identify every

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Customer Behavior Analysis: Identifying risky customers based on their purchased product on e-commerce.

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Abstract - *Today's world many people are using e-commerce to buy their day to day products. E-commerce plays a vital role in purchasing products as the e-commerce industry grows many problems related to this industry start growing. The main problem the e-commerce industry is facing is to identify risky customers based on their purchase of products. Many criminals are today using e-commerce sites to buy antisocial or harmful or unusual or explosive/chemicals products to attempt crime. Many criminals and terror organizations are using e-commerce sites to buy chemicals, acids, electronics components. This research paper focuses on identifying Risky customers based on purchased products using machine learning methods.*

***Key Words*: Machine Learning, Data Mining, KNN Algorithm,**

1. INTRODUCTION

E-commerce sites selling many types of risky/harmful products. People could use this product to attempt any type of crime like robbery, terror attack, homicide etc. In Pulwama attack, Kashmiri 17-year-old teen used Amazon to buy chemical ingredients for making improvised explosive devices (IED).[1] Many internet shopping platforms, Alibaba, amazon is selling chemicals without understanding the background information of customers.[2] For e-commerce sites, it is necessary to understand the background information of customers and stop unusual buying of products. There are a lot of methods and techniques available to analyze Customer behavior but most of them are only effective in the domain of Products Marketing, Customer Rating, and Market basket analysis but very few methods and techniques that are effective in the security domain. Customers who visit e-commerce sites leave some important information and also e-commerce sites have some important information about customers that customers provided to them while Registration process. We can use machine learning methods and data mining techniques to identify customer behavior. In this research paper, we use data mining and KNN (K Nearest Neighbor) classification method to identify risky customers.

Approach to Customer Behavior Analysis:

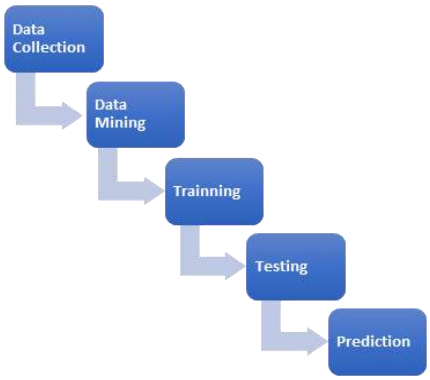

Fig 1- Process Flow

1.1 Literature Review

This paper is a study of customer behavior based on products purchased by them on e-commerce sites. Many Research papers are published in the customer behavior prediction domain. The past literature was taken from the published studies of similar work "K. Maheswari and P. P. A. Priya, Predicting customer behavior in online shopping using SVM classifier"[3]. This paper uses the SVM classification algorithm to classify customers according to their buying behavior. Classification is done by considering how the customer spends their valuable time, day in buying decisions. Most frequent items bought and quantity of buy. "Kareena and N. Kapoor, A Review on Consumer Behavior Prediction using Data Mining Techniques, "[4] this paper predicts customers behavior prediction using data mining and SVM Algorithm for this it uses data either past purchase history or customer review. "A Customer Classification Prediction Model Based on Machine Learning Techniques".[5] this paper predicts which types of customers are responding to offers and discount sales using KNN classification. Most of the customer Behavior analysis papers are related to Marketing, product rating, product reviews domain but a very limited search is carried out in customer behavior analysis based on purchased products to predict customer risky or not. Motivation to write this research paper is Pulwama terrorist attack case where

India Covid-19 Outbreak Analysis and Comparative Study of Machine Learning Techniques

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ABSTRACT

The COVID-19 pandemic is the world health crisis of our time and the biggest global humanitarian challenge the world has faced.

In 2019, the Centers for Disease Control and Prevention (CDC) started monitoring the outbreak of a new coronavirus, SARS-CoV-2, which causes respiratory illness now known as COVID-19. Authorities first identified the virus in Wuhan, China.

After China , the virus has spread like wildfire in every country, Due to which the World Health Organization (WHO) declared a pandemic.

The SARS-CoV-2 has infected millions of people all over the world, causing N no.of deaths. The United States has faced the highest number of deaths due to COVID-19.

Major patients who get infected will have a mild form of the disease. WHO stated that 80% of people who get infected by COVID-19 will recover without hospitalization. The remaining 20% can face serious respiratory illness.

This paper presents the analysis of the transmission of COVID19 disease and predicts the scale of the pandemic using different models.I have used some of the well known machine learning models such as Linear regression,Decision Tree, Logistic regression and Random forest also perform comparison between them .

Keywords **: Covid-19, Decision Tree Regression, Linear Regression, Logistic Regression, Random Forest Regression, Gaussian NB Regression, R-Square**

INTRODUCTION

The Coronavirus has always been toughest to be cured. Coronaviruses are group of viruses that cause diseases in mammals and birds.In human it mostly causes respiratory illness

Coronaviruses are named for the crown-like spikes on their surface.The virus contains club-classified positive sense viruses, such as spikes projected from their surface., A coronavirus disease (COVID-19) is an infectious disease caused by a lately discovered coronavirus.

The outbreak of coronavirus disease (covid-19) continues to spread , and as of May 31, 2020, it has reached 199 countries and territories around the world, with 6,239,852 cases and 377,828 deaths.

The virus was first identified in Wuhan, Hubei, China, on 31st December 2019 when WHO was alerted to several cases of pneumonia in Wuhan.The disease further spread globally, thus resulting in the coronavirus pandemic.

The pandemic spread like wildfire. It all started with pneumonia cases being reported with an unidentifiable cause. When a physician noticed and alerted others about this incident he was reprimanded as spreading fear, rather an 'anti national activity. They immediately realized that the warning was true when health officials reported that vertebrates were spreading to humans.

This outbreak has become the biggest threat to the global markets and financial markets. Stock prices and bond yields have plunged drastically.

Forecasting the spread of COVID-19 is one of the challenges in recent times.Forecasting the pandemic with high accuracy will help the world to take precautionary measures against the spread of virus . Machine learning techniques are highly used for modeling real-world problems.Specially machine learning applications are mostly used in predicting diseases nowadays.Forecasting of pandemics can be done using different methods. Some of the well known methods are time series and regression. I have chosen some of the machine learning techniques that are Linear regression,Decision Tree, Logistic regression and Random forest on available data.I have attempted to solve the problem of forecasting the pandemic of COVID-19 using python data analysis tools and machine learning methods stated above.

STUDY ON SQL INJECTION TECHNIQUES & MITIGATION

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Abstract - *In modern days, cyber threats and attacks are triggered to corrupt or steal the knowledge of an individual in huge volume of knowledge from different lines of companies. Across the world, nowadays it became mandatory to guard the database from security related attacks. SQL injection is a High risk and most vulnerable threat which may exploit the entire database of any organization whether it is a private organization or a government sector, where code is injected in a web page. This code injection technique is employed to attack data-driven web applications or applications. A SQL statement will be changed in such a manner, which goes with always true as constraint. This study paper is ready to offer a comprehensive information about topics like basics of SQL Injection, types, recent attacks and mitigation as a case study. This survey won't be complete, if we miss out to learn the algorithms, which used as a base to identify vulnerability in this internet connected world which in turn exploits the database and discover top secrets. Tautology SQL injection – one of the code injection attack is widely used as a data – driven attack and gaining unauthorized access as per the security related literatures and causes severe damage to the organizational data banks and government sector.*

***Key Words*: SQL Injection, Tautology, security, detection, prevention**

1. INTRODUCTION

In this era, websites have become the most essential part in our lives. Among the top most security threats SQL Injection attack ranks top based on OWASP Top 10 security vulnerability report. Through these websites we insert number of personal data which gets stored in the database. We can access it from anywhere using network. This opened the gate for the attackers to grab those data from vulnerable web pages. To find those vulnerable web pages the attackers can find many efficient tools like botnet which generate the list of vulnerable web pages. Once the webpage is detected the attacker start to steal the data using SQL Injection attack. Web page detection is done to intrude inside the Database. So they target the webpage which is connected with back end database.

In this paper we try to answer the following review questions

1. What does SQL Injection means?

2. Why SQL Injection attack is done ?

3. How this attack is processed ?

4. What will be the consequences of this SQL Injection attack?

5. In how many ways these attacks are grouped?

6. List out the types of attack.

1.1 What is SQL injection (SQLi)?

SQL injection may be a web security vulnerability that permits an attacker to interfere with the queries that an application makes to its database. It generally allows an attacker to see data that they're not normally rights to retrieve. This might contain data belonging to other users, or the other data that web application itself is able to access. In many cases, an attacker can change or delete this data, causing persistent changes to the application's content or data

IoT Based Application for Industrial Controller Machines

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Abstract - *This paper gives details and a prototype for monitoring different parameters of electronic machines and controlling them using IoT. This prototype contains UI (User Interface), hardware devices, cloud (Web Server). Node MCU (Microcontroller Unit) for prototyping. The ESP8266 module is one of the low cost and high features modules which makes it an ideal candidate to use in the prototype. Not all manufacturing plants consist of automation of controlling machines, and some machine controlling systems are available but they are not very cost-efficient. This prototype will be giving them an opportunity to add automation to their manufacturing plants, at a very low cost.*

Automating low-level tasks like switching ON and OFF electronic machines will give cost-benefit for big organizations by removing human involvement. This proposed system will help the organization not only control the electronic machines but also monitor them so that they can get the maximum use of their machinery. This monitoring and controlling machines can be done remotely, this gives extra power to the organization. This system we can use in the Medicine Manufacturing industry where before storing anything they need to create an environment that's cool or hot. Also, we can use this in Metal, Plastic Moulding plants where we need to start machines early to get ready for work.

Key Words — IoT, Node MCU, Cloud, Relay, Webserver, Electronic Machines

Literature Survey - In the latest paper of Industrial Device Control Using the Wi-Fi Module by P. Srinivasarao, K. Vamsi Saiteja, K. Prudhivarj, N. Prasanth Reddy, Ramavath Tejaswini they proposed system for controlling devices using Wi-Fi module. There are drawbacks in this prototype which is it only provides controlling for devices and it can be only accessible using a smartphone. This prototype can only be accessible using a smartphone because it uses Third Party app as client-side for giving instruction. Third Party app has an In-app purchase, which provides free for prototyping but as we scale we need to pay for its use.

Our proposed system does not need an app for client-side, it can be accessed using a Laptop, Desktop, or mobile phone. This proposed system is a plus point over the Third Party app in which we have to pay for scaling. Our proposed system has to control of machines as well as monitoring them so we can use this data for further studies.

INTRODUCTION

The first Industrial Revolution is known for the shift from our dependencies on animals, human effort as a primary source of energy to the use of fuel and mechanical power. The second Industrial Revolution comes with major breakthroughs of electricity, wireless and wired communication and new form of energy generation. The third Industrial Revolution comes with the development of digital systems, communication, computing power, processing. Currently we are living in the Fourth Industrial Revolution which brings the "Cyber-Physical Systems" involving entirely new capabilities for machines. These capabilities are relay on new technologies such as Internet of Things (IoT).

This paper displays the design and prototype of a proposed system which monitors and controls electronic machine. In this paper we will present an overview of IoT phenomena as well as its application in the manufacturing industry. The basic concept of IoT is everything in the world can be computer that is connected to computer. The basic concept of this prototype is, we are providing web application for controlling and monitoring machines. This web Application can be used using a mobile phone as well as computer. This web application will send data to a cloud server. Cloud server will give that data to node module and node module will further provide that instruction to the Relay, and according to instruction Relay will perform a particular action on an electronic machine, which is either ON or OFF. This ON and OFF data will be saved on a database for further monitoring of machines.

COMPONENTS

ESP8266 (Wi-Fi Module)
Relay
Board Module
MySQL Database
LED (as machines)
Cloud

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Fake News Detection using Machine Learning

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Abstract: ***The ubiquity of fake news today is spreading like an invisible forest fire which means we can't distinguish between the real and fake news so easily. People believe in anything the social media, news websites, online newspapers, Blog/Vlog/Weblog posts, etc. show very easily. Therefore the credibility, integrity and authentication of news are imperative in every field. Data or information, today is travelling faster than the speed of light so we need to be quick to assess it as well. This has made certain computational, logical and analytical tools that can help us identify real news from the online content. In this paper, we have used a dataset to recognise false news. Pre-processing, feature extraction, classification, and prediction are all elucidated in detail. Some operations such as tokenizing, stemming, and Data Exploration such as response variable distribution and data quality check are performed by the pre-processing functions (i.e. null or missing values). Function extraction techniques include quick bag-of-words, n-grams, and TF-IDF. For fake news detection with a probability of truth, a logistic regression model is used as a classifier.***

Keywords: Fake news detection, Logistic regression, TF-IDF vectorization, Tokenization, Stemming, Lemmatization, n-grams, Bag-of-Words, Probability of Truth

I. INTRODUCTION

Modern life is becoming more and more reliant on the internet and cutting edge technological advancements to deliver the latest and the most trending/viral information to each and every individual around the globe but "Every coin has two sides". As the development in information transfer continues to advance towards a better future, it also comes with the growth in the pessimistic side for example Trolling, Fake News Spreading, Spamming, etc. which has to stop or at least mitigate as much as possible. Facebook, Twitter, Reddit, Youtube, and Whatsapp are some of the social media sites that are used to apportion fake news [1].

The Accuracy of the model is at the most 70-85% on most of the models. We have included the Naive Bayes classifier, Linguistic features based, Bounded decision tree model, SVM, etc. The objective of this paper is to ameliorate the accuracy of recognising fake news beyond what is already present. By fabricating a new model which will conclude the spurious news articles on the basis of the following criteria: spelling mistake, jumbled sentences, punctuation errors etc.

II. LITERATURE SURVEY

There are three categories of fake news in general. The first one is the fake news, which is not backed by any kind of research and completely made up by the authors just to make it attractive. The second category is fake satire news, which is fake news with a primary goal of amusing people. The third category is the poorly written news articles, which are just partially true and although they contain some real news, but are not completely true.

Kai Shu, Amy Sliva, Suhang Wang, Jiliang Tang, and Huan Liu explored in their article the two phases of reviewing the fake news: characterization and detection. The basic concepts of fake news were in the characterization phase and the detection phase had a review of existing fake news detection approaches. These include feature extraction and construction of model [2].

In the paper by Hadeer Ahmed, Issa Traore, and Sherif Saad, a comparison was made between different feature extraction techniques and machine classifiers. Their model used n-gram analysis and machine learning techniques. They obtained a maximum accuracy of 92% using the Term Frequency-Inverse Document Frequency (TF-IDF) and Linear Support Vector Machine (LSVM) [3].

In order to identify fake contents in online news, Perez-Rosas, Veronica & Kleinberg, Bennett and Lefevre Alexandra and Rada Mihalcea had used two different datasets. Different classification models were developed by them in order to get the maximum accuracy. They used linear sum classifier and fivefold cross verification in order to get the accuracy, precision and recall and FI scores averaged over the five iterations [4].

E.M Okoro, B.A Abara, A.O. Umagba, A.A. Ajonye and Z. S. Isa in their publication had combined human-based and machine-based approaches since these both cannot solve the problem of human literacy on their own. They introduced a Machine Human (MH) model to detect fake news in social media. This model combines the human literacy news detection tool and machine linguistic and network-based approaches. So these two approaches worked simultaneously with each other to detect fake news [5].

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Autonomous Car with Optimized Dynamic Range using Machine Learning: A Review

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Abstract: ***In this paper, we have done a comprehensive study of the technology and algorithms that are used in self-driving autonomous cars. We have discussed how machine learning models and artificial intelligence play a crucial role in these vehicles. With the automobile technology booming with the increase in people's standard of living, delivering an efficient and cost-effective self-driving module is the need of the hour. We have also mentioned the importance of the dynamic range of the optical sensors that are popularly used in self-driving cars. There are two ways to increase the dynamic range of the sensors which are mentioned in the topics below. Accordingly, as the level of automation in cars increases, a network of autonomous cars will be groundbreaking as the cars will be able to communicate and share essential information which can help them to learn and analyze different situations. We have also discussed how a smart city can have this ability to make the day to day operations more efficient. Lastly, we have mentioned the technical challenges that are faced and will be faced by autonomous cars.***

Keywords: Machine Learning, Dynamic Range, Automation level, Sensors, Smart City, Connected Cars

I. INTRODUCTION

The full driving exercise is too unpredictable a movement to be completely formalized as a sense-acting mechanical autonomy framework that can be unequivocally settled through model-based and learning-based methods to deal with accomplishing fully compelled vehicle self-governance. This is true for unconstrained, real word operation where the number of edge cases is extremely large, and allowable error is extremely small. The belief that people are poor drivers is all around archived in mainstream society since we are now and again diverted, tired, alcoholic, sedated, and irrational. Today, the issues of geopositioning, trajectory augmentation, and more significant level choices stay loaded with open difficulties to be completely tackled by the frameworks consolidated to a production stage. A lot of intelligence is required to understand the world of predictable but irrational humans. The aftereffect of utilizing profound learning-based automated annotation is that it can dissect the driving which allows the coordination of complex interactions with a human's viewpoint. The improved dynamic range of the sensors can add more to record and observe the real-world dynamics. Keeping the data loss to a minimum, the data collected will be run through the machine learning model to make the swift edge cut decisions that the drivers experience in real life. The ultimate goal is to make fully autonomous vehicles that can make their own decisions and do not require any supervision from the driver. Additionally, with an increase in these "intelligent vehicles", it is possible to build a network along with these individual vehicles which in turn will create an information network to be utilized for progressive measures. Now, when we add so much to the system of existing vehicles, there are bound to be challenges and obstacles in implementing such diverse and advanced technology. We have also discussed those challenges in this paper. We will now discuss the various topics that constitute building the desired self-driving cars.

II. REVIEW OF LITERATURE

The First Step towards shaping the modern automated driving system began in the 1920s. Houdina Radio Control exhibited the radio-controlled vehicle, called Linriccan Wonder[1] which was a 1926 Chandler comprising of a transmitting antenna on its back compartment. Radio bursts sent by another vehicle tailing it was received by the transmitting antennas to circuit breakers which controlled the vehicle's motion using electric engines. Japan's Tsukuba Mechanical Engineering Laboratory built up the first semi-autonomous vehicle in 1977, the vehicle attained speeds up to 30 kmph (19mph) which had two cameras on it and an analog computer which deciphered specifically tagged streets. Ernst Dickmanns, a German Pioneer, bought a Mercedes van in the 1980s to travel many miles autonomously on roadways, a gigantic accomplishment particularly with the processing ability of the time.
United States Defense Advanced Research Projects Agency (DARPA) [2], in the mid-2000s, sorted out Grand Challenges where groups assembled to contend with self-driving vehicles. The Self Driving car venture of Google began in 2009, including different aides who effectively contributed to the innovation which took years.

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Assistive Object Recognition System for Visually Impaired

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***Abstract*— The issue of visual impairment or blindness is faced worldwide. According to statistics of the World Health Organization (WHO), globally, at least 2.2 billion people have a vision impairment or blindness, of whom at least 1 billion are blind. In terms of regional differences, the prevalence of vision impairment in low- and middle-income regions is four times higher than in high-income regions.[6] Blind people generally have to rely on white canes, guide dogs, screen-reading software, magnifiers, and glasses to assist them for mobility, however, To help the blind people the visual world has to be transformed into the audio world with the potential to inform them about objects as well as their spatial locations. Therefore, we propose to aid the visually impaired by introducing a system that is most feasible, compact, and cost-effective. So, we implied a system that makes use of Raspberry Pi in which you only look once (YOLO v3) machine learning algorithm trained on the coco database is applied. The experimental result shows YOLO v3 achieves state-of-the-art results of 85% to 95% on overall performance, 100% (person, chair, clock, and cell-phone) recognition accuracy. This system not only provides mobility to the visually impaired with that it provides the term that ahead is an XYZ object rather than a sense of obstacle.**

***Keywords*— Visual Impairment, Raspberry Pi, YOLO v3 Algorithm, Computer Vision, Object Recognition, voice output.**

I. INTRODUCTION

"ONLY BECAUSE ONE LACKS THE USE OF THEIR EYES DOES NOT MEAN THAT ONE LACKS VISION."

Eyesight is one of the essential human senses, and it plays a significant role in human perception about the surrounding environment. For visually impaired people to be able to provide, experience their vision, imagination mobility is necessary. The International Classification of Diseases 11 (2018) classifies vision impairment into two groups, distance and near presenting vision impairment.[6] Globally, the leading causes of vision impairment are uncorrected refractive errors, cataract, age-related macular degeneration, glaucoma, diabetic retinopathy, corneal opacity, trachoma, and eye injuries. It limits visually impaired ability to navigate, perform everyday tasks, and affect their quality of life and ability to interact with the surrounding world upon unaided. With the advancement in technologies, diverse solutions have been introduced such, as the Eye- ring project, the text recognition system, the hand gesture, and face recognition system, etc. However, these solutions have disadvantages such as heavyweight, expensive, less robustness, low acceptance, etc. [2] hence, advanced techniques must evolve to help them. So, we propose a system built on the breakthrough of image processing and machine learning.

The proposed system captures real-time images, then images are pre-processed, their background and foreground are separated and then the DNN module with a pre-trained YOLO model is applied resulting in feature extraction. The extracted features are matched with known object features to identify the objects. Once the object is successfully recognized, the object name is stated as voice output with the help of text-to-speech conversion.

The key contributions of the paper include:

- Robust and efficient object detection and recognition for visually impaired people to independently access familiar and unfamiliar environments and avoid dangers.
- Offline text-to-speech conversion and speech output.

II. RELATED WORK

1) Real-Time Objects Recognition Approach for Assisting Blind People:

In this paper, two cameras placed on blind person's glasses, GPS free service, and ultrasonic sensors are employed to provide information about the surrounding environment. Object detection is used to find objects in the real world such as faces, bicycles, chairs, doors, or tables that are common in the scenes of a blind. Here, GPS service is used to create groups of objects based on their locations, and the sensor detects an obstacle at a medium to long distance. The descriptor of the Speeded-Up Robust Features (SURF) method is optimized to perform the recognition. The use of two cameras on glasses can be sophisticated. [2]

2) Wearable Object Detection System for the Blind:

In this paper, the RFID device is designed as a support for the blind for the disclosure of objects; especially, it is developed for searching the medicines in a cabinet at home. This device can provide information about the distance of a defined object, how near or far it is and simplifies the search. For identifying the medicines, the device can provide the user with an acoustic signal to find the desired product as soon as possible. The

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Feature Detection using KAZE and Harris Detectors for Ear Biometrics

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***Abstract*—The importance of human ear as a suitable biometric feature for human identification was contrived a long time ago. There are significant proofs that demonstrate that human ear alone can be utilized as a biometric trait because it overcomes the constraints of other biometric traits. Human ear can also be used in integrated manner with some other biometric features like fingerprint, iris for a better performing biometric system known as multi-modal biometric technique. Accuracy of a featured oriented image classification system is mainly depended on feature detector – extractor used. Therefore, choosing an efficient feature detector is of utmost importance. This paper proposes feature detection using KAZE (blobs) and Harris (corners) algorithms.**

***Keywords*—Biometrics, identification, KAZE, Harris, feature detection, matching**

I. INTRODUCTION

The appearance of the outer ear in human beings (or pinna) is formed by the outerhelix, the lobe, the tragus, the antihelix, the antitragus, and the concha. Figure 1 illustrates the anatomy of human ear. The countless ridges and valleys on the outer ear's surface serve as acoustic resonators. At low frequencies the pinna reflects the acoustic signal towards the ear canal. At higher frequencies the pinna reflects the sound waves thus causing neighbouring frequencies to drop. In addition, the outer ear allows us humans to recognize the origin of a sound. The shape of the outer ear develops during the embryonic stage from six growth nodules. The structure of the ear therefore, is not completely random, but still subjected to cell segmentation. Though there are similarities between the right and left ear they are not symmetrical [1].

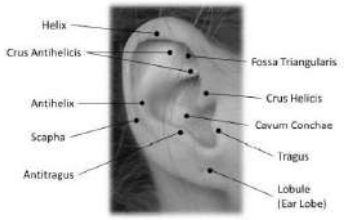

Figure 1: Human ear anatomy [1]

Human ear has remarkable characteristics which makes it a good trait for biometric systems. Medical studies have proven that vital changes in the shape of the ear take place before age of 8 years and after 70 years of age. Hence, ear is considered as a stable feature. Ear is also a great example of passive biometric trait where much support is not needed from the subject. Ear can be captured even without the knowledge of the subject from farther distance. Size of the ear is also one of the most important aspect. Size of the ear is smaller than that of the face but larger than the iris and the fingerprints and hence image of the ear can be collected without much hassle. Ear is not changed under the influence of cosmetics or with the use of eye glasses. Moreover, as there is absolutely no need to touch any equipment, there are no issues related to hygiene. Ear images are also much more secured than face mainly because it is very difficult to associate ear image with a particular person. This makes the ear database extremely secure with low risk of attacks.

Iannarelli (1989) [2] states that the human ear is an unique feature of each individual. Dividing the ear into eight parts, twelve measurements are taken around the ear and distances are measured by placing a compass over an enlarged image. *Hurley and Carter* [3] described multiple methods for identification combining results from different neural classifiers. Nixon and Carter (2000a, 2000b) have used a different technique called force field transformation where the image is treated as gaussian attractors. The method used by *Choras (2005*) [4] was based on the new co-ordinate system in the centroid, making any rotation of the image irrelevant for the purpose of identification. Later, *Choras* (2007) [5] added additional experiments to further expand his earlier study by recommending multi-modal (hybrid) biometric system. *Middendorff et al.* (2007) [6] emphasized that the type of data that is used whether 2D or 3D, the type of classification algorithm performed on each type of data, the output of the performed algorithm, the fusion type performed to combine them can improve the performance of a biometric system. *Kisku et al*. (2009) [7] proposed a multi-modal recognition system using ear and fingerprints based on Scale Invariant Feature Transform (SIFT). Another research in ear biometric by *Zhou et al. (2001*) [8] includes a robust technique 2D ear recognition using colour SIFT features.

The IIT Delhi ear database is used which is provided by the Hong Kong Polytechnic university. *(https://www4.comp.polyu.edu.hk/~csajaykr/myhome/database_request/ear/).* Figure 2 shows some sample images from database.

Figure 2: Sample from ear database

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Yield Prediction using Soil & Climatic Data using AI

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Abstract - *Food production in India is largely dependent on cereal crops including rice, wheat and various pulses. Predicting the crop yield well ahead of its harvest would help the policymakers and farmers for taking appropriate measures in terms of agronomy, crop choice and for proper agricultural planning. Such predictions will also help the associated industries for planning the logistics of their business. The project aims at developing a machine learning model to make such predictions. The model is trained using the dataset which contains rainfall data of the past decade which includes average rainfall (in mm), relative humidity, temperature, and soil data as Features and the crop yield as labels. The data is time-series data. Using appropriate machine learning techniques, the model learns the correlation between the yield and features like Soil Type, Rainfall. The data collected is real-time data of the past several years, provided by online government records for the state of Maharashtra. The predictions can be useful for industries in the agricultural sector and farmers for proper choice of crops etc.*

Keywords: crop, rainfall, soil, yield, data, farmers, predictions.

1. INTRODUCTION

Agriculture is one of the most important industrial sectors in India as well as Maharashtra and the country's economy is highly dependent on it for rural sustainability. It accounts for a large share in GDP (gross domestic product) (16%), and an even larger share in employment (49%). About 60 % of the land in the country is used for agriculture in order to suffice the needs of 1.3 billion people. Due to some factors like climate changes, unpredicted rainfall etc, the level of agriculture has decreased. However, as the conditions change day by day very rapidly, farmers are forced to cultivate more and more crops. Being this as the current situation, many of them don't have enough knowledge about the new crops and are not completely aware of the benefits they get while farming them.

In this project, first, the impact of rainfall and the soil type on the crop yield is analysed by using the data from past several years which consists of climatic and soil data and the yield of crops (kg/ha) of different talukas of Maharashtra.

To know the level of production we perform analytics on the agriculture data and create a machine learning model to predict the yield of crops like Rice, Wheat, Maize, Bajra etc. The proposed system aims at recommending crops which are predicted to have better yield taking into account the current climatic conditions as well as soil conditions of the location of the farm.

2. EXISTING SYSTEM

Currently, there exists no automated system for this purpose which takes into consideration both the climatic and soil factors for prediction of yield. This leaves space for errors which are inevitable. Factors such as uncertain weather and soil are not considered while making choices, which could cost heavily. The proposed system focuses on automating the prediction of crop yields by taking into consideration the climatic conditions and soil data.

3. METHODOLOGY

In order to predict the crop yield, we need to build a model which will take into consideration various factors like soil type, soil quality, climatic conditions, etc. and predict the yield of a particular crop in a particular region.
Following steps are used:

Step 1: Gather Data
Gathering data is the most important step in solving any supervised machine learning problem. We will be gathering the previous year's data of crop yield, climatic conditions and soil types of Maharashtra.

Step 2.1: Exploring Data
Building and training a model is only one part of the workflow. Understanding the key characteristics of the data beforehand, we can build a better model. This could simply mean obtaining a higher accuracy. It could also mean requiring less data for training, or fewer computational resources. Various visualization techniques can be used to detect various correlations and patterns in the training data, which can further help in creating an accurate prediction system.

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AI based Smart Mirror for enhancing selfie experience

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Abstract - *A smart mirror is an application that enhances the user-experience of taking pictures. It uses a Multi-Label Classification algorithm that classifies the natural beauty of humans which is not limited to fairness. Everyone has the belief that beauty is related to fairness. The idea presented in this paper helps categorize beauty with respect to the anatomy of the face and other attributes. For the system, our own custom Dataset was developed each for skin attributes and hair. The dataset for skin had over 830 images and 21 facial attributes and the dataset for hair had over 500 images and 11 attributes. The images were manually searched and downloaded from google.com and were manually mapped with their respective attributes.*

Key Words*: *smart mirror, Multi-Label Classification, custom Dataset , beauty, fairness.

1.INTRODUCTION

This paper aimed at designing a mobile application that can not only see the skin-deep reflection but also go beyond an ordinary mirror and can classify hair and skin type by just seeing the image. The application can be used to see the changes in a person like change in hair color, skin-tone, and so on. Knowing your skin and hair type is essential as proper measures can be taken to avoid any further damage to hair and skin. The type of skin a person has depends on the amount of water and oil in skin. If these are out of balance, a person may have to suffer.[9]Of total people studied, 27.9% of men and 36.7% of women declared having "sensitive" or "very sensitive" skin. The subjects complaining about "sensitive" or "very sensitive" skin were 2–4 times more probable to declare suffering from atopic dermatitis, acne, psoriasis, or vitiligo. They were 2- 3 times more reactive to climatic factors, cosmetics and food intake. In conclusion, although less frequently reported than in other countries, sensitive skin is a frequent condition in India. Understanding your hair texture is the most important rule in natural hair care, it is crucial to establishing a proper care routine. When the hair strand is thinner than the string of thread, your hair is fine. Hair strands with the same thickness as a thread are classified as medium, and thicker than the thread are coarse/thick .Nowadays, there are different products for different skin and hair types. Choosing an appropriate product is very difficult without knowing your skin and hair type. So , in order to know a type of skin and hair with a click , we have built an application which can classify hair as thick,thin,medium,long,straight,so on and skin as fair, acne breakout, oily ,sensitive, so on. The main features of Smart Mirror are: 1) extensible: many such modules can be integrated. 2) changes in skin and hair can be recorded with a click.In this paper we describe the design and implementation of mobile application and ml modules and compare it with other similar platforms.

1.1 LITERATURE SURVEY

There are already several spectacular open-source smart-mirror projects in the market however they have restricted functionality.

Ali Mollahosseini Et al.[1] projected a brand new deep neural network architecture for machine-driven facial features recognition. The projected network consists of 2 convolutional layers each followed by max pooling then four inception layers. Author has projected a picture based static facial expression recognition method for emotion Recognition. The projected technique contains a face detection module supporting the ensemble of 3 progressive face detectors, followed by a classification module with the ensemble of multiple deep convolutional neural networks (CNN).

The vision of ambient Intelligence (AmI) has brought a new twist to the decade previous analysis and industry initiatives in realizing sensible Environments. The AmI vision, as projected by the EU. association [12], promotes a paradigm wherever humans are enclosed by intelligent and natural interfaces offered by the interconnected heterogeneous computing devices embedded into everyday objects. Therefore, Aml are often seen as a propulsion toward a user friendly and user-empowered smart surroundings for providing effective support to human interactions.

The proposal [1],[2] focuses on facial and expression recognition. The proposed methodology is to determine various attributes of skin to further recognize skin disorders and suggest cures for the same. The smart mirror is a modification over a normal which uniquely classifies the given image of hair and skin over a wide range of attributes. The system also keeps a record of

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Predicting Stock Movements Using News Headlines And News Articles

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Abstract

The main objective of the system is to analyse the future value of a certain stock of a particular company using the sentiment analysis and to predict whether a particular stock will go up that is whether it will increase or it will go down which means it will decrease on the basis of certain news headline, also detection of fake news and OCR was implemented for providing the user as an option for entering the news headline or a news article, the data we used was DJIA news headlines dataset and five different machine learning algorithms were used – Random Forest classifier, Naïve Bayes, Decision Tree, Logistic Regression and Support Vector Machine(SVM).

Keywords: *Sentiment analysis, OCR, Naive Bayes, DJIA, Decision Tree, Logistic Regression, Support Vector Machine*

1. INTRODUCTION

Predicting stock prices and the status of stock market is a quite strenuous task in itself. Today stock prices of any company so not depend upon the financial factors of the company but also on the various other factors such as socio-economic factors and especially in this century the movement of stock prices are no more only linked with the current economic situation of the country rather the stock prices of the particular day are also directly or indirectly depends on the company related news, natural calamities as well as the political events. The motive of the research is to build a machine learning model which will predict whether the stock price of a company will go up or will go down and the model also predicts the exact stock prices for the next day and the day after based on the today's news headlines of the company. We have taken Dow historical stock dataset of the years 2008-2016 which consists of the date, news headline, stock movement labelled as '1' for increment and '0' for decrement. The OCR model was also integrated with this model to make sure if the user is reading a headline on a newspaper or a different language newspaper, he/she should be able to know the price or movement of a stock just by clicking the picture of the headline on a newspaper of any language and upload that picture on the portal.

Also the user can have a quick view on the real time stock history or stock prices jut by selecting the ticker and the no of days/months the user wants to see, the model will return real time graph of the selected day/month for stock price of the particular company of which the ticker has been selected. Also the system provides an option to upload the news headlines as well as the whole web-app in three different languages which are English, Hindi and Marathi.

The section I of the paper explains the introduction of general stock movement prediction using classification methods such as Random Forest Classifier. Section II presents the literature review of system and Section III presents proposed system architecture Section IV presents an evaluation parameter used for calculating the accuracy of the model. Section V provides us with the results. Section VI gives the conclusion, whereas at the end references and links are presented.

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Food Dicted: A Restaurant & Food Recommendation System

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Abstract

To provide an answer for the mundane questions like where to eat? And what to eat? We are developing an Android Application that uses simple Machine Learning Algorithms like Content based filtering and Clustering. The first phase of the output consists of prediction of restaurants based on user input and the second phase includes prediction of dishes based on the tags selected by the user.Now days we are provided with a large number of choices which is overwhelming,here there is a need to filter and efficiently deliver information in order to minimize the problems of information overload. Recommender systems are used to solve this problem by searching through this information and predict an output according to the users personal preferences. This system explores various characteristics and the potential of different techniques of prediction to analyze the result.The system uses content based recommendation techniques for producing food recommendations.It is based on similarity score of foods. Basically, our system constructs user profiles from the inputs (preferences) given by the user and food profiles(tags selected) from the ingredients of the food, then it recommends the most appropriate dish according to the preferences of the users.

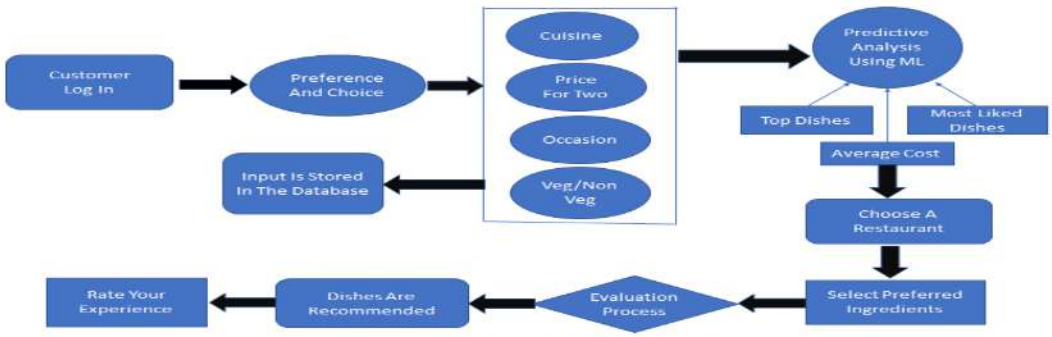
Keywords:*Predicting restaurant; Predicting dish; Android development; Cosine Similarity Matrix; Machine Learning; php database;*

1. INTRODUCTION

The main idea is to create an application that takes into consideration the likes and dislikes of the user, implements machine learning algorithms and provides not only a restaurant but also with the dishes to be eaten in the particular restaurant.We can take for examples various social networking sites such as Instagram that use various recommendation system techniques and suggest users, what to follow etc based on the users previous choices and taste[1].

Recommendation systems analyze patterns and give the desired outcomes. Given this general idea, our project's main aim is creating a recommendation system for users which predicts the restaurant and dishes based on the user's input of his preferences.

The Development of the application has been done using Android Studio. Databases are stored in the XAMPP server and linked to the system using PHP code. The login and register functionality and its security has been implemented using Javascript. The database consists of a number of tables that take care of storing the user inputs or preferences and also the restaurant suggestions for users.We have used similarity measures or similarity metrics to provide restaurant recommendations based on user selections.



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Argument Mining for Medical Reviews

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Abstract
Argument mining is the process of extracting opinions and reasons from dialectical text and drawing conclusions to illuminate the author's viewpoint concisely. Hence, argument mining becomes highly useful in the medical domain, especially for pharmacists and analysts in analysing the effects of drugs on people and their varying opinions on the effectiveness of the drugs in question. In this paper, we propose a system that uses argument mining and machine learning to extract supporting and attacking relationships between sentences from drug reviews, in an effort to build an application that can provide deeper insight into people's opinions on various drugs. We identify argumentative content based on the presence of discourse indicators, which then undergoes pre-processing and feature extraction to form a meaningful representation of the text. We consider seven feature sets consisting of structural features, TF-IDF scores for unigrams and bigrams and their combinations. The feature vectors are given to a machine learning classifier for predicting support/attack relations between sentence pairs. We evaluate three classification algorithms, namely support vector machine, random forest classifier and AdaBoost classifier, using precision, recall, F1 scores and 10-fold cross validation accuracy as evaluation parameters. The application can then give a detailed analysis of the given medical review.
Keywords: *Argument mining, Drug reviews, Pharmacovigilance, Natural language processing, Machine learning, Relationship extraction.*

1. Introduction

Due to the widespread prevalence of the internet, many people now have a common medium to share both technical information and casual opinions about a variety of subjects. This provides a rich field of study for natural language processing research, and there is a need to provide a summarized view of the huge amount of data and extract meaningful information from it.

Developing and applying computational models of argument is very important for the healthcare domain. Healthcare information is complex, heterogeneous and inconsistent. With the advent of new drugs in the market, there is a decent chance that someone might suffer from an adverse drug reaction unforeseen by the manufacturers of the drug. Adverse reactions are the recognized hazards of drug therapy and they can occur with any class of drugs. Tracking the discourse happening about medicines and identifying it from medical reviews becomes important in order to better understand the effects of drugs on the human body, apart from clinical trials. Argument mining is appealing for medical reviews as it allows for important conflicts to be highlighted and analyzed and unimportant details to be suppressed. The general public's reception of drugs and to take precautionary measures while prescribing such drugs can be analyzed more effectively by developing automatic argument mining techniques.

Hence, we aim to build a system that can extract supporting or attacking relationships between arguments from drug reviews using machine learning and natural language processing techniques. These arguments should then be presented so as to support sense-making of the target domain. By looking at the arguments related to a medical topic or a drug, both medical professionals and general users can understand the general reception and opinions of the public

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ORIGINAL RESEARCH

Peak power reduction in multicarrier systems using Goppa codes

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Received: 22 May 2019 / Accepted: 1 November 2019 / Published online: 7 November 2019

Abstract Multicarrier modulation (MCM) schemes are in use in both wireless and wired communication systems for transfer of multimedia data and is an attractive solution to high speed wireless data transmission system. OFDM, the most widely used MCM technology is extensively used in the field of radio communications yielding a high data rate in mobile environment in presence of a hostile radio channel. Although OFDM is robust to frequency selective fading, it has a problem of PAPR ratio, which is prominent especially in the uplink of a mobile terminal. It is critical to maintain the efficiency of power amplifier due to the limited battery power. High PAPR occurs due to large fluctuations in OFDM signal envelope and requires a highly linear (HPA), which are expensive, bulky and difficult to manufacture. In order to reduce the PAPR, several techniques have been proposed which can be broadly classified as distortion based and distortion less schemes. In this paper a coded OFDM scheme using Goppa codes has been proposed which shows an improvement on reducing the peak power of transmitted signals compared to the uncoded signals along with error correction and detection.

Keywords MCM · OFDM · RM · Convolution codes · Goppa codes · PAPR

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Abbreviations

OFDM	Orthogonal frequency division multiplexing
PAPR	Peak average power ratio
HPA	High power amplifier
IFFT	Inverse fast fourier transform
RF	Radio frequency

1 Introduction

OFDM is one of the multi-carrier techniques which have been experimented by academicians, researchers and industries over the years and has become a new emerging standard [1] for broadband wireless access in the next generation networks. The wireless network resources, bandwidth and energy [2], are scarce and therefore the main criteria behind wireless networks is to use network resources as efficiently as possible and provide quality of service required by the users simultaneously.

Bandwidth, speed as well as energy or power efficiency are becoming increasingly important for wireless communication systems due to limited battery resources in mobile devices and increasing demand of faster communication. Energy efficiency is therefore the key factor in future mobile communications networks. The transmitted signal of OFDM exhibits a high PAPR, which reduces the efficiency of high power amplifier, degrades the performance of the system and outweigh all the potential benefits of multicarrier transmission systems [3].

The efficiency of the HPA in the radio frequency front end of the base stations can be increased to cater to increase in peak power of OFDM signals; but RF power cannot be increased directly and is a cost effective process. Considering devices with finite battery life, it is important to find ways of reducing the PAPR of input signal leading

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An approach to PAPR Reduction in OFDM using Goppa codes

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Abstract

Orthogonal frequency division multiplexing (OFDM) is a widely used modulation and multiplexing technology applied in many telecommunications standards due to its spectral efficiency and robustness against multipath fading. The multicarrier aspect of OFDM signal is characterized by high peak-to-average power ratio (PAPR), which renders the power amplifier (PA) inefficient and causes distortion in the transmitted signal. Several techniques to overcome and reduce PAPR such as signal distortion, signal scrambling, coding etc. are proposed and implemented on multipath fading channels. Coding methods does not affect system complexity as forward error correction is an inherent block in any digital communication system. The frequency diversity benefits of OFDM is not utilized well unless channel coding is used. Several codes like Hamming, Golay, BCH, RS, Reed Muller etc. have been investigated so far. Goppa codes were needed to be explored in OFDM systems. In this paper, its ability to reduce the peak power is studied for conventional OFDM signal. These codes are used in computer and telecommunication based applications owing to its useful properties required for cryptography. The PAPR reduction of Goppa coded OFDM (GOFDM) is found to be satisfactory for higher order constellation mapping of binary information. A look up table can also be created to select Goppa code words on the basis of a desired threshold of PAPR in dB. A mathematical analysis of the relationship of input data and its PAPR is also executed and certain conclusions are drawn as shown in the lemmas. But coding methods solely cannot achieve substantial PAPR reduction and therefore most of the literature on PAPR reduction methods have combined coding with other techniques. In this paper, G-OFDM is extended to a hybrid method of constant amplitude modulated (CAM)-G-OFDM to completely mitigate the PAPR problem. But it is achieved at the cost of transmitter and receiver complexity and performance parameters like bit error rate (BER), dependency on modulation index etc. which can be taken care of by making some amendments in the system design.

Keywords: block codes; Goppa codes; OFDM; phase modulation; PAPR

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DISEASE PREDICTION MODEL USING MACHINE Learning

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Abstract—The objective of the system is to identify symptoms of patients and then prediction of the diseases. Identification of similar patients cases is useful for improving patient outcome, for treatment or disease recommendation to all patients, prediction of very efficient outcome, research on those cases. The world is moving at a fast speed and in order to keep up with the whole world we tend to ignore the symptoms of disease which can affect our health to a large extent.The correct prediction of the disease now-a-days is the most challenging task. We proposed disease prediction using symptoms. For the disease prediction, we use Naive Bayes machine learning algorithm for accurate prediction of disease. In our System disease prediction required disease symptoms dataset. The accuracy of general disease prediction by using Naive Bayes is 88%. After general disease prediction, this system is able to search for the nearest doctors and users can book an appointment. Once your appointment is booked then it will show the nearest medical shops. You can also be able to purchase medicines from it.

Index Terms: Naive Bayes, Machine learning, Disease Prediction.

I. INTRODUCTION

Artificial Intelligence can enable the computer to think and make computers more intelligent. AI study considers machine learning as a subfield in numerous research work. Numerous analysts feel that without machine learning,awareness can't be created. There are many kinds of Machine Learning Techniques like Unsupervised, Semi Supervised, Supervised, Reinforcement, Evolutionary Learning and Deep Learning. These techniques are used to classify a lot of huge data very fastly. So we use Naive Bayes machine learning algorithm for classification of big data and accurate prediction of disease.

Because medical data now-a-days is increasing day by day. So usage of that medical data for predicting correct disease is an important task but processing data is very important data mining plays a very important role and classification of large dataset using machine learning becomes very easy.

One can possibly use Machine Learning many times a day. Today Machine Learning is present everywhere.Some machine learning algorithms only work on structured data and time required for computation is high. Also they are lazy because they store entire data as a training dataset and use complex methods for calculation.

The section I explains the Introduction of general disease prediction using classification methods such as Naive Bayes. Section II presents the literature review of system and Section III presents proposed system architecture and state diagram Section IV presents results and discussion of the system. Section V concludes the system. While at the end references paper are presented

II. LITERATURE REVIEW

The paper "Predicting Disease by Using Data Mining Based on Healthcare Information System" [1] applies the information mining process to predict high blood pressure from patient medical records with eight alternative diseases. Under- sampling technique has been applied to come up with coaching knowledge sets, and data processing tool wood hen has been wont to generate the Naive Bayesian and J48 classifiers created to improve the prediction performance, and rough set tools were wont to scale back the ensemble supported the concept of second-order approximation. But the choice trees generated by J-48 is typically lacking within the leveling therefore the overall improvement of victimization ensemble approach is a smaller amount.

Author[2] has proposed a best clinical decision-making system which predicts the disease on the basis of historical data of patients.In this predicted multiple diseases and unseen pattern of patient condition. Designed a best clinical decision- making system used for the accurate disease prediction on the historical data. In that also determined multiple diseases concept and unseen

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Voice Controlled Smart Home

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Abstract

Over the past few years, the home automation industry has seen huge expansion due to the fact that home automation has become comparatively highly accessible due to ever increasing dependency on smartphones and smart devices. In Spite of this, problems in the interoperability of devices arise because of the absence of uniformly accepted protocol inside the application layer which prompts the user to be able to access and monitor multiple smart applications and appliances. During the course of this study, a voice-controlled smart home automation system was developed and implemented using the OpenHab framework that provides a platform that is focused on mixing various smart devices and technologies at the back-end. Since much of the smart devices possess differing communication protocols, the aim of this project was on the process of development of a sensible home automation solution that is modular and versatile. In addition, this system uses Google Voice Assistant for voice control which is integrated into the system via OpenHab cloud connector. RESTful protocols are used to integrate different devices with different communication protocols and used MQTT protocol to add sensors to NodeMCU that keeps a watch on the ambient conditions of the room.

Keywords: *IoT, OpenHab, MQTT Protocol, NodeMCU, Home Automation, Voice Control, Firebase, Thunkable*

1. Introduction

The development of technologies makes it possible to introduce automation in every aspect of life. We like to control the devices from a single place whether it may be in our home or out of the home in order to ensure safety, less power usage and for our comfort too. There has also been an increase in demand for controlling electronic devices through voice. This project will be achieving this with the invention of new smart home devices and home automation systems.

A Fully functioning home automation system is user friendly, covers home security, can monitor the home appliances and allows remote access through an interface.

2. Literature Review

The idea of home automation system is present from the late 1970s. New technology change has changed to face of home automation system. Internet of Things (IoT) got evolved in 2008 has changed the human-to-machine and machine-to-machine interaction.

Some existing home automation systems:

1. Bluetooth based home automation system controlled using mobile phones
2. ZigBee based home automation system using mobile application
3. GSM based home automation system using mobile phones
4. Home automation using RF modules[1]
5. Wi-Fi-based home automation system using mobile application
6. Home automation system based on Cloud
7. Home automation using Android SDK
8. Home automation system using Z-Wave based sensors

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TRAIL-TRACKER: ANTI-POACHING INTELLIGENCE USING AI AND IOT

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Abstract: Poaching in today's world is one of the most significant threats to wildlife. Poachers use different methods to capture animals. Many commercial poachers use military-grade weapons along with arrows and spears to hunt wildlife. Sometimes, objects called snares (a set of wires tied to trees configured to capture any animal by their leg or neck that gets into it) are also implemented. Poachers also trap the animal into large nets, known as trap nets, pitfall traps (a vast pit dug in the ground that is layered with leaves and plants) or baits. In this paper, we suggest a new solution that operates in real-time to pursue the cause of wildlife conservation by preventing the poaching of any species of animals - endangered or non-endangered by profit-hungry poachers with the help of Artificial Intelligence(AI) and Internet of Things(IoT). In comparison to previous methods in the same domain, it presents an alternate approach, in the form of a monitoring system that can track poaching activity and predict poachers' behaviour and alert forest authorities for any suspicious crime.

Keywords: Artificial Intelligence, Internet of Things, Anti-Poaching, Wildlife Conservation, Applied Machine Learning

1. INTRODUCTION

Poaching is the plunder of wildlife organs. Trade of ivory, animal skin and bones are a few well-known resources acquired by hunting the animals in exchange for money[1]. For example, the illegal ivory trade in Africa causes the continent to lose 100 elephants every day. Since the 1990s the problem has escalated rapidly in particular for elephants. Like in 2011 the total world population of elephants was dropped from 1.3million in 1979 to 423,000. As per the Tanzania Wildlife Research Institute, daily loss of 30 elephants has been estimated in Tanzania to poaching. A population of 355,000 was tallied in 1994 in Tanzania but since then in 1999 it dropped promptly to 180,000 and below that in 2011.[2][7]. The global tiger population has dropped over 95% from the start of the 1900s and has resulted in three out of nine species to be brought on the brink of extinction. At this rate, these creatures will be endangered and will eventually face extinction. These activities are continuously increasing in the world due to the decrease in the population of the animals and the increase in the number of the rarity of some species of animals. In order to protect wildlife and their habitats from poaching and illegal trade various wildlife conservation agencies are established across the globe. Many rangers are stationed to patrol throughout the conservation areas. Many local communities, wildlife populations, and the environment is negatively affected by wildlife poaching. The animal parts are sold as novelty items and are sold for their "medicinal" properties in various black markets. For example, Ivory is used by the Chinese for arts and utility purposes, the Americans to make gun and knife handle as well as decorative details on these weapons.[3]

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EMOTSQUAD: Emotion Detection and Attendance Management System

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Abstract

The most expressive way humans display emotions is through their facial expressions. It becomes difficult for a professor to look after each student completely. Our system focuses on improvising and making existing systems convenient through an application. To analyze and monitor the behavior of students present in the classroom, the system performs face recognition and analysis is done on the data generated. In this paper, we propose an automated emotion detection and attendance management system. The system is based on face detection and recognition techniques and algorithms. It detects the student through the camera and marks the student as a present. The student is monitored throughout the lecture and emotions are captured continuously which helps us to analyze the behavior of students and the whole class behavior during each lecture. The working of the system and algorithms are described in this paper.

Keywords: *Local Binary Pattern Histogram (LBPH), Facial expression analysis, Attendance Management*

1. Introduction

Smart classrooms monitor only the physical presence of students but not their cognitive ability. Previously it was not possible to achieve one to one interaction between the teacher and student with the help of technology. Thus by using various student behavior analysis techniques it is possible to increase the effectiveness of lectures. Teacher's get data about the activity of each and every student during the lecture. So it becomes easy for the teacher to monitor the feedback of the lecture. Facial expression recognition is not a theoretical field but finds practical applications in many fields. Coupled with human psychology and neuroscience it can come up as an area that can bridge the divide between the more abstract area of psychology and the more crisp area of computation. A computer with more powerful expression recognition intelligence will be able to better understand humans and interact more naturally. Many real-world applications such as commercial call center and affect-aware game development also benet from such intelligence. Possible sources of input for expression recognition include different types of signals, such as visual signals (image/video), audio, text and biosignals. For vision-based expression recognition, a number of visual cues such as human pose, action and scene context can provide useful information. Nevertheless, the facial expression is arguably the most important visual cue for analyzing the underlying human emotions. Thus, this system not only helps the monitoring of the behavior of students in class but it also helps teachers to modify their teaching style to get a more positive response. Another use case is marketing/advertising in which the expression of customers is recorded. It helps to analyze how people react to an advertisement, product, packaging, and store design.

2. Literature Survey

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SWAYAM: A Conversation Aid App

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Abstract

Whilehaving a conversation with a deaf & dumb person, there always comes a communication barrier (i.e. the use of sign language). Not everyone understands sign language, hence there is a need for an interpreter. In order to overcome this barrier, Swayam is created, where a impaired person can easily communicate with the other person through a video call. This product converts the gestures of a mute person into text/speech at real time and converts the speech of the other person to text.

Keywords: *Sign Language Translation, Video Classification, Text-to-Speech.*

I. INTRODUCTION

Sign Language is a set of languages that use predefined actions and movements to convey a message. This language is primarily developed to aid deaf and dumb people. It uses a simultaneous and precise combination of movement of hands, orientation of hands, hand shapes, etc. People who are hearing or speech impaired are left behind during a video call situation, so they have to use the usual text to communicate with other people or they require an interpreter who understands sign language in order to communicate. The main purpose of this product is to remove the need of the interpreter at the time of the video call since this job would be done by the app itself. The product captures gestures of the impaired person through camera and convert the signs into text and displays the converted text on the screen of the other person. The product also detects the speech of a normal person and then converts it into text and displays it on the screen of a deaf & dumb person. This conversion of speech to text & sign language to text happens at real time i.e. during the time of the video call. Hence removing the need for an interpreter.

II. RELATED WORK

Images that are being captured from webcam are processed using TF-pose-estimation library which sketches the stick figure of the body and identifies the key points and recognizes the gesture. The system provides corresponding words to the gestures provided. It recognizes gestures one after the other as well as gives a proper outcome with slight variations in the gestures [1] The proposed system is an interactive application where the sign language gesture images are acquired by inbuilt phone camera; vision analysis are performed by OS; and speech output is provided through the phone speaker. This app recognizes one handed sign representations of alphabets and numbers [2].

This paper describes proposed methodology for design and implementation of Alphabets recognition system of Indian sign language where static images of hand gesture are used as an input. This Paper describes Correlation-coefficient algorithm which has been used for feature extraction and Neuro-fuzzy algorithm which has been applied as recognition algorithm [3]. This paper consists of a three devices one is a data glove, i.e. the motion sensor used by a deaf & dumb person, which senses the gestures. The second is the microcontroller. It matches the motions with the database and produces a speech signal. The output of the system is using a speaker [4].

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KrishakMitra ((कृ षक मि) - Crop Prediction

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Abstract -- Nowadays, Nation's Pride, Farmers are suffering a tremendous amount of losses due to the reduced yield of their crops. This paper concentrates on helping the farmers by predicting the yield of the crop they want to grow by considering climatic conditions like temperature and rainfall. Also, the module additionally takes into consideration the soil factors like potassium, sodium and phosphorus content of the soil to more accurately predict the crop yield.

Keywords -- K-Means, Google API, RANSAC

INTRODUCTION

Krishak Mitra, the name itself suggests Farmer's Friend. Mobile apps and their services have made our life simpler by fulfilling our daily needs for information, communication or entertainment. Mobile Applications have brought a new revolution. We would provide one such mobile application "KrishakMitra", which can lead to a healthy life. KrishakMitra is a mobile application proposed keeping the farmers in mind and also a common man who wants to grow vegetables for his daily needs. Besides the attention paid to the agricultural field and over the past decades, there are still millions undernourished and a billion malnourished people in the world. There are more than 1.4 billion adults who are overweight and one-third of all food produced is wasted. The global population is expected to grow up to more than 9.7 billion people. It is also observed that global food consumption trends are changing drastically. If the current trends in consumption patterns and food waste are going to continue, it is estimated that the world will require 60% more food production by 2050 (Alexandratos and Bruinsma 2012). KrishakMitra helps to improve crop production for the ever-growing population of the world.

LITERATURE SURVEY

[1] A novel approach for efficient crop yield prediction by P.S. Maya Gopal, R.Bhargavi. It compares various algorithms for their accuracy in crop yield prediction and concludes that hybrid MLR-ANN model has the best accuracy of all the algorithms

[2] "Machine Learning Approaches for CropYield Prediction and Nitrogen Status Estimation In Precision Agriculture: A Review." Computers and electronics in agriculture, v. 151, pp. 61-69. Chlingaryan, Anna, Salah Sukkarieh, and Brett Whelan. Due to the direct relation between crop yield and nitrogen levels in soil, nitrogen estimation is an important factor for predicting crop yield. Some ML techniques, such as Gaussian Processes (GPs) (Bishop, 2006; Rasmussen and Williams, 2005), Dirichlet Processes (DP) (Ferguson, 1973) and Indian. Buffet Process (IBP) (Griffiths and Ghahramani, 2011) are probabilistic and enable consideration of sensor noise while conducting probabilistic fusion of information from different sensors using fertilizers

[4] Prediction of Crop Yield Using Machine Learning by Rushika Ghadge, Juilee Kulkarni, Pooja More, Sachee Nene, Priya RL. It focuses on predicting crop yield and recommending fertilizer for optimizing the yield of the crop. This can be achieved by algorithms like Kohonen Self Organizing Map (Kohenon's SOM) and BPN (Back Propagation Network).

[5] Efficient crop yield prediction using machine learning algorithms by Arun Kumar, Naveen Kumar, Vishal Vats This particular paper focuses on predicting the yield of sugarcane-based on a combined dataset of soil, rainfall and yield by applying supervised machine learning algorithms like Support Vector Machine, K-Nearest Neighbor and Least Square Support Vector Machine

Implementation

There are two modules in the proposed system :

1. The first module gives the output based on temperature and precipitation for which the RANSAC algorithm is used. The output of this module is then fed to the second module.
2. The second module gives the output based on N, P, K values of soil using K-Means algorithm.

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An International Open Access, Peer-reviewed, Refereed Journal

KRISHAKMITRA (कृषकमित्र) - GRADING OF MUSHROOM

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Abstract -- Mushroom is a type of fungi that is very commonly used in cooking. There are various species of mushrooms that can be found naturally. Most of the mushrooms are poisonous and hence it is very crucial to find out whether the mushroom is edible or not before consuming it. For this purpose, various characteristics of the mushroom can be used as a measure to determine their quality. Machine Learning-Classifying algorithms can be used for this which will help to determine the grade of the mushroom, based on its characteristics. The "A" graded mushroom can then be cultivated by the farmers for a living.

Keywords -- Naive Bayes, Gaussian function, Edibility.

1. INTRODUCTION

Mushrooms are actually wild fungi that were found to be a good delicacy in the early 1650 and hence due to increased consumption of mushrooms people started cultivating it on a large-scale from the business point of view. Sometimes poisonous mushrooms like Conocybe filaris, Webcraps etc. may result in the death of a person, hence determining the grade of the mushroom that one is consuming is very important. Using the Naive Bayes Classification algorithm we can teach the machine to classify the mushrooms into an 'edible' (grade A) and 'poisonous' (grade B) based on its various characteristics. This type of classification will help farmers to cultivate more good quality mushrooms and set their price accordingly. This module is an extension to the previously developed application "KrishakMitra" which is used to predict the type of crop and its variety which will give maximum yield for the farmers field based on the characteristics of the field soil and that location's climatic conditions using Machine Learning algorithms.

2. LITERATURE SURVEY

Mushroom quality is graded using hyperspectral image analysis in the wavelength range of 400 to 1000 nm. Different algorithms are used based on chemometric techniques and image processing methods in the paper[1] An automated system to grade the raw mushrooms and analyze them on the basis of the size of mushrooms and the level of opening cap. Proposed methods calculate the size of shiitake by using area sum of shiitake area and the rate of lamella areas is presented in this paper.[2] Support Vector Machine and Naive Bayes algorithms are used for the classification of mushrooms. Expert system is developed to classify the mushrooms on the basis of their characteristics. In the studied paper, performances of both algorithms are evaluated on mushroom data in fold cross-validation.[3] The classification of poisonous mushrooms is determined by three classification algorithms namely; Decision tree, Naive Bayes and Support vector machine. The Agaricus and Lepiota family is taken into consideration for mushroom data in the proposed paper. [4]

UDAN - Ude Desh ka Aam Naagrik

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Abstract - *UDAN is an RCS scheme i.e. Regional Connectivity Scheme launched by our Hon'ble Prime Minister Narendra Modi. RCS is vital as connectivity is the key to development in any country. In India, air connectivity between some regions is not so good. Hence, the RCS scheme was launched. Moreover, UDAN (Ude Desh ka Aam Naagrik) means "letting the common citizen of the country fly". The Ministry of Civil Aviation (MoCA) in India released it on 15 June 2016. It aims at making aviation affordable and widespread, boosting the travel and tourism in the country at a reasonable fare. It will also help in boosting national economic development, job growth. Hence, this scheme has 2 main components. The first component is making flight travel affordable for the common citizens thereby enhancing the tourism within the country (UDAN). The second component is to feature several hundred financially-viable, capped-airfare, new regional flight routes to link about 100 underserved and unserved airports in smaller towns amongst themselves also like the well served airports in bigger cities (RCS). The Government will provide a "Viability Gap Funding" (VGF) to the flight operators related to the scheme whenever needed.*

Keywords - Air ticket booking, Regional Connectivity, Airline reservation system, Booking, Flight booking system, RCS, Reservation, Ticket booking system, UDAN.

1. INTRODUCTION

India is the third largest aviation market in the world's aviation industry. It is of great concern that tier-II and tier-III cities are connected by air. As a result, to enhance regional connectivity and connectivity to tier-II and tier-III cities, UDAN Scheme was launched by the ministry of Civil aviation and government of India in 2017[6].

The UDAN scheme aims to bring connectivity to unserved and under-served airports of the country. This will be done by reviving existing air-strips and airports. It would benefit all stakeholders: the citizens would get the advantage of affordability, connectivity and more jobs [6]. It will provide viable and profitable business to operators. It aims at promotion of tourism, increasing employment and promoting balanced regional growth [6].

Fig -1: UDAN logo

The major objectives of the UDAN scheme are as follows:

- Revival of the prevailing under-served and unserved airports / airstrips in smaller towns.
- Helping people by providing them affordable flights and hence boost connectivity.
- Providing viable and profitable business to operators.
- Promotion of tourism, enhancement of employment, establishment of balance in regional growth.
- Opportunity to small and first-time operators and asking them to contribute to the rapid growth in passenger traffic.

The key features of UDAN scheme are as follows:

- RCS is applicable on route length between 200-800 kilometers with no lower limit set for hilly, remote, island and security sensitive regions [6].
- 50% of the seats must be committed as RCS seats on RCS flights.

UDAN - An RCS Flight Booking Application

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***Abstract*-- India is the third largest aviation market in the world's aviation industry. In order to help the citizens in getting the advantage of affordability, improve connectivity and provide more jobs to the people, the RCS UDAN scheme was launched. UDAN is an RCS scheme i.e. Regional Connectivity Scheme launched by our Hon'ble Prime Minister Narendra Modi. RCS is vital as connectivity is the key to development in any country. In India, air connectivity between some regions is not so good. Hence, the RCS scheme was launched. Our main aim is to build an application for booking of flight tickets, be it regular tickets or tickets under RCS scheme. For booking tickets under the RCS scheme, certain conditions are to be satisfied. It is necessary to create an awareness about the scheme and thereby, help the common citizens of the country so that they can avail the benefits of the scheme.**

***Keywords*-- Air ticket booking, Regional Connectivity, Airline reservation system, Booking, Flight booking system, RCS, Reservation, Ticket booking system, UDAN.**

I. INTRODUCTION

India is the third largest aviation market in the world's aviation industry. It is of great concern that tier-II and tier-III cities are connected by air [1]. As a result, to enhance regional connectivity and connectivity to tier-II and tier-III cities, UDAN Scheme was launched by the ministry of Civil aviation and government of India [1]. The UDAN scheme aims to bring connectivity to unserved and under-served airports of the country. This will be done by reviving existing air-strips and airports. It would benefit all stakeholders: the citizens would get the advantage of affordability, connectivity and more jobs. It will provide viable and profitable business to operators. It aims at promotion of tourism, increasing employment and promoting balanced regional growth.

However, the main issue is that very little or nothing about the scheme is known to the people of the country. There is no proper awareness about the scheme. So, this application will also create awareness among the people and to make air travel affordable for the people, we thought of creating an RCS flight booking application.

Our main aim is to build a software for booking of flight tickets, be it regular tickets or tickets under RCS scheme. So, our application will help the passengers to book tickets easily and conveniently. Passengers can also book tickets under the RCS scheme. Booking, payment, cancellation, viewing the current bookings, viewing previous booking history can be done using this application.

II. PROBLEM DEFINITION

In today's world where technology is in lead people tend to book flight tickets through third party applications. Till date no third party application has created awareness or aimed at including RCS benefits for people. Normally, these third party applications are indulged in earning more profit and they end up buying RCS tickets in bulk and sell these tickets at normal rates to people keeping them unaware of the scheme.

Our application "UDAN - An RCS Flight Booking Application" aims at preventing the frauds of third party by including biometric module for every user who wants to book a flight under RCS.This module aims at capturing the image of an individual and storing it which will help in verification and ultimately prevent frauds as the ticket for the user will contain the captured photo. The passengers get benefits of this scheme only after the thorough validation of RCS route, RCS flights. If he/she has selected a valid RCS route and wishes to travel with an RCS flight, then he/she will be allotted the RCS ticket. Otherwise, he/she will have to proceed for normal booking.

The application provides one more benefit. If any passenger has cancelled his/her RCS ticket, the ticket would automatically be transferred to the next eligible passenger. The application will also take care of refunding extra money paid by the subsequent passenger and a part of the ticket payment will also be refunded to the traveller who has cancelled the ticket.

Refunding of money on cancellation of a normal ticket will be done based on the number of days left in the departure of the flight.

E-commerce in Emerging Global Market of India: An Analysis of Present Status, Challenges and Future Prospects

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Abstract : As we know that the e-commerce industry has been penetrating in almost all countries and also capturing the major chunk of the retail market share in those countries for the last decade. In India it is inclined to grow majorly as the country is well equipped with the advances in technology and it is one of the emerging global markets in the world. In this paper we have analyzed the studies and researches of various papers, articles, marketing agency reports, government websites, etc. to know about the factors contributing towards the growth of e-commerce industry in India and shaping it as a global market. Furthermore, in this paper we have attempted to examine the idea of e-commerce, retailing, global e-commerce markets, scenario, growth trends, challenges and future prospects of the e-commerce industry in India.

Index Terms **– E-commerce, Global E-commerce Markets, Retailing, Idea of E-commerce, Scenario, Growth Trends, Challenges, Future Prospects.**

I. INTRODUCTION

E-commerce is the technology which is predicted to become more and more popular in the coming future and which can enhance further business purposes. While the e-commerce is still being the maturing market, emerging economies are poised to become subsequent mega market because the rapid increase of internet users in these countries. This Emerging markets are the hotbeds for e-commerce that comes with the unique opportunities and challenges across the regions and which is extremely accurate and consistent with the South Asian region, as Indian e-commerce is that fastest growing industry. As, e-commerce achieves higher penetration rates in developing countries e.g. India, and it also enables to overcome obstacles to adopt the high-speed networks which are fast enough for Smartphone and shipping cost. The e-commerce industry has transformed the ways of business doings in India. Much growth of e-commerce industry has been triggered in India and thanks to the increasing internet and smartphone penetration. Every second three more Indians experience the web for the primary time in their life and it is being estimated that by 2030, there will be more than 1 billion of them which are going to be online. As India is the fastest growing market within the E-commerce sector and therefore the Indian e-commerce market is estimated to grow to US$ 200 billion by 2026 from US$ 38.5 billion as in the year 2017. The on-going digital transformation within the country is estimated to extend India's total internet user base to 829 million by 2021 from 604.21 million as of December 2018 and which will further enhance the number of E-commerce companies to attach to the new users. The internet economy in India is estimated to get doubled from US$125 billion in April 2017 to US$ 250 billion by 2020, which is majorly backed by the e-commerce industry. India's E-commerce revenue is predicted to leap from US$ 39 billion in 2017 to US$ 120 billion in 2020, growing at an annual rate of 51 per cent, which is the highest in the world and highest among all the countries with the larger e-commerce base in the world. In India, cash on delivery which is the most preferred payment method, accumulating about 75% of the e-retail activities. In 2017, the most important e-commerce companies in India were Flipkart, Amazon, Myntra, Paytm, and Snapdeal. In 2018, Amazon beat Flipkart and was recorded as the most important event in the Indian e-commerce industry in terms of revenue.

II. LITERATURE REVIEW

Here we are going to the review some the research papers in the context of the e-commerce industry in the Indian perspective has changed the way of doing business in India. Here are some of the research papers including various aspects of e-commerce related to India.

1) Prateek Kalia, Navdeep Kaur & Tejinderpal Singh (2017)

E-COMMERCE IN INDIA: EVOLUTION AND REVOLUTION OF ONLINE RETAIL – This paper specifically presents the origin of e-commerce and the broad sector of online retail in India. Various aspects related to the origin of E-Commerce in India is also being discussed in detail. It describes the internet penetration all over India and as per study India is the third largest country in terms of internet users. It also shows India is the driving force for E-commerce in the Asia Pacific region after China. It shows the various aspects of the Global Retail E-Commerce Index & various prospects which hamper Indian rankings in the list. Different E-Commerce scenario related to India is being studied & it shows that online retail has fifty per cent share in the present E-Commerce industry in India. It gives an idea of online retail market size & growth which shows that the future prospects related to this industry are extremely positive.

2) Rhitabrata Kumar & Dr. Asha Nagendra (2018)

AN ANALYSIS OF THE RISE OF E-COMMERCE IN INDIA – The paper gives us an idea of how the e-commerce sector has taken a massive rise in the India market through the last decade moreover due to the digitization which has enhanced various opportunities for evolving the business models. The main purpose of this paper is to show how the e-commerce sector has managed the various consumer behaviour by providing them quality of service as well as benefits and thus attracting the consumers regularly. As consumer behaviour changes from time to time the ecommerce sector also fulfils the necessary requirements. In this paper there was a study on collection of data through various secondary sources and there was also a questionnaire circulated to various parts of India in which views and opinions were taken from 56 individuals. The study showed that there was a massive increase in the E-commerce sector in the last five years which was resulted due to the technology and digitization which has assisted its growth and some challenges are also there for this industry.

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A Proposed System for Understanding the Effects of Urbanization on Mangrove Vegetation

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Abstract

Urbanization brings many benefits for human society, but the flora and fauna pays the toll for it. Over the past few years urbanization has occurred at such a rapid pace that it has altered biodiversity drastically. One of the natural elements that have suffered are mangroves, exposing coastline to dangers. In this paper we propose a methodology to understand the correlation between increasing urbanization and its negative effects on mangrove cover. Normalized Difference Vegetation Index (NDVI) and Normalized Difference Built-up Index (NDBI) calculation on Landsat8 OLI images can give a measure to vegetation cover and Urban Heat Index (UHI) which is a measure of urbanization [1]. These measures combined with other parameters like sewage water outlets in mangrove swamps, air quality and carbon emissions will prove the basis for analysis of the relation between growth in urbanization and decrease in mangrove vegetation.

Keywords: *Mangrove, Urbanization, Normalized Difference Vegetation Index (NDVI), Normalized Difference Built-up Index (NDBI), Image Processing, Landsat8.*

1. Introduction

This template, modified in MS Word 2007 and saved as a "Word 97-2003 Document" for the PC, provides authors with most of the formatting specifications needed for preparing electronic versions of their papers. All standard paper components have been specified for three reasons: (1) ease of use when formatting individual papers, (2) automatic compliance to electronic requirements that facilitate the concurrent or later production of electronic products, and (3) conformity of style throughout a conference proceedings. Margins, column widths, line spacing, and type styles are built-in; examples of the type styles are provided throughout this document and are identified in italic type, within parentheses, following the example. Some components, such as multi-leveled equations, graphics, and tables are not prescribed, although the various table text styles are provided. The formatter will need to create these components, incorporating the applicable criteria that follow.Mangroves act as natural protection for shorelines from floods, winds, damaging storms and hurricanes. They also prevent erosion from sedimentation and act as a nursery for marine life.

Mangroves are distributed worldwide in 123 countries spreading about 150,000 sq.km area, with South East Asia contributing about 33% of it. Mangroves spread over 4921 sq.km in India contributing about 3.3% worldwide. Overall vegetation cover has increased from 4046 sq.km in 1987 to 4921 sq.km in 2017, mainly because of the protected sanctuary of Sundarban in West Bengal [1,2].

However, mangrove cover in coastline near urban areas like Thane creek has shrunk over the last few decades. The development in Mumbai Metropolitan Region and sedimentation has encroached vast portions of mangrove vegetation. Since 1973 Thane creek has lost over 36% of its mangrove cover to urban development [3,4] .

We aim to present a statistical study of cause and effect of loss of mangrove forest near urban coastline.

2. Literature Survey

This study [5] by A. W. Sejati examines the urban and forest cover by applying NDBI and NDVI on Landsat 7 ETM and Landsat 8 OLI for metropolitan region of Semarang from 1990 to 2015. The

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Suraksha-The Personal Safety Application

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Abstract - In today's world, the number of people using android phones has expanded rapidly and subsequently hence, an android application can be used efficiently for personal security or various other protection purposes. The main aim of the Suraksha application is to provide security for a person where the victim is present mentally at the time of situation that situation could be anything, for example, any attacks or robbery. In case of emergencies, Suraksha application will be useful for a person's safety by sending SOS to emergency contact and more...

Keywords: Security, thrice shake, SOS (Save Our Soul), keypress, GPS (Global Positioning System), API.

1. INTRODUCTION

In today's time, women's safety has become a major issue as they can't step out of their house at any given time due to a fear of attacks or violence. Even in the twenty-first century wherein the technology is swiftly developing, and new gadgets were advanced however still women and girls are going through troubles. Even these days in India, women cannot move at night in lots of locations or even at daytime crowded locations because hundreds and thousands of incidents of physical/sexual abuse happen to women each day. amongst different crimes, rape is the quickest growing crime in the country nowadays that is attacks on girl is growing daily and in this case of where she can't dialup to the police or other family members because that attack will be a fraction of time and victim cannot able to do anything at that time. So here, Suraksha is an android app that ensures the safety of women and will provide all the safety methods. Proposed system will be very much helpful in such cases where the victim is not able to open an app and perform any action. by using the Suraksha app women can travel anywhere at any time without having any trouble.

2. LITERATURE SURVEY

Numerous works have been done against attacks to provide safety. In this paper, Application helps in tracking the location of the registered user, along with one of the registered contacts will receive a call from the user in case of an emergency. Further, it sends SMS to a registered contact containing location using latitude and longitude provided GPS location tracking system of the device, the SMS message will be sent every 5 minutes until the user of the application stops it manually [1].

The user can trigger the calling function by shaking the phone or by the user interface of that application via the panic button and the respective location will be sent to emergency contacts as well as police [2].

There are multiple features like lock screen access and siren on the receiver device. The modules of the HearMe application can be accessed through hardware buttons with the intention to get quick access to the victim woman. Also, HearMe [3] blows a noisy siren on the receiver device even if the mobile is in silent mode, which increases the reliability of getting help.

This mobile software sends a message with the user's GPS coordinates to a listing of emergency contacts while a button on the app display is touched. The coordinates are updated and reset with each 300m trade-in location [4].

The authors describe an advanced women security system to provide the safety measure in public places and public transports. In this app it consists of SOS Keypress Module and Voice Recognition Module, Global Positioning System (GPS) module, Spy camera which detects Night-vision hidden cameras which are placed in changing rooms-hotels room etc.[5] In such cases it traces the location using GPS module and sends the notification to the user about unsafe place. Electric Shock for Self Defence as well as Screaming Alarm.

The Self Defence system uses technologies that are embedded into a compact device. The ladies carrying this device as a watch or band, just in case of any harassment or once she finds that someone is going to harass, she presses a switch that is situated on the watch or band the data about the attack along with the body posture and location is sent as SMS alarm to a couple of predefined crisis numbers[6].

The developer used GPS, GSM, and Zapper Circuit. Also, microcontrollers are the heart of the system. Whenever women press the emergency switch, the microcontroller and zapper circuit will get triggered. A Zapper circuit will produce a high volt at its ends. Whereas the GPS module collects the current location and sends SMS through a GSM module to the stored number. Same time the buzzer will get on and make noise for help [7].

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Nidāna - A System For Detection Of Genetic Disorders With Prominent Facial Features Using AI

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Abstract

Artificial Intelligence along with facial analysis techniques have lately been at par with the capabilities of medical experts in the identification of various genetic syndromes. So far, these techniques could identify some of the diseases by extracting the facial features of an individual, restricting their role in the medical field where a lot of diagnoses should be considered. We've developed a portal that would help in early detection of genetic disorders or at least reach a strong hypothesis if not an exact diagnosis using AI, computer vision and CNN, that gauges similarities of genetic syndromes on the basis of unconstrained 2D facial images. The results predicted by the portal can be used in cohesion with other medical diagnoses, behavioural and growth analysis for precision in the diagnosis of genetic syndromes.
Keywords: *Artificial intelligence, CNN, Genetic Syndromes, Transfer Learning*

1. Introduction

Diseases induced by concealed genetic disorders influence the majority of individuals throughout their life. Below, we explicitly focus on genetic syndromes with prominent facial features. These disorders affect nearly 8% of the population. From the 60 crore people affected by rare genetic diseases, India has around 10% of them. All these alarming figures and we still don't see proper care given to them. Many affected people exhibit signs that impair their well-being and standard of their life. Primal diagnosis is vital to avoid sudden emergence of possible health disorders, such as serious congenital heart defects, respiratory problems, slow and stunted development, amongst various other issues. Though most of them cannot be cured completely, we can surely help to improve their lives with our little gestures. Early diagnosis is beneficial for the patients because peculiar avoidance and monitoring programs help avoid the incidence of potential health issues, like respiratory problems, and developmental delays, among others.

Most of these syndromes seem to have distinct facial phenotypes [1], which provides comprehensive information to genetic specialists, which helps them in diagnosing a particular genetic disease [2]. Genetic researchers have either sought a solid diagnosis for more specific or unusual syndromes, or at most a clear hypothesis, based on the facial features of the individual. In most cases, though, patients visit a genetic expert years later, after initial symptoms emerged. Oftentimes, due to the subtle nature of these syndromes and a wide range of potential disorders, attaining the appropriate diagnosis includes prolonged and valuable handiwork and analysis which may take several ages or even a few decades (the diagnostic odyssey).

Identification of unclassical presentations of typical syndromes, or occasional disorders, may be limited by prior experience of the particular genetic specialist. Computer systems are used as an aid or reference for medical specialists thereby increasing extensively. Nidāna guarantees to provide expert knowledge and awareness to healthcare professionals.

Facial appearance is a crucial aspect of diagnosing the syndrome. Using computer vision for facial recognition has tremendous potential to this point. Over the past few years, computer vision research has dealt with the issue of facial recognition.

The identification of a particular genetic syndrome from facial phenotypes is analogous to typical facial identification. However, in reality, the creation of the Syndrome Identification System is difficult due to many reasons, emphasizing limited data, the subtlety of facial features and ethnic diversity.

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Blockchain: A Solution for Improved Traceability with Reduced Counterfeits in Supply Chain of Drugs

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Abstract

The Pharmaceutical supply chain needs huge attention while developing technology-based solutions as there is a great need of surveillance in the production and distribution of fake, substandard, counterfeit and grey market medicines, which account for hundreds of billions per year across the globe. Counterfeit drugs have captured the global markets over the period and affecting and risking many lives in a large [1]; solutions to address these have become inevitable. Studies revealed a lot of pharmaceutical products, medicinal devices and doctors have been subjected to counterfeiting the drug supply chain which is prone to lots of pharmaceutical crime. The pharmaceutical market's growth and a rise in world-wide sale of drugs leading to invention of many forms of technology and digital-based platforms trying to come up with solutions for the supply chain. Besides pharmaceutical frauds, increasing security and addressing vulnerabilities of the medical supplies is an area of concern. This leads to the formation of many technology solutions to make supply chains secure, trustable and remove counterfeit drugs from it by applying various methods and approaches. Our System proposes to leverage blockchain technology to make the supply chain of drugs transparent to increase trust among actors and provide security, authenticity and traceability with the help of IoT.

1. INTRODUCTION

As proposed by a study conducted by the World Health Organization (WHO), more than 100,000 deaths a year in Africa are due to counterfeit/fake drugs ordered from unknown or untrusted vendors[2,3]. The actors involved in the pharmaceutical supply chain cannot completely guarantee the authenticity of drugs because ownership of drugs changes continuously in the supply chain, secondly as supply chain does not connect the physical and information flows of drugs i.e. where the product/drug is exactly at any particular moment which is untraceable most of the time and hence for drugs regulatory authorities traceability of drugs is quite costly practice. Hence patients at the end are the victims of any counterfeit drugs supplied. Thus one of the major reasons for the drug's counterfeiting is the current pharmaceutical supply chain in which the lack of end to end visibility, security, trust and traceability are major issues to be addressed.

Information and Communication Technology (ICT) is being empowered by Blockchain technology in all the ways. This research aims to evaluate the implication of blockchain technology on the supply chain and procurement in the pharmaceutical industry. Blockchain can positively influence tracking, tracing, visibility, trust through smart contracts in the supply chain, and thus will positively impact the operation of the pharmaceutical industry. Our idea is to bring all these features to the supply chain by leveraging the advantages provided by blockchain and IoT.[10,11,12]

2. LITERATURE SURVEY

Blockchain solutions to non-financial applications and its integration in business strategy is facing resistance as it requires a great amount of sharing of information. As per *Perboli, G. et al.*[4] the utmost need is to involve all users/actors in blockchain while implementing it. *Author* described the application of the blockchain in the supply chain as an enhancement that has the ability to assist all the stakeholders/actors in the flow of the chain. An accurate implementation of the blockchain in the supply chain must begin with an study of the objectives of all the actors involved, to build a business design suited to stating the returns of a solution.

Mettler M. [5] discussed *Hyperledger*, a research network across industries involving Cisco, IBM , Bloomberg , Accenture, Intel and Block Stream recently launched the Counterfeit Medicines Project which has an eye on the issue of pharmaceutical drug counterfeiting. Each drug is marked with a timestamp under this project.

Hardware Implementation of Autonomous Surface Vehicle (ASV) using Arduino Mega

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Abstract

Our objective is to make an operating model of an autonomous water surface vehicle (ASV) that's multi-modular in nature, i.e. makes use of multiple modules and sensors so as to sense and actuate the specified functions to suit our desired methodology of travel, conjointly keeping in mind a path-saving algorithmic rule, that takes into consideration GPS reference system to reach out heading and course modification angles. This, in order to capture the desired telemetry and data from the onboard sensors at the specified locations in the path, then return to base for the retrieval of the data for analysis.

The principle of navigation involves two solutions, close range navigation, and broad navigation. An ultrasonic sensor will provide close range navigation, while the GPS module, will help with broad navigation. Both these systems are crucial for the primary function of this vehicle, which is locomotion over a water body. The secondary function is the collection of photographic data of point of interests over the relevant area.

1. INTRODUCTION

The ultimate goal of humankind returning into the second decade of the 21st century has been complete automation. Once it involves automation, transportation has created many-a-leap.

Land transport automation is fairly easier once we have a tendency to compare it to water transport automation. In contrast to land, many things ought to be paid attention to, like water pressure, tidal forces, and winds so on.

An autonomous surface vehicle usually outlined as any water surface vessel which will perform without a crew to direct it. The destination co-ordinates are fed into the vessel first.

The vessel's GPS module creates a path plan accordingly. An ultrasonic sensor is usually used to identify obstacles.

International Regulations for Preventing Collisions at Sea (COLREGs) are a group of rules and rules ordered down so as to be followed by all marine vehicles including autonomous vehicles.

2. PROBLEM STATEMENT

We are building an efficient Autonomous Surface Vehicle by integrating different modules such as Ultrasonic Sensor, GPS module, Compass and Camera module.

We have using the path finding algorithm to find the path to the desired co-ordinates and even obstacle detection algorithm to detect the obstacle.

It also makes use of obstacle avoidance algorithm to avoid the obstacles using specified angle detection and steering algorithm. It uses GPS module for the real time heading and course change angle.

The ASV is prepared such that it uses camera module for taking the pictures of obstacle so as to get to know the type of obstacle present.

3. LITERATURE SURVEY

Unmanned Surface Vehicles (USV) has found many applications in navy and other organizations for variety of missions and applications.

USV has many different applications such as surveillance of coasts, port security and submarine protection.

Many private and government firms use it for oceanographic purposes like ocean depth measurement, water sampling and monitoring.

USVs are also used for hydrographic surveying. Hydrographic surveys helps to ascertain how the features of sea, river or any other water body would affect construction, oil or gas drilling, etc. USVs can greatly accelerate the hydrographic data collection.

Crime Analysis And Hotspot Prediction

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Abstract

Crime is a major social and economic problem in almost every country, which threatens the safety of its citizens and also disrupts the economy of that nation. Understanding patterns in criminal activity will allow us to predict the crimes that may occur in the future and also predict their "hot spots" (the areas where they are most prominent to occur) and enables the authorities to more effectively and efficiently allocate manforce and resources to prevent or respond to incidents. Day by day crime is increasing, as there is an increase in unemployment, population density and other such factors. Crime has always been a problem for civilians as well as the authorities. The authorities are collecting and storing detailed data tracking crime occurrences. This data contains spatial and temporal data, which can be used to precisely predict the regional crime rates, detect and predict Crime Hotspots. Deep Learning and Neural Networks has been widely proven effective for detecting temporal patterns in a time series . We aspire to use the power of Deep Learning to help the authorities battle crime to provide a safer society for the civilians to live in.

1. INTRODUCTION

1.1. Motivation

Machine learning and Artificial Intelligence have gained immense popularity, starting from the end of the previous decade. Their shere, almost unlimited scope and areas of application has taken over the decade by storm. To humans research and analytics for predicting the chance of some event occurring has always been one of the top priority. Such type of analysis is broadly classified as predictive analysis. This predictive analysis helps us gain a possible insight in the future. This insight in predicting storms, natural calamities, crimes, etc can mean the difference between losing and saving millions.

1.2. Relevance

Pervasive criminal activity research suggests that setting focus on specific areas with high crime rates or criminal activity is an effective crime prevention strategy, and with the help of an accurate prediction model authorities will be able to identify timings and areas of elevated crime rates in certain localities of a town. The authorities would be able to allocate their resources to that particular locality which is termed as a hotspot (an area with high crime rate) more efficiently to either prevent or effectively and quickly respond to criminal activity. Absorbing this model into the system will help authorities take appropriate measures that allows for an effective deployment of manforce and other resources at the crime hotspots and removing resources from areas seeing a decrease in crime levels. But, the real challenge is the sheer volume of data and number of variables that criminal activity and crime depends on. This presents a challenging task in formulating, analyzing, predicting criminal activities and hotspots and even more while developing a model to do so.

This paper aims to use the power of algorithms like RNN (Recurrent Neural Networks) and STNN(Spatio Temporal Neural Networks) and predict crime hot spots. RNN have proved very efficient in predicting textual and numeric data in stock markets and predictive fields and on the other hand STNN have proved very efficient in space and time series predictions.

This type of predictive analysis will identify the future hotspots(locations) for a crime and what crime is more likely to occur there. This analysis is done on past crime data of that particular location. Traditionally the local authorities use simple graph based methods to look at which crime is occurring more and in which area. The pin that is on the map and starts focusing more on that area, increasing their patrol frequencies and so on.

2. LITERATURE SURVEY & RELATED WORKS

Various methods and suggestions have been made by researchers and authorities for the prediction of crime. However every system has its own lacunas.

Music Player with a Difference

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Abstract

The motivation regarding this paper is to create an environment for music lovers where they wouldn't be dependent on the internet all the time.
The basic functionality of the application includes playing songs of multiple music formats, adding songs to a playlist, rating songs, filtering songs, etc.
Optional functionalities include getting correct song metadata using APIs and playing songs not included in user libraries using APIs which doesn't require internet to function
The convenience of the user is prioritized by providing a music recommendation system. This system analyses user behavior and music tastes and starts recommending new songs that are not in the user's library. This means the user is suggested multiple songs of users' liking.
Also as the app is available on multiple platforms the music library is shared across all user devices using File Transfer Protocol, along with all other user data. It also periodically scans the library for changes and syncs the changed files.

1. INTRODUCTION

Cross-platform music player is a web application that works across multiple systems. It automatically syncs the data without any manual efforts. Basically this application provides ease to the user and saves the efforts. The basic functionality of the application includes playing songs of multiple music formats, adding songs to a playlist, rating songs, filtering songs, etc.

One of the popular personalization technologies powering the adaptive web is collaborative filtering. Collaborative filtering is the process of filtering or evaluating items through the feedback of other people. Collaborative Filtering technology brings together the feedback of large interconnected userbases on the web, supporting the filtering of substantial quantities of data. As the number of songs increases day by day it is difficult for users to find their favorite music. Calculate the Mel frequency cepstral coefficient [2]feature quantity by analyzing the characteristics of music content. Then the feature quantities are clustered to compress the music feature values. Finally, the distance metric function is used to calculate the similarity between all music in the feature value database of the searched music. The closer the distance is, the higher the similarity is according to the similarity, the result of the recommendation is obtained. The method recommended results have higher accuracy in experiments and provide an idea for music recommendations when user data is missing.

Today's Music recommendation systems considerably help users to find interesting music in these huge catalogs, music recommendation systems research is still facing substantial challenges[1]. In particular, when it comes to build and incorporate recommendation strategies that take into account data beyond simple user-item interactions or content-based descriptors but dig deep into the very core of listener needs, preferences, and intentions. Music recommendation system research becomes a big endeavor and related publications quite sparse. With the collaborative filtering techniques[5] becoming more and more evolved, recommender systems are widely used nowadays. However, the utilization of the recommender system in academic research itself has not received enough attention. Development of effective methods for search and retrieval, in particular, content-based preference elicitation for music recommendation is a challenging problem that is effectively addressed by a system that automatically generates recommendations and visualizes a user's musical preferences[3], given her/his accounts on popular online music services. The system retrieves a set of songs preferred by a user and computes a semantic description of musical preferences based on raw audio information. Collaborative filtering is the most well-known approach. However, existing approaches generally suffer from various weaknesses. Sparsity can significantly degrade the performance of the traditional collaborative filtering. The topic model-based collaborative filtering

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Aid for Children with Learning Disability

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Abstract

With rapid and fast development in AI, E-learning and distributed learning provides an excellent platform for children to learn at their own pace without much intervention from parents. Also, parents should keep in mind that early intervention will not only help an individual(child) in academics but can also create a positive impact in the workplace and relations with family and friends. Thus computer-based systems would help them to overcome their learning difficulties.

1. INTRODUCTION

Learning disabilities are neurologically-based processing problems. Such problems can result in a comparatively slower growth of a child's brain and their learning skills to their peers. These learning skills can include lower as well as higher level skills such as reading, signal processing, reasoning, memory, attention and writing. These learning disabilities most often can't be cured but it's effect can be reduced through early intervention by professionals and by creating a supportive environment around the child which should be done by their parents to help them through physical or challenging activities which can in turn improve their capabilities.

Some types of learning disabilities are as follows:

Dyscalculia: This type of learning disability involves difficulties in understanding math related problems, right from numbers to complex equations and hence can vary from person to person. For example, at an early stage the child might just struggle with numbers and counting but eventually can lead to inability in learning math facts such as equations and multiplication tables..

Dyslexia: This disability can be of two types, one in which the child faces difficulty in understanding sounds of similar words and another in which there is difficulty in grasping the meaning of a few words and sentences. Children might also face difficulties in expressing their thoughts into words, not knowing the meaning of those words.

Language Processing Disorder: It is a type of disorder in which the victim is unable to process the spoken or the natural language which means that there is difficulty in understanding the meaning of spoken words and converting the same in a lower-level language.

ADHD: In this type of disorder the child is unable to stay focused and can get easily distracted by their surroundings which in turn shows their hyperactive behaviour and this can cause difficulty in their schooling. If this is controlled at an earlier stage, ADHD victims can be very successful in the later stage of their life. Hence, it is also termed as a neurodevelopmental disorder.

Down Syndrome: It is a type of genetic disorder which causes a distinct facial appearance,cognitive delays and intellectual disability.It is basically a condition in which an individual has an extra chromosome. Early intervention programmes are helpful for both children as well as adults in order to improve the quality of their lives.

With the fast progress of computer technology, researchers have assayed to use artificial intelligence to improve computer-aided instruction systems for children with learning disabilities. This system is to cure any type of disability which will enhance the learning and problem solving skills of a student. Meanwhile, researchers have also attempted to develop more efficient and impressive programs to enhance the learning performance of students. However, customary systems for testing merely give students a score, and don't give them the occasion or a chance to learn how to improve and develop their learning performance but such systems would really help them to interact and not worry about the performance of their peers. The analysis of these tests would help to advise the students with their learning patterns and indicate their strengths and

Vote Block - A Digital Ledger

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Abstract

Fundamental right to vote or voting in elections forms the basis for democracy. Elections is the process for people to choose their representatives and express their preferences for how they are governed. In all earlier elections of India, a voter casts his/her vote using the ballot paper. This is very much prone to errors and time-consuming because of the EVMs, all the condensed materials like the ballot papers, ballot boxes and stamping are completely replaced into a simple box called ballot unit. The objective of our project is to create a Digital Ledger using Blockchain Technology for Elections. The Digital Ledger will help in keeping the list of all the voters and each and every voter will be able to vote. The Digital Ledger will automatically count the vote and complete the transaction. The digital ledger will make the voting process simple, efficient and faster compared to the current EVM system. Current EVM is bulky, less efficient and tampering issues with the existing system. Election Process takes too much time and money, which can be saved using our system. Voters need to stand in long queues which wastes time and productivity.

1. INTRODUCTION

The objective of this paper is to improve the election process by constructing a digital ledger through blockchain. All the eligible voter lists and single vote per person rule can be easily possible using a digital ledger. Votes can be automatically counted, and the process will be simple, faster, and efficient than current EVMs. Blockchain is originally used for generating distributed databases initially developed for a cryptocurrency(bitcoin). Blockchain makes a record of the transactions made by users using blocks. A secure and robust system for voting is possible through blockchain. To use Ethereum blockchain technology for elections. The digital ledger will help in keeping the list of all the voters, and each voter will be able to vote, and then the digital ledger will automatically count the vote and complete the transaction.

The overall paper is discussed in the following subsections as follows; starting with a discussion on the state-of-art techniques in blockchain followed by the Proposed System Architecture and implementation details

2. LITERATURE SURVEY

The basics of blockchain and its cutting edge applications are explained in brief, and the drawbacks of public ledgers and usefulness of a hybrid solution is also explained.[1] A hybrid solution is a peer to peer network, which is encrypted so it cannot be viewed even if it is public. In the study,[2] the authors have used blockchain technology to make a secure electronic voting system. An ID card was used for authentication via an IC (Integrated Circuit) with a pin for secure voting.

A wallet system that is used for voting purposes using blockchain technology. A vote is credited as a coin in the voter's wallet, which is transferred to the candidate once the vote is cast.[3] In paper [4], the authors introduce Secret Voting implemented using Enigma Protocol, which is a decentralized sopen-source protocol that lets anyone perform computation on encrypted data. Table 1 depicts the comparison of Traditional EVM's with blockchain-based Voting System.

Table 1: Comparison with Existing System

Traditional EVM system	*Blockchain-based voting system*
The result is slower as compared to blockchain-based voting systems.	The result is faster than a traditional EVM system.
Security issues the voting system, and the results can be tampered or changed.	No security issues present, more secure than the EVM based system. The votes are secure as Ethereum is used to store vote
It has hardware vulnerabilities that can be manipulated.	It doesn't have any hardware vulnerabilities and is durable.
EVM systems don't have any technological potential.	Blockchain-based systems have huge technological potential.

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Automatic Number Plate Detection System and Automating the Fine Generation Using YOLO-v3.

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Abstract

Vehicles violating traffic rules must be charged with fines. Recognizing the vehicle number in the complex traffic conditions is difficult. An Android phone platform based automated number plate recognition system is proposed. The captured image is processed to get the optical characters. The built-in GPS module can be used to geo-tag images. The system that we are developing sends a trigger to the nearby traffic policeman as soon as the person breaks the signal. This is real time and the driver will be able to view where and when a person broke the rule. Previous methods for this, like R-CNN and its variations, used a pipeline to perform this task in multiple steps. This can be slow to run and also hard to optimize, because each individual component must be trained separately. This system is designed using YOLO-v3 and Django framework, and the application is developed using React-Native framework.

Keywords: *Number plate detection; fine generation; notification; object detection; optical character recognition; You Only Look Once- v3; django; react-native.*

1. Introduction

License Plate Recognition has been widely used in different domains like traffic control, security process, crime detection and automatic parking systems. In recent times LPR has taken a leap into technology easing the work of car detection. Besides all the improvements LPR has made in this modern era there still are problems related to its accuracy, efficiency and processing time. There are many challenges that affect the process of LPR like poor video quality and meteorological conditions which results in inaccurate results as output. At the same time many projects related to LPR have high processing time and are redundant in real-time execution for traffic monitoring and investigation To tackle this problem our project proposes a real time solution for license plate detection by first detecting the license plate and simultaneously converting the license plate using Optical Character Recognition to character data and sending alerts to all the traffic officials in the

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Attendance Recognition System using Face Appearance

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Abstract

Educational institutions are also concerned with student attendance on a daily basis. This is mostly because his or her attendance at the school influences the overall academic performance of students. There are primarily two traditional marking approaches that name the roll call or take the student sign on paper. Both have become longer and more difficult. There is thus a need for a student attendance program based on computers that helps the faculty automatically to maintain records. This algorithm compares the test image and the training picture and decides the present and absent students. The attendance record is held in an excel sheet that is automatically changed in the program.

1. INTRODUCTION

Growing high, college and university is attended by each pupil. Empirical evidence shows that the attendance and academic performance of students was closely related. The argument claimed that students with weak attendance records are generally associated with poor retention. The faculty must also maintain an accurate attendance record. The manual attendance record system is unreliable and requires more time to document and measure each individual student's average attendance. Therefore, a program is needed to address the question of student accreditation by the measurement of average student attendance. The facial recognition offers an option for automatic student attendance.

2. RESEARCH OBJECTIVE

Face recognition can be used for various things such as image and video processing, human machines, criminal identification etc. This led researchers to develop calculative models to classify the fairly simple and user-friendly faces. The very important truth is that, even though these pictures are of high dimensionality, they only occupy very little dimensional space. In order to represent this face space, it is, therefore, easier to think instead of considering a complete face space with a high dimension, just a subspace with a lower dimension. The goal is to apply the framework (model) for each face and separate it from a large number of stored faces with other adjustments in real-time.

3. EXISTING SYSTEMS

There are different types of recognition system available in the market some of them are:

3.1. Biometric System based on fingerprint

In this system, the fingerprint of each student of first fed and saved into the database and then whenever the student enters into the class it first needs to put it's finger in to the Fingerprint based Biometric System and then after getting recognized it's record will be saved in to the excel sheet , database and the attendance will be marked.

3.2. Identification by radio frequencies

In this system, first database has to be created, the data of the student belongs to a particular student needs to be registered in to the system and then whenever the student enters in to the college it first needs to scan the ID card which belongs to a particular student only and get recognized it's record will be saved and the attendance will be marked based on the unique frequency.

3.3. Recognition System using Iris

In this recognition system, a database has to be created for each student by standing the student in front of the system and saving it's Iris data into the system. Secondly, whenever the student comes into the college or enters the college it first needs to scan it's Iris from the system and then needs to get entered into the college.

Plasma Voting: A Secure e-Voting Platform

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Abstract

Voting is a process where people vote to raise opinions about the contestants and make important decisions collectively. Having a transparent, secure and reliable voting system is the need of the hour. Firmly registering and splitting transactional data, constructing computerized and organized delivery chain processes, improving transparency around the entire value chain are a few examples of these difficulties. Blockchain provides a potent method to engage these problems. This paper provides a basic execution of a blockchain built e-Voting system using Ethereum blockchain provided by Ganache locally, while it also discusses the feasibility, future scope and liabilities understanding the needs of a voting system. The review explores that various possibilities are free for making use of blockchain in diverse business sectors; yet, there are still some challenges to be addressed to achieve higher usage of this technology, with some advancements, this technology can prove to be a boon in near future.

1. INTRODUCTION

Voting has now become a way to make a collaborative and collective choice, or explicitly raise an opinion among a meeting or collection of electorates. During balloting, the person to be selected is the contestant of an election, and the individual that draws a poll for his or her chosen candidate is the voter. Since the beginning of the 17th century, voting has been the habitual apparatus by which present day democracy is operating. In this paper we propose a basic implementation of an e-Voting system using Ethereum blockchain. It is implemented using the Ethereum blockchain along with truffle and ganache at the backend. Users can connect to the system using metamask which is a Google chrome extension. Here, we have performed smoke tests for test cases for various scenarios such as the information verification of the contesting candidates, eligibility of the user to vote, maintaining the vote counts of the candidates and a check to avoid double voting.

Blockchain: Blockchain uses an associate network of computers to perform and validate transactions. Blockchain can be defined as an increasing list of blocks or records. They are connected using cryptography. The cryptographic hash of the last block is linked with the current block. In the Proposed System, we will use DApp (Decentralized application) made using a private blockchain.

Ethereum Platform and Ether: Ethereum is an operating system featuring smart contracts. It is a public, open-source, blockchain-based distributed computing platform Ether can be considered as cash. It is used to make transactions on an Ethereum Blockchain. There is no requirement of a third person to approve the transaction.

Node Package Manager: NPM is provided by Node.js. It consists of a command line client, NPM and an online database of public. NPM is used for installing the required node packages.

Truffle Framework: Truffle is the framework used for testing, building and deploying applications on the Ethereum network. It has some primary development frameworks for Ethereum smart contracts and decentralized applications (DApp) like Truffle and Ganache. Here we can Compile, Migrate and Run in order to compile the contracts, deploy them and run their unit tests. Thus it is an environment for development and a framework for testing and helps by providing project structure, files and directories.

Ganache: Ganache (Truffle Suite) is used to provide a modifiable local Ethereum Blockchain. Ganache provides a personal blockchain for Ethereum development which develops contracts and applications and also runs tests. It helps to perform all actions on the main chain without any cost. Ganache provides us with the external accounts, each account has a private key, which is used to log into metamask.

Metamask: Metamask is a chrome extension, it is used to access DApps that are ethereum enabled in your browsers. It allows users to manage and import accounts using private keys on their Ethereum wallets. It allows a user to interact with their DApps. Voters can connect to the application through metamask extension. Ethers or gas required to

Health Diagnosis Cross-Platform Application Development

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Abstract

In our society today, people all around the globe are having major health problems like Diabetes and Heart Problems or both, and there is a great need for risk prediction these problems people are having. Most of the time we are hacked with hassles of traveling and time from reaching the health practitioner. But our mobile phone can now help us bridge the gap where we can personally diagnose ourselves based on the risk of the above-mentioned problems. Today, mobile devices have changed how we conceive software. There is a great range of development alternatives. In this paper, we propose a health diagnostic system to monitor and predict the health parameters of a patient using machine learning algorithms and PhoneGap to implement a cross-platform mobile application. Supervised machine learning is the construction of algorithms that finds the mapping function between the input parameters and output values. Data Categorization from prior information is the aim of supervised machine learning classification algorithms. Classification is administered very frequently in data science problems. This paper will give us a clear understanding of PhoneGap, cross-platform mobile application, Prediction Analysis and also how this health diagnosis mobile application works in this context.

1. INTRODUCTION

The objective of the project is to make a cross-platform mobile web application that allows users to bridge the gap between the user and the health practitioner where we can personally diagnose ourselves in a less difficult situation as most at times we are cut up with the hassles of traveling and time from reaching the health practitioner. For more severe conditions like Diabetes and Thrombosis (Heart blockage - can result in cardiac arrest) as these are one of the most common major ailments any person has today, this project helps the user to check whether one has to visit the doctor or not as per the requirements of the patient. This app is available in four different OSs, namely, Android OS, Windows OS, and iOS.

For prediction, we are going to apply Supervised Learning Algorithms and train the model with the help of training data to accept some test data and predict the corresponding output accordingly.

2. METHODS AND TECHNOLOGY

2.1. Machine Learning

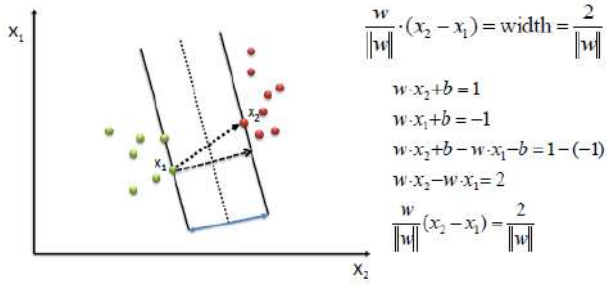
Machine learning (ML), a subset of AI, is the scientific study of algorithms and statistical models used by computer systems to perform selected tasks without using explicit instructions, calculating patterns, and inferring rules instead. In its application to business problems, machine learning is also referred to as predictive analytics.

2.2. Supervised Learning

Supervised learning algorithms build a mathematical model of a group of knowledge that contains both the inputs and, therefore, the desired outputs. Data were understood as training data and consists of a group of coaching examples. Each training example has one or more inputs, and therefore the desired output also referred to as a supervisory signal. There are many different types of Supervised Learning. Some of them are listed below.[1]:

2.2.1. Support Vector Machine:

In machine learning, support vector machines (SVMs, and support- vector networks) are standard learning models with related learning algorithms that analyze the data used for classification and multivariate analysis.During a high- or infinite-dimensional space, SVM builds a hyperplane or set



Equation of S.V.M

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PV Based Power Management system using Smart Inverter

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Abstract - *Many photovoltaic system has been using battery storage system in order to tackle the issue regarding the power.This paper also covers the losses involved in power transmission. Information about the photovoltaic system with battery storage has been included in it. The previously happened research has been also included in it. Inverter , solar panel, buck converter and battery bank are the 4 main blocks of the system mentioned in this paper. The circuits that we have made are also included in this paper for our reference. Our aim is to provide a detail view on the power management in the solar PV system.*

Key Words*: *PV battery, Inverter, MPPT, Transformer, microgrid, battery bank.

1.INTRODUCTION

As we all know that, there is scarcity of non-renewable resources such as petrol, diesel etc, which in turn increases the importance of renewable resources such as solar, wind and hydro. In the recent times the photovoltaic cell has become of great importance due to its characteristics like available in large quantity and clean nature. Due to this the installation cost of PV technology has been reduced significantly. Global warming is another reason for shifting to renewable sources of energy. The main application are household appliances, solar car, data communication uses PV power generation. But the main problem arrives is the power fluctuation in the PV system. At the same time this technology is difficult to implement due to its irradiance behaviour and continuously changing surrounding temperature. This is the reason that battery storage system is more coming into the picture.

The PV system stated in the paper consist of solar panel, an inverter, buck converter, battery bank. There are 2 paths in the system first which is directly going from solar to inverter and second one is from solar to battery bank to buck converter to inverter. This thing is necessary as in daytime we have the sunlight but there is no solar energy in the night. So, we stored the power in the battery bank for the night purpose. In past no of power management methods for PV battery system has been proposed in the literature. Some of them are discussed below. A wind PV battery-based energy management and control system has been introduced but the only problem it had was not being able to control the reactive power. After that another wind PV battery-based system cane into the picture which mainly focuses on optimization cost and size but it neglected the issue of dynamic power balancing, one more problem it had was it required huge data of past 30 years for power estimation by wind turbine and PV array. Another method was also proposed which focused on optimization instead of control methods. All of these methods were mainly focusing on power management between main PV battery unit and remaining generation units.

The system which is used to improve the power failure tragedy and also to improve the power quality of system is small scale microgrid. We have to study the stability and performance of PV battery system for the different loading effect, voltages and frequency. Effect of solar irradiance will result in the dynamic performance of the microgrid. Therefore, in order to have a stable system we need to modalized grid connected system. The very first step in the implementation is to model and to simulate the microgrid power system. PSCAD can be used to perform modelling. We can compare this microgrid to a rural hospital which requires 24*7 power supply.

The system we have implemented is earlier also implemented but with lots of losses occurring in their system. The similar system was implemented in [1] but in that project they have majorly focused own control and management and not on losses occurring in the system. The PV array we are using are considering its MPPT. We are going to place our solar at 20^0 inclination from ground considering the latitude longitude of Mumbai. At this inclination we are getting the maximum output from our PV array. This idea was discussed in [2] and in that they have also mentioned about MPPT which is discussed in section III. The grid which is discussed in [1] is of very high ratings whose implementation at college level is not possible so we have implemented a small scale microgrid taking the guidance of [3]. In [3] they have implemented a microgrid using both PV and wind turbine and have represented its simulation. We have implemented buck converter in the battery bank path whose guidance is taken from [4].

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Design and Performance Analysis of C-Band Water Antenna

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ABSTRACT: This paper proposes a dielectric water antenna which is compact, flexible, has low weight, high gain, directivity, and a wide bandwidth. The proposed design has been optimized for the structural values over a frequency range from 0.5 to 8.0 GHz. Distilled water has been used in the glass tube resulting in its significant size reduction. The simulated results have been analysed for statistical parameters (mean & variance). The results have been compared for three different materials used as dielectric layers such as RT-Duroid (6002-lossy), alumina and FR-4. Radiation patterns have been generated using CST 2019 to observe Main Lobe Magnitude, Side Lobe Magnitude, Angular Width and Angular Direction over a frequency range from 0.5 GHz to 8.0GHz. It was observed that dimensional variations of the proposed antenna play an important role in controlling its radiation parameters such as Gain, Main Lobe Direction, Angular Width and Side Lobe Levels. The simulated results for all the three materials used as dielectric layer exhibit a resonant frequency at 5 GHz for the selected dimensions. VSWR for fabricated antenna < 2 and S_{11} < –10 in 3.5 to 8.0 GHz frequency range. This antenna is much cheaper than those using the dielectric materials like mercury, eutectic gallium indium and liquid crystal. It has a much simpler design as compared to Dense Dielectric Patch Antenna (DDPA) which also uses water as a dielectric material.

Keywords: antenna performance, dielectric antenna, water antenna.

Abbreviations: CST, computer simulation technology; DRA, Dielectric Resonator Antenna; SMA, Sub Miniature Version A; VSWR, Voltage standing wave ratio; VNA, Vector Network Analyser; DDPA, Dense Dielectric Patch Antenna.

I. INTRODUCTION

An antenna serves as one of the most important components of any wireless communication system. Since its invention by Henrich Hertz in 1886, antennas have been constantly modified to meet the challenges of the era. Liquid antennas are becoming popular as they are flexible and reconfigurable [1, 2]. To harness these features of liquid antennas Monopole seawater antenna, half-loop water antenna with pump and water-loaded antenna were developed [3-5]. Various liquid materials, such as mercury [6, 7], eutectic gallium indium Hayes *et al.,* [8], liquid crystal [9, 10] and water [11, 12] have been used for implementation of antennas due to their properties such as liquidity, transparency etc. Among these materials, water has become the most popular one because of low cost, easy access, and safety. Water, when used for designing antennas can be of two types, salt water and pure water. The salt water is usually used as a conductor to support the current flow. Different water monopoles have been designed based on this idea [13, 14]. On the other hand, the pure water is commonly applied as a dielectric to construct dielectric resonator (DR) antennas [2, 15-16]. In Dense Dielectric Patch Antenna (DDPA), due to the transparency of the water dielectric patch, it was integrated with solar cells [17]. However the materials used in the above mentioned monopole antennas are much more expensive than the water antenna as described here.

Further the design of DDPA is much more complex than our fabricated water antenna. Madhav *et al.,* [21] designed and implemented a compact antenna on FR-4 substrate material, working in the range of for LTE bands at 1.95–2.04 and 5.92–7.2 GHz, and WiM87AX band 2.87-3.76 GHz. Xu *et al.,* (2013) [22] designed and implemented compact multiple frequencies monopole antennas by loading a set of complementary metamaterial transmission lines with impedance matching better than -10 dB. The metal parts of the antenna become lossy at high frequencies, thus dissipating energy [18]. The DRAs have lower losses as they have lesser metal parts. They are thus more efficient than metal antennas at high microwave and millimetre wave frequencies [19, 20].

Water antennas are a special type of DRAs. The antenna's size is given by $\lambda_0 / \sqrt{\varepsilon_r}$ where λ_0 is the free-space wavelength and ε_r is the dielectric constant of the resonator material. Water has a high dielectric constant, especially dielectric constant of pure water is 81. Thus the antenna's size gets considerably reduced. They are advantageous as they have reduced weight, exhibit excellent conformability as it is easy to make antenna of the desired shape which is difficult to achieve using other dielectric materials or metals. It is reconfigurable as the operational frequency and bandwidth can be controlled by altering height and radius of the liquid column. It can be turned off or drained when not in use. Even large water antennas are easily transportable.

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SLOT LOADED CAPACITIVE FED SUSPENDED RMSA WITH MEANDERED GROUND PLANE

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Abstract

In this paper, variations in the Capacitive fed suspended RMSA configurations have been proposed. Initially, the reference antenna consists of a rectangular patch of the size of (35.5 × 45.6) mm^2 and a small rectangular feed patch of the size of (1.4 × 4) mm^2 residing on the same substrate suspended above the ground plane. The coaxial probe is used to feed the small patch, which in turn excites the radiator patch electromagnetically, yielding a large impedance bandwidth (BW) of 39%, with good gain and broadside radiation pattern. By, meandering the ground plane of reference antenna with three rectangular slots, the prototype antenna is fabricated and measurement has been carried out to validate the result for a compact broadband response. Later, by loading a pair of rectangular slots in the radiating patch of the reference antenna in addition to the rectangular slots in the ground plane, the prototype antenna is fabricated and measurement has been carried out to validate the result for compact dual-band response.

Keywords: Coupled capacitive feed, Dual-band, electromagnetically, meandering slots, Rectangular microstrip antenna (RMSA), Reference antenna (RA), Slot loaded.

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AI BASED E-ASSESSMENT SYSTEM

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ABSTRACT

We have seen that a number of students apply for various examinations which may be institutional, non-institutional or even competitive. The competitive exams mostly have objective or multiple-choice questions(mcqs). The automation of scoring of subjective or descriptive answers is a need considered nowadays. Our objective is to design a system that can evaluate subjective answers as good as a human being. The paper presents an approach which focuses on the inference process required for development of such system. The assessment is based on the similarity measures between the answers. Based on the accuracy and importance of the features, weights are assigned to those features which help in calculating the result. Our system is able to assess brief answers efficiently. It aims at faster and flexible evaluation. Implementing such a system would be a step forward in the educational field.

KEYWORDS: E-assessment, Subjective Answer, Cosine Similarity, WMD, Wordnet, Grammar, Jaccard Similarity.

1. INTRODUCTION

Examination is a test of a person's knowledge in a particular area which is either subjective or objective or both. Usually, competitive examinations consist of multiple-choice questions or mcqs. Automatic evaluation of the objective exams is beneficial as it saves time, provides efficiency, reduces usage of resources. However, this automated evaluation technique is only for the objective exams and not for the subjective ones. Subjective answer sheet checking is one of the huge administrative tasks for any education institute. In this examination process, candidates need to write answers, an examiner collects those answer sheets and submits them to authority for further checking process. This process involves 3 levels of paper checking: -

- First Level Paper Checker,
- First Level Moderation,
- Second Level Moderation.

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Engineers Guide: Recommendation System

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Abstract: Several studies have reported the importance of co-curricular and extra co-curricular activities in college along with a good academic score; however, reprogramming this into the current Education system is yet to be accomplished. The paper describes an overview of the website which helps the end users in the above mentioned problem. Firstly, a recommendation engine enables the user to rate a particular book and get recommendation according to his rating. Secondly, along with the recommendation the paper also provides an event forum displaying all the co-curricular events in the college. Finally, using web crawling and scraping techniques web content of different hackathon events from different sites is obtained.

Keywords: Collaborative filtering, Content based filtering, Recommendation system, Scraping.

1. INTRODUCTION

Recommendation system for the books will be implemented as books play the most important role in any student life. Strong academic score cannot be achieved without books. Books help the students to understand the concept in the best possible way. Many of them have their own recommendation system to recommend books to the buyers. This paper presents a new approach for recommending books to the buyers. This system combines the features of content filtering and collaborative filtering to produce efficient and effective recommendations. Extra curricular activities are important for everyone with respect to grade or standard. Extra curricular activities just don't improve students skills but also develop their brain. It is found that students who performed different extracurricular activities were a bit smarter and had overall developing skills. Also, there is a chatbox and forum section using which customers can communicate with each other and resolve their queries. Also, there is a scraping section where users will get to know about upcoming hackathons along with necessary details.

1. **Rating based input**: Different users of the website will rate the books according to their liking and depending upon that, new users will get suggestions of those books.
2. **Content based input**: At the time of signup, the users have to enter their details along with their branch and depending upon that also, the users will get suggestions.

2. Content Based Recommendation

Content based recommendation is the most common method used for recommendation. The basic operations performed by a content based recommendation system consists of various factors like matching user various data like location, age, gender, branch and rated items list on the site stored in his account with similar items having common specifications, in order to recommend new items meet the users interests. Content based recommendation is usually based on two approaches that is Analysing the description of the items and Building users profile and item profile from user rated content.[2]

1. **Analysing the description of the content :** In this approach, the system will suggest anything similar which the users had liked before. The content of the books which the user has gone through, will be compared with all the remaining books which are present in the database and the books which matches successfully will be recommended to the user.

Blockchain Based Digital Certificate Generation and Verification System

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***Abstract*— Each year millions of students graduate. A large number of students apply for higher studies and interview posts where they need to submit their mark sheets and other certificates. The issuer (graduate institute) goes through a laborious task generally manually, to maintain and share. And also verify the certificates to the applying organization if at all. Currently there is no proper system of verifying the certificates from the graduate institute. Also, academic institutes have been having a long-standing issue with counterfeit of certificates. This issue can be addressed by creating Digital Certificates or E-Certificates. Digital certificates can be generated using the blockchain technology with QR-code embedded on each certificate. To address the verification problem, the verifier would have to just scan the QR- code and validate it. This concept will help educational institutions and other service sectors like healthcare, bank to verify certificates of a particular individual in very less time, effortlessly and in a cost-effective manner.**

***Keywords*— BlockChain, Digital Certificate, QR code, Verification, Ethereum.**

I. INTRODUCTION

A. Background Information

Blockchain has emerged as one of the promising technologies and has been growing rapidly, with its applications on a wide range of domains. A blockchain, is a growing chain of records called blocks, that are linked and secured using cryptography [2]. Each block contains data, a cryptographic hash of the previous block providing a secure linkage between blocks, a timestamp to validate etc. It is a decentralised system where the data is distributed among various participants referred to as Nodes. Every node has a consistent copy of data. Consequently, the nodes maintain the database together. A new block becomes validated only once it has been verified by multiple parties which are binded by a set of rules called Smart Contracts, making addition of new blocks secure and structured. Smart contracts are a set of rules that run on blockchain in a form of a computer program [1]. Furthermore, making modification to data arbitrarily very difficult.

B. Rationale

The students graduating either choose to continue their studies or go hunting for jobs. In both the cases they are required to submit their certificates. A couple of times students find that they have lost the certificates and they need to reapply which is a long procedure and has to go through multiple verification taking a lot of time. Also considering increase in forgery of documents, the organization to which the certificates are submitted find it difficult to verify the certificates [5]. There is no effective way to check for the forgery.

C. Objectives

To address the issue of distribution and verification of certificates we propose a decentralized application that does Digital Certificate Generation and Certificate Verification module. An effective solution by integrating the concept of Blockchain and QR code has been proposed. The system saves paper, cuts management costs, prevents forgery, and provides accurate and reliable information of certificates.

II. LITERATURE SURVEY

Blockchain technology has a wide range of applications and its own challenges. The comprehensive overview on blockchain technology with blockchain architecture provided by P. Tasatanattakool and C. Techapanupreeda [6] and the key characteristics of blockchain by Z. Zheng, et al [9] inspired us to adapt Blockchain for application development. Smart contract technology is reshaping conventional industry [10]. One of the most important features of blockchain is the security it can provide for the data [8]. Hence, we use blockchain for verification of stored data and document forgery can be reduced.

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BEACH CLEANING BOT

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Abstract - *A bot to be controlled wirelessly using an android application can be advantageous in the scenario of an unclean beach. A bot capable of collecting garbage in a beach environment can help reduce manpower. The usage of a camera to detect garbage can help in reducing the power consumed by the bot and can help intelligently collect garbage. Detection of garbage is acheived by using high efficiency tensor flow models whereas control of the bot and other actions is done with the help of a Raspberry PI.*

Key Words: Raspberry Pi, Object Detection, Android application, Beach cleaner bot.

1. INTRODUCTION

In countries like India which are known for their beaches, the main problem arises when the people overpopulate the beach and start littering the surface of the previously clean beaches tampering the beauty of those tourist spots. We were inclined towards this idea when we had worked for an NGO previous year during the Ganpati festival. The beaches were overloaded with litter and cleaning it required a team of 100 plus social workers. So, we realized the idea of making a beach cleaning robot that will be controlled via radio frequency and would reduce the work of 100s to a handful of people.

1.1 Problem Statement

Once a wise man said, "Cleanliness is next to Godliness", rightly said! We all love being in a clean, elegant and pleasant smelling surroundings. Who likes being in a dirty environment. However, in an overpopulated country like India, it can at times be difficult to maintain clean surroundings and with so many tourist spots in the country, it becomes all the more difficult to keep the places clean.

Cleaning beaches is a growing problem these days. NGOs and other non-profit organizations are working very hard to clean beaches. However, it takes a lot of manpower, volunteers, and motivation to clean beaches by hand. It is not possible to clean all the beaches in the country considering the number of NGOs taking part in the initiative. This leads to several problems with the environment. Lack of cleanliness in beaches leads to several environmental problems such as water body pollution. If this problem is not solved as early as possible, it will lead to many other problems such as mass water living creature deaths, that take place due to various non-decomposable waste such as plastic, thermocol, etc.

This problem arises mostly during the time of festivals such as Ganesh Chaturthi, Navaratri when large idols made up of Plaster of Paris(POP) are immersed in the water. The number of idols immersed is going up and POP does not do well with water. Idols after immersion appear again on beaches the next day, leading to a lot of garbage that has to be removed by hand by volunteers from NGOs. This task is very time consuming and requires a lot of manpower.

In spite of the number of organizations and NGOs that come to the scene to clean the beaches, the problems do not cease to stop. Hence it is necessary to build a system or a device that automates the entire cleaning process and can also be monitored.

This device will help the organizations largely to improve the beach cleaning process and hence will be a boon for the society. This device will also be helpful to monitor a lot of metrics that play an important part in making decisions by the organizations.

1.2 Objectives

Our main objective for building this project that is beach clean is to reduce the manual work of cleaning the beaches done by the cleaning officials. As the beaches in India are mostly littered and people do not through the garbage like plastics, bottles and many things and the especially during the time of Ganesh festival the people immerse the Ganesh idol in beach water, the idols are mostly made up of Plaster of Paris which does not dissolve or submerge into the water and float out the waters,and stack up that shores which increases the work of cleaning. Cleaning in that month is quite treacherous for the cleaning officials.

2. LITERATURE SURVEY

There are very few systems that have been developed so far. These systems basically use an entire mechanical mechanism to collect garbage. The systems use a lot of energy and do not provide remote monitoring and different modes of operation. Existing systems haven't done a lot for the well being of the NGOs as they are quite

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A pulse generation system based on new method for testing performance of high-resolution nuclear spectroscopy systems

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The paper presents a design and construction of uniform amplitude pulse generator for testing Differential Non-Linearity (DNL) of high-resolution nuclear spectroscopy systems. The paper describes two methods based on two new techniques called DAC Interpolation and Analog Multiplexer based design. A prototype of DAC interpolation technique has been designed and tested. **The method based on analog multiplexer and chain of resistors is simulated and the results of which is reported in the paper. The systems produce pulses with step size of 10 microvolt (μV), making them capable for calibrating spectroscopy systems with the resolution as high as 13-bit (8K). The systems are designed using commercially available components. The pulse generation system provides import substitute for commercially available imported models.

Keywords: Uniform Amplitude Pulse Generator, Multichannel Analyzer, Nuclear Instrumentation, High-Resolution Nuclear Spectroscopy Systems, DAC Interpolation, Analog Multiplexers-Chain of Resistors.

1 Introduction

Calibration is an important step to ensure the reliability of the result of any instrument. Calibration of the instrument has to be done on a regular basis for getting accurate results. Testing and calibration of nuclear spectroscopy system are carried out by either conventional method that exercises standard radiation sources and radiation detection setup or by using Nuclear Pulse Generator[1]. The two important linearity parameters, Integral Non-Linearity (INL) and Differential Non-Linearity (DNL) of nuclear spectroscopy systems are validated using nuclear pulse generator. Nuclear pulse generator comprises of Uniform Amplitude Pulse Generator (UAPG) and Precision Pulse Generator (PPG) for testing of DNL and INL of the spectroscopy system, respectively[2]. The calibration system should have better linearity and resolution compared to the system under test.

The UAPG is used for testing the performance of High Resolution MCA (Multichannel Analyzer) as shown in Fig. 1. For this purpose, the output at UAPG is fed to MCA. And the graph of counts collected in individual channels of MCA over a period of time is plotted as shown in Fig. 1.

For the variation in the number of counts in individual channel from their average value gives the DNL performance of MCA. The INL can be calculated based on these DNL spectrum. UAPG can also be used to test the linearity of Analog to Digital Converters.

To test or validate a spectroscopy system, UAPG must generate linear sweeps of duration of few seconds to hundreds of second as shown in Fig. 1. Various analog and digital methods described in the literature for generation of linear ramp are not suitable for calibration and testing of High-resolution nuclear spectroscopy systems[3,4].

Analog methods rely on the use of capacitor as a major component or operational amplifier as an integrator with capacitor in the feedback path[5]. Analog methods need low charging current in pico-amperes and high value of capacitor to generate long sweeps. Leakage current of capacitor and bias current of operational amplifier are significantly large as compared to the charging current (pico-amperes) that affects the linearity of the ramp. Also, minimization of leakage current and bias current requires special techniques and components.

Digital method like Digital Synthesis (DDS) cannot generate step pulses of amplitude other than the resolution provided by Digital to Analog Converter (DAC). It is also dependent on DNL error of DAC and is prone to jitters[6].

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DreamDom - AR based Furniture Application

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Abstract - *The Proposed study focuses on how Augmented Reality can affect E-commerce and thus providing the best solution for the problems faced by the customers while purchasing the products online. The customer will not only be able to buy the product but also try it virtually. Thus, following the try before buy with the help of Augmented Reality will help the users as well as the E-commerce thus assuring the increased sale as well as the competition.*

Keywords - Augmented Reality, AR SDKs, Sceneform SDK, ARCore, 3D models.

1. INTRODUCTION

"DreamDom" will be a perfect implementation of augmented reality. "DreamDom" will have various functionalities like providing a 3D view of different furniture objects around you in the real world. The customer will not only be able to buy the product but also try it virtually. Thus, following the try before buy with the help of Augmented Reality will help the users as well as the E-commerce thus assuring the increased sale as well as the competition.

Fig -1: DreamDom logo

Do you remember the time, when you were buying a chair, a carpet, or anything else? Remember how excited you were about the fortunate purchase, rushing home and finding out that an item did not fit the room and there were only two further options: either return the goods and go back to the start, or leave and live with it. Fortunately, with new technology advances and stuff like AR i.e. Augmented Reality, these times are gone. Selecting colors for the interior, choosing a drawing or a model of a room, staging it with the furniture. Essentially, AR is a technology which enables us to render the computer-generated 3D object models into the real world and have it interact with its surroundings as if it were physically present at the same location. The proposed paper can be called as the furniture retail guide to the users of what the chair would look like in our living room before making a purchase. A few years ago, developing AR applications meant learning OpenGL and complex vector math. In 2018, Google released the ARCore along with the Sceneform SDK for android in order to make AR development easier for everyone. ARCore is a platform for building Android AR experiences. It enables your phone to sense its environment, understand the world and interact with the information. ARCore in itself isn't an SDK, rather it is an engine that helps SDKs to render the objects. Hence, in order to make use of this functionality, Google released Sceneform SDK to enable developers to build Android AR applications.

2. LITERATURE SURVEY

Augmented Reality is a technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite view. Augmented Reality can be implemented using various Software Development Kits (SDK's). The comprehensive study about the use of various SDK's and about Augmented Reality and how it is different from Virtual Reality by Dhiraj Amin and Sharvari Govilkar [1]. The use of Augmented Reality in classrooms, basically studying the opinions of teachers using the marker-based AR application. The Project proposed and studied by Irfan Sural [2] showed that the teacher candidates were very

MAHINE LEARNING BASED COPY MOVE VIDEO FORGERY DETECTION

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Abstract: The consumption and utilization of Multimedia in different digital formats is increasing across the globe. The Videos provide immediate and substantial visual and communicational opportunities than any other form of digital media. Thus with it's proliferate use, the chances of its misuse also increase. The Video forgeries are largely affecting the videos available online and offline. A forgery of a single visual element may lead to severe misrepresentation and misunderstanding of the underlying data. Thus detecting video forgeries is of utmost importance in the current scenario. This paper suggests the detection of copy paste forgery using motion and machine learning concepts. This paper concentrates on Motion-Based Multiple Object Tracking, analysis feature coefficients of HOG, Blurriness and Chromaticity, of which feature vectors are generated and given as an input to Support Vector Machine(SVM) for classification as Forged and Original.

Keywords: Video Forgery, Object Tracking, HOG, Blurriness, Chromaticity, Support Vector Machine.

I. INTRODUCTION

In the digital epoch, creation and distribution of Video forgery is easier due to the availability of Video editing software's coupled with high speed internet. Even a usual user can create a forged digital video and proliferate it over the Internet web. Thus Digital video forgeries exploit various attributes like color, brightness, resolution etc. The Video forgery detection aims at authenticating the video by validating its history and content attributes.[1]

There are different types of forgeries which can be basically classified into two types: Whole frame forgeries and Object forgeries. The Whole-frame forgeries include addition, deletion and replication of frames which is easy to perform and restricts the set of forgeries to be performed on the video. Object forgeries alternatively deal with addition or deletion of objects in the video. Object forgeries might even have a straight effect on the observer's interpretation of the video content. They are more sophisticated, flexible and difficult to perform compared to the traditional compression or frame based forgeries. In the context of Video Forgery, Copy-move forgery (CMF) is a simple forgery method that implies copying and moving a part or entire object in the frame to a new location in the same frame accompanied with some post-processing operations. The Copy Move Forgery Detection (CMFD) techniques are computationally expensive and bring about high false positives, and use high correlation between original and forged parts of the video frames to detect and determine copy paste forgery.[2] However since the source and the targets are part of the same video frame the properties like colour, brightness, illumination, noise etc are presumed to be efficiently matched in the forged regions. This characteristic is utilized in many CMFD algorithms [3]

This paper proposes a CMFD method based on the Passive approach for Video Forgery Detection. For this the video is firstly divided into selective key frames by using the concepts of Multiple Object Tracking. From these frames the HOG, Chromaticity and Blur features are extracted based on the physics and statistical properties of each frame. The feature vector thus formed is provided as an input to the machine learning classifiers, SVM(Support Vector Machine) and KNN(K Nearest Neighbor). The Machine learning approaches makes automatic decision regarding the video and classifies it to be genuine or forged. Thus the objective of this paper is to develop a method to detect the copy move forgery and to classify the test samples into Forged or Original.

II. PROPOSED METHOD

A. Motion-Based Multiple Object Tracking

This paper aims at detecting CMF which is a kind of object forgery hence the first step is object detection. Object detection, a pre-requisite for initializing a Motion based object tracking process, refers to locate the object of interest in every frame of a video sequence.[4] Optical Flow, Frame differencing and Background Subtraction(BS) are the three procedures for moving object detection. Here Background subtraction is chosen as it is relatively suitable for motion based object detection from a static background and stationary camera.

The background subtraction algorithm to detect moving objects is based on Gaussian Mixture Models. The BS algorithm divides the video frame into foreground and background. We are interested in foreground as it gives us the required moving objects and helps us in object detection. Noise is eliminated using morphological operations on the foreground mask. Corresponding moving objects are detected using blob analysis. Object detection is based totally based on motion and motion estimation is done by Kalman Filter. It predicts location of tracks and likelihood detection being assigned to each individual track in each frame. Track maintenance is done by the multi Object Tracker object in MATLAB. The output of Motion-Based Multiple Object Tracking is a series of frames of unique tracks. These frames are then used as targets in the experiment for further procedure and analysis.[5]

B. Feature Extraction

Feature extraction aims at extracting the appropriate information from the videos and present it in low dimensional space. Feature Extraction is basically performed when the data to be processed is to huge and redundant.[6] A large video database is converted to a set of features during Feature Extraction. Feature extraction algorithms use a common extraction method which are either by key point based or block based feature extraction mechanisms.

New Computer Controlled High Resolution Programmable Validation System for Research in Electronics Hardware

Nilima Warke, J. M. Nair, P. P. Vaidya

Abstract: ***Conventional methods for validation of electronics hardware research are susceptible to manual measurement errors, and give limited accuracy of 8 to 10 bits. These methods are also time consuming and do not ensure accuracy in validation of performance parameters. Hence, a new computer controlled high resolution programmable hardware research validation system has been proposed here for testing the electronics hardware systems. The test signals with high resolution (16 bit) and high accuracy are generated using multiplying digital to analog converter (MDAC) with high reference bandwidth. The output signals are measured with the same resolution and accuracy using 16 bit analog to digital converter (ADC). The output data is transferred to the PC through USB interface for further analysis using Teensy 3.6 card. The signals can be generated in bandwidth of 0-10MHz in step size which can be as small as 10µV and as large as 600mv which is user programmable. This proposed system has been designed, constructed and tested. The experimental results of this system have been reported here which ascertain the performance of the system. With this system, manual errors in measurement are avoided and testing time is significantly reduced. The reported system is low cost economic solution for validating the electronic research work in academic institutes.***

***Keywords*: Computer controlled validation, electronics hardware systems, fast testing time, high resolution measurement**

I. INTRODUCTION

Electronic hardware systems are often designed and constructed based on new concepts and methods during research work in field of electronics engineering. The performance of these hardware systems needs to be validated for the input-output relationship for which these systems are designed. During conventional testing, a set of test signals are applied to the inputs of the device under test (DUT) and the output responses are analysed [1][2]. The basic testing system is as shown in Fig. 1. Devices can be tested manually and automatically [1]. Conventional methods for validation of hardware research involve use of function or pulse generator, digital storage oscilloscope (DSO), high resolution digital multimeter (DMM) etc. for measurement of input and output signals.

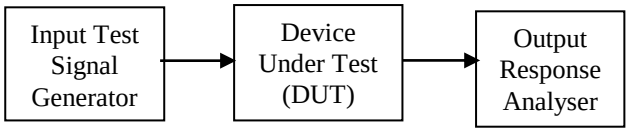

Fig. 1: Basic Testing Approach

Manual testing typically requires function/pulse generator for test signals and DMMs, DSO and frequency analysers to observe the output Test input signals are generated using signal generator units with sine square and triangular waveforms amplitude of which can be adjusted with the resolution of few millivolts. Signal generators provide precise, highly stable test signals for a variety of components and systems testing purpose [3]. Direct digital synthesis (DDS) and point to point (PxP) techniques are used in signal generators [4],[5]. DDS involves switching of digital to analog (DAC) code resulting into spikes (jitter) in the output [5]. PxP uses digital filters along with switching code [4] which increases the complexity of circuit.

DMM measure only DC with 3 1/2 to 8 1/2 digit accuracy, DSO measures AC with limited accuracy of 8 to 10 bits. To analyse the frequency response, spectrum analysers are also used. DSO and analyser have limited storage capacity.

These methods of validation give limited accuracy of 8 to 10 bits and are susceptible to manual measurement errors. These methods are also time consuming and do not ensure accuracy in validation of performance parameters [6].

When a new hardware is developed as a part of research work, it needs to be tested thoroughly for expected input-output relationship. For this purpose, many times it is required to give the input signals in steps of few microvolts over a wide bandwidth of nearly 0-10MHz. It is quite clear that the conventional measurement systems described earlier are not able to meet these requirements. Hence these validation methods are often questioned by expert research workers in this field. The integrated test systems which are commercially available from reputed manufacturers like Tektronics, Keysight etc are very costly (around Rs 15lakhs more) and don't give high resolution and accuracy of 16 bit which is required for precise measurement. So, there is a need of new hardware research

validation system which should be able of generate the test

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Common Mode Voltage Removal using New Balancing Technique for Extraction of Low Level Differential Signals Embedded in Large Common Mode Voltages

Nilima Warke, J. M. Nair, P. P. Vaidya

Abstract*: The paper proposes a method based on new principle for removal of common mode voltages (CMVs) present in the differential signals [#]. These CMVs can be reduced nearly to zero without using any components with tight tolerances which is achieved using a new balancing technique. It is proved that the performance of the circuit depends only on the ratios and not on the individual values of the resistors because of which the performance of the circuit is not affected over the wide range of temperature. The circuit based on this principle was designed, constructed, tested and results are reported in this paper. Unlike the conventional techniques which use filters for removal of the common mode signals in specific band of the frequencies, the method reported here removes common mode signals of all known and unknown frequencies. Using this method, it is possible to extract very low values of the differential signals in the range of few microvolts where common mode voltages can be as high as few volts. It is possible to improve the effective common mode rejection ratio (CMRR) of any differential amplifier by a factor of more than 10^3 to 10^4 with this method.

***Keywords*: Balancing technique, common-mode rejection ratio, common mode voltage removal, differential amplifier, instrumentation amplifier.**

I. INTRODUCTION

In many applications, it is required to amplify the extremely weak differential signals (AC+DC) in presence of large common-mode signals [1]. For example, in biomedical applications, the actual differential ECG signal that appears between the electrodes in any lead configuration is generally limited to ±5 mV in magnitude and 0.05 Hz to 150 Hz in frequency with an additional DC offset which can be as high as 300 mV due to the skin-electrode interface. In addition to these two signals, the human body can pick up large interference signals from power lines, fluorescent lights, and so forth [2]. This interference can appear as either a normal-mode signal or a common-mode signal as shown in Fig. 1.

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In general principle of amplification of differential signal is also associated with amplification of CMV signal by very small factor known as common mode gain [3] as shown in Fig. 2 where, Vid =(Va –Vb)- which is differential voltage to be measured.

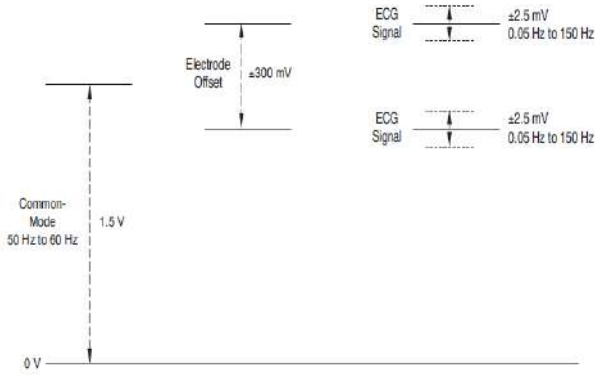

Fig. 1: ECG signal characteristics [2]

Here,

Vcm- Common mode voltage,
Ad – Differential gain
Acm – Common-mode gain
Vo- output of the amplifier.

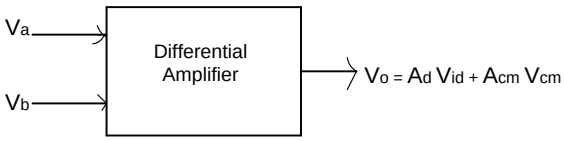

Fig. 2: Typical Differential amplifier configuration

There are several techniques which are utilised for reduction of CMV due to power line interference of known frequency using driven right leg circuit, notch filter, adaptive filters and Digital FIR filters as reported in [4]-[9]. These methods are effective for the narrower frequency band to get tolerable amplitude and phase distortion. However, there are certain applications where it is not possible to reduce the CMV as given in the following example.

In many sensors processing applications very small changes in resistances are required to be measured using bridge configuration which results into low differential voltage in presence of large CMV [10]. This CMV can be as large as 5V for a supply voltage of 10V for the bridge configuration as shown in Fig. 3.

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Measurement of neutron induced reaction cross sections of palladium isotopes at the neutron energy of 14.54 ± 0.24 MeV with covariance analysis

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Abstract

The $^{110}Pd(n,2n)^{109}Pd$, $^{102}Pd(n,2n)^{101}Pd$, $^{105}Pd(n,p)^{105}Rh$ and $^{106}Pd(n,p)^{106m}Rh$ reaction cross sections have been measured with respect to the $^{197}Au(n,2n)^{196}Au$ monitor reaction at the neutron energy of 14.54 ± 0.24 MeV by using the method of activation and off-line γ-ray spectrometry. The mono-energetic neutron beam was

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Additional information

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Measurement and covariance analysis of ^{100}Mo (n, 2n) ^{99}Mo and ^{96}Mo (n, p) ^{96}Nb reaction cross sections at the incident neutron energy of 14.54 MeV

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Abstract

The ^{100}Mo (n, 2n) ^{99}Mo and ^{96}Mo (n,p) ^{96}Nb reactions have been studied relative to the ^{197}Au (n, 2n) ^{196}Au monitor reaction, at the neutron energy of 14.54 MeV, based on an experiment performed using Purnima neutron generator. Extended unscented transformation technique has been applied for computing the contribution of uncertainty of each attribute, which is then propagated, for the measurement and covariance analysis of the cross section of ^{100}Mo (n, 2n) ^{99}Mo and ^{96}Mo (n, p) ^{96}Nb

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Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment

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Error Propagation using Extended Unscented Transformation Technique in Micro-correlation method for covariance analysis of efficiency of a HPGe detector

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Abstract

In this paper, an extension of the unscented transformation (UT) technique namely, the extended unscented transformation technique (EUT) is applied, for the first time, for determination of the partial errors in each of the attributes in the efficiency of High Purity Germanium (HPGe) detector. The partial errors are then propagated using the micro-correlation method of Geraldo and Smith, 1990 in order to determine the mean and covariance matrix of efficiency of HPGe detector using a standard ^{152}Eu gamma-ray source, for an experiment performed at Purnima reactor, Bhabha Atomic Research Centre (BARC), Mumbai. It is found that applying EUT technique for the generation and use of covariance matrix in nuclear data is relatively simpler and can be extended easily to any number of attributes as the procedure involved is the same, irrespective of the number of attributes.

Introduction

Uncertainty propagation and covariance analysis play an important role in various nuclear areas such as, nuclear design calculations and analysis of reaction cross section measurement. The most popular method of error propagation is the first order perturbation theory based approach also known as Sandwich formula. A lot of studies are being conducted in covariance analysis in varied fields like nuclear science [1], [2], [3], [4], [5], [6], [7], [8], [9] and biomedical engineering [10], [11]. Total Monte Carlo method is also being used increasingly, in recent times [12], [13].

Efficiency calibration of HPGe detector is usually the first and primary step in measurement of activation cross sections induced in nuclides by photon, neutron and charged particles using γ-ray spectrometric technique of the respectively formed radioactive nuclide.

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High resolution nuclear timing spectroscopy system based on new method of free running ramp and tracking ADCs

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Received 23 March 2020

The paper describes a new method for high resolution nuclear timing spectroscopy system using tracking ADCs and free running ramp to give the timing resolution of few ps over wide dynamic range of time interval extending up to few μs. The method makes use of tracking ADCs with 16 bit resolution with low conversion time of nearly 1 μs along with a free running ramp which is given as input to the two ADCs. Both the ADCs and ramp are designed to track their characteristics in order to neutralize the errors due to drift in their characteristics and hence complex system of spectrum stabilization is not required. ADC1 digitizes ramp input at the arrival of START pulse and ADC2 digitizes ramp input at the arrival of STOP pulse. The difference between digital codes of these ADCs is a measure of time interval between START and STOP pulses. New system doesn't require delay and hence biased amplifier. System has dead time of 1 μs and spectrum stabilization is easy.

Keywords: Nuclear timing spectroscopy system, Time interval measurement, Tracking ramp, ADCs

1 Introduction

Time interval measurement is required in various applications of science and technology domain, e.g., lifetime measurement in atomic energy and physics, distance measurement in laser ranging systems, time interval measurement in nuclear timing spectroscopy system[1-4]. Time interval (TI) between two signals arising from two nuclear detectors needs to be measured in conventional nuclear timing spectroscopy system, as shown in Fig. 1. Detectors produce analog pulses corresponding to incident energy of the radiation, which are further processed by Time Pick-off circuit. Time Pick-off circuit produces digital pulse at its output at the time instant which is strictly correlated with the occurrence of the input pulse. Pulses available from Time Pick-off circuits are given as START and STOP input pulses to Time-to-Amplitude-Converter (TAC). TAC produces the output voltage which is proportional to the TI between START and STOP signals. This voltage is digitized using MCA and timing spectrum is developed. For proper operation of TAC, STOP pulse is delayed using delay component which ensures that the STOP pulse will always occur after the START pulse. Because of this delay, the timing spectrum is shifted in time domain. To obtain better resolution with the limited number of channels of MCA, biased amplifier is used. The performance of conventional timing spectroscopy system is limited by efficacy of Time pick-off, TAC and MCA. To address these issues, integrated system using single ADC was proposed[5].This system doesn't make use of biased amplifier. However, the need of delay circuit still exists.

So to overcome this limitation, new system with Two Tracking ADCs is proposed in this paper.

2 New System

Free running ramp generation circuit produces periodic ramps of time period of 25.6 μs refer Fig. 2. The duration of the ramp and its frequency are governed by pulses applied to operate the analog switch. In order to obtain the stable ramp duration and its frequency, these pulses are generated using crystal controlled oscillator and counter ICs. START and STOP pulses can occur during this period, as shown in Fig. . Ramp is given as input to two tracking ADCs. At time instant T1, ADC1 receives start conversion command i.e. START pulse. ADC1 code is accessed using micro-controller ARDUINO-DUE and corresponding data is stored in the computer. Similarly at T2 time instant, ADC2 receives start conversion command i.e., STOP pulse. ADC2 code is accessed using micro-controller and stored in the computer. The difference in two digital codes is proportional to the TI. In case, when the STOP pulse arrives after START pulse, the digital code D2 will be more than D1. However when STOP pulse arrives before START pulse, the digital code D2 will be less

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Measurement of ^{100}Mo (n, 2n) ^{99}Mo reaction cross section and covariance analysis using extended unscented transformation technique at the incident neutron energy of 13.9 MeV

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In this paper, the measurement and covariance analysis of the cross section of ^{100}Mo (n, 2n) ^{99}Mo reaction, with the ^{197}Au (n, 2n)^{196} Au reaction being used as the monitor, at the incident neutron energy of 13.9 MeV is reported. The ^{3}H (d, n) ^{4}He nuclear reaction is used as the neutron source. The experiment was performed at the Purnima neutron facility, BARC. The method of activation with off-line γ-ray spectrometry is used. The covariance analysis of the ^{100}Mo (n, 2n) ^{99}Mo reaction is also performed, for the first time, using the extended unscented transformation (EUT) technique[1], which is an extension of unscented transformation (UT) technique[2], for the determination of partial uncertainties arising due to attributes in combination with the micro-correlation technique of Geraldo and Smith[3]. The present results obtained for ^{100}Mo (n, 2n) ^{99}Mo reaction cross section are found to be in good agreement with EXFOR data and the theoretically calculated value using the TALYS 1. 8 code. Comparisons with the data in the available basic evaluated nuclear data libraries, such as ENDF/B-VIII.0, JEFF-3.3, JENDL-4.0, ROSFOND-2010, CENDL-3.1 and TENDL 2017 are also presented and discussed.

Keywords: Extended unscented transformation, ^{100}Mo (n, 2n) ^{99}Mo activation reaction cross-section, Off-line γ-ray spectrometry, Covariance analysis, TALYS 1.8, ENDF-B/VIII.0

1 Introduction

The technique of determination of reaction cross sections by the measurement of the activity produced in the sample after irradiating it with a beam of particles is known as activation technique. In this technique, the reaction cross sections are calculated using direct attributes, such as counts, gamma ray intensities, half-life, irradiation time, cooling time, counting time and other auxiliary attributes such as atomic mass, isotopic abundance and many others. Many of the attributes are associated with uncertainties that further propagate through the functional relationship and ultimately lead to the final uncertainties in the reaction cross sections[4].

Among the various uncertainty propagation techniques, the Monte Carlo (MC) method gives the best estimate for the uncertainties propagated through nonlinear transformations. However, it involves propagation of large number of histories through nonlinear transformations resulting in huge amount of computations. The Unscented Transformation (UT) method, is another uncertainty propagation technique which finds extensive applications in error estimation studies. This technique works on the two basic principles, namely that instead of propagating the entire probability density function (pdf) through a nonlinear transformation, it is easier to propagate a set of individual points called sigma points and secondly that it is easier to find these sigma points which have a sample pdf that closely approximates the true pdf of a state vector[5]. So, in the UT technique, sigma points are nonlinearly transformed rather than nonlinearly transforming the entire pdf. Depending on the nature of nonlinear transformation and its application[5], there are different forms of UT techniques based on the principle used in the selection of sigma points. In our earlier paper[6]it has been established that the extended unscented transformation (EUT) technique, which is a form of unscented transformation, gives results, for higher moments, in better agreement with the Monte Carlo method than the unscented transformation technique and so is much better than the UT technique for large nonlinearities and high uncertainties.

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University Marksheet Verification using Blockchain

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Abstract— **This document illustrates the use of Blockchain technology to prevent the alteration of the university mark sheet. According to various researches during the course of education, the students achieve many certificates. Students produce these certificates while applying for jobs in jobs in many sectors like finance, healthcare, technology etc.where all these certificates are needed to be verified manually. There can be incidents where students may produce a fake certificate and it is difficult to identify them. This problem of fake academic certificates has been a longstanding issue in the academic community. Because it is possible to create such certificates at low cost and the process to verify them is very complex, as they are manually needed to be verified. This problem can be solved by storing digital certificates on the Blockchain. The Blockchain technology provides immutability and publicly verifiable transactions, these properties of Blockchain can be used to generate the digital certificate which is anti-counterfeit and easy to verify.**

Keywords—Blockchain, Decentralization, Smart Contract, Ethereum, Ledger, Data Privacy,Data Security.

I. INTRODUCTION

Every year around a million people graduate[1]. Graduation certificates and mark sheets contain information confidential to the individuals and should not be easily accessible to others. Hence, there is a high need for a mechanism that can guarantee that the information in such a document is original, which means that the document has originated from an authorized source and is not fake. Verification of mark sheets is a tedious process for the industries to carry out, which often involves contacting the respective universities/colleges to cross verify the mark sheets. Any particular industry needs time to authenticate if the certificates of any student are genuine. In the blockchain, there is no centralized ledger but we use a decentralized ledger that means the same data is present with the members of that blockchain. This data is always kept updated with its transaction. First, the mark sheets of students will be created. The higher authorities will authenticate the digital certificate and will mark it with a digital signature and it will be given to the student and its cryptographic hash will be stored on the blockchain. We are going to produce the decentralized certificate verification application on the Ethereum Blockchain. We choose this technology because it is traceable, tamper-proof, and encrypted. By integrating the blockchain technology we will be able to eradicate the problem of fake certificates. We will use a smart contract at the backend to interact with the blockchain and the encrypted hash value of each document will be stored in the blockchain which will be verified against the user document.

II. LITERATURE REVIEW

A. Blockchain

BLOCKCHAIN is a technology underlying the emerging cryptocurrencies including Bitcoin [2]. The key advantage of blockchain is widely considered to be decentralization, and it can help establish disintermediary peer-to-peer (P2P) transactions, coordination, and cooperation in distributed systems without mutual trust and there is centralized control among individual nodes, based on such techniques as data encryption,time-stamping, distributed consensus algorithms, and economic incentive mechanisms. Blockchain can be called as the next generation of cloud computing, and is expected to radically reshape

Data Governance with Analytics

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Abstract: ***"Data governance is an emerging trend in enterprise information management" [4]. The purpose of data governance is to minimize the cost and risk and also to increase the value of data. It requires data to be correct and also ensures the quality of data. Organizations today struggle to organize and utilize the data, assure its quality, and turn it into measurable business value. The purpose of this research paper is to analyze the data and bring useful insights that will help in better decision-making, enhanced operational efficiency, and increased revenue for data governance. For better decision making and to ensure that the data is fit for purpose, the approach used in this paper is Exploratory Data Analysis.***

Key Words **– Data Governance, Exploratory Data Analysis, Analytics, Data mining**

I. INTRODUCTION

Data governance is a set of management behaviors about data usage in an organization [2]. Data governance is control over the management of data and helps in maximizing the value of the organization's data asset and minimizing the risks related to data. As the volume of data is increasing from diverse sources there needs to be a check on data before the decisions are being made based on incorrect and inconsistent data. Data governance is a data management concept concerning the capability that enables an organization to ensure that high data quality exists throughout the complete lifecycle of the data [6]. It is like a framework that helps the organization in the management of data which helps in cross-functional team collaboration. Governance is not a one-time project, but a constant program. Data governance focuses on data as a strategic enterprise asset [5]. It is important to get insights about data, how are different fields correlated to each other before making decisions based on the available data. It will also help to ensure that the data is fit for purpose and improve the decision-making process. These insights about data can be brought using Exploratory Data Analysis (EDA). New tools for raw data characterization of these datasets through EDA are required to suggest initial hypotheses for testing [3].

II. PROBLEMS AND CHALLENGES

Organizations implementing analytics as an integral part of their decision making typically have several stakeholders: managers, analytics practitioners, and data management practitioners [1]. Stakeholders face major problems which do not lead to effective decision making. From a data management perspective it becomes difficult to determine how the data is correlated when there are incomplete or inconsistent data. Due to limitations in the infrastructure of data governance the insights of data and its impact can't be provided to the stakeholders. Without analytics it would be difficult for Data Stewards to find the Critical Data Elements (CDE), so by using analytics it becomes easy to find the CDE's in the data. Data management practitioners are struggling with numerous ad-hoc data requests from analytics practitioners and managers [1]. As there are limitations in time and cost it becomes a long process to determine an effective decision-making process. The problems and challenges can be overcome by using analytics within data governance.

III. DATA GOVERNANCE DEFINITION

Data governance specifies decision rights and accountabilities for an organization's decision-making about its data. Furthermore, data governance formalizes data policies, standards, and procedures and monitors compliance [5]. It helps to ensure the availability, integrity, usability, and security of data based on the standards and policies of the organization and provides a cross-functional framework for managing data as a strategic enterprise asset. The goals of data governance include reducing the cost of managing data, resolving issues within a data set, positioning data as a high-value asset as well as maintaining data policies and procedures, highlighting outliers in the data that deviate from corporate standards and provide feedback to data stewards. It is the core component of data management process and ensure that the data within the organization is consistent and is not misused. Data governance should include analytics to optimize the decision-making process. By providing more insights on data, effective decisions can be made. It enforces common definitions and standard formats boosting data consistency for business and helps to break the silos in an organization that has a separate transaction processing system and have a decentralized coordination. Data governance overcomes decentralized coordination by harmonizing data through a collaborative process with stakeholders from different units. Another benefit that data governance provides is the data quality along various dimensions such as completeness, conformity, uniqueness, timeliness, integrity, accuracy, and consistency.

The newly issued "Information Technology Service Governance" national standards set the information technology governance objectives in four aspects, namely, strategic consistency, risk control, operational compliance, and performance improvement [2]. From these objectives, we can see that the essential goal of governance is value and risk, and governance is the framework of decision-making and responsibility to encourage expected behavior [2]. There are various critical success factors of data governance which are as follows:

- Cross-functional involvement: It should involve the participation of stakeholders from different units.
- Alignment with business objective: Alignment of data and process with business objectives.
- Metrics: Data quality metrics help to measure the success of data governance.
- Policies and standards: Must ensure that the data is fit for purpose.
- Compliance monitoring: Assessed periodically to ensure that the procedures are followed.

Real-Time E-commerce Comparative Website using Data Mining

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***Abstract*- Real-time E-commerce Comparative website helps in real-time comparison of clothing products from different e-commerce websites based on their prices. Nowadays, customers shopping online need to check the desired product at different e-commerce websites to avail of the product with the best prices and quality. The paper describes an overview of the website which provides a comparison of products available at different e-commerce websites. The website enables the online users to analyze the clothing product specifications and compare prices of the specific product available on other e-shopping sites and buy their desired products saving a lot of user's time, efforts and money. Using web crawling and scraping techniques, the details of the products on different sites are obtained.**

Index keywords—A web crawler, Web Scraper, BeautifulSoup, MongoDB, Flask, ElasticSearch, E-commerce.

1. PROBLEM DEFINITION

Nowadays people are shifting from traditional shopping to online shopping, as most people use smart devices like tablets, mobile phones, laptops, etc. to access these e-commerce websites. As a result, more people are preferring to shop online, giving a boost to the online shopping industry. Also increasing the number of e-commerce websites has increased the involvement of online users to find the best products with the right deal. However, it takes a lot of time and gets that product with the best price and quality.
It's difficult to get all the prices of a product at a single point for the decision making of end-user. Thus it doesn't satisfy the user's demand due to restrictions, or limitations of technologies. To overcome this problem, Real-time product analysis is a web-based project that will enable the users to compare the prices of a product from different e-commerce websites at a single place. Apart from this, it recommends buying the best products over a number of e-commerce websites. Thus saving a lot of user's time, effort and money.

In Real-time product analysis, the main task is to fetch the data of e-commerce sites. Intelligent agents are used for crawling through different websites to fetch URLs of different products. The intelligent agent is a web crawler or a Shop-Bot that is an automated program that continuously browses the www and fetches the URLs from different E-commerce websites[7]. Further, the web scraper scraps and retrieves the data from these fetched URL and stores it in the database.

2. LITERATURE SURVEY

Dive into Web Scraper World

This paper[1] is about the working of Web Scraper. Web scraping is based on the concept of web indexing. The Web Crawler fetches the desired links, the data extractor fetches the data from the links and stores that data into a CSV file. The vast community and library support for Python has improved the coding style of python language and it is most suitable for scraping data from websites.

Application of NoSQL Database MongoDB

In this paper[2], the characteristics of the data logic model of MongoDB and the mode design principles were analyzed. Then the anti-normal form-based model was proposed. The relational database has multiple table storage with a foreign key, a sharp decline in query performance with a huge amount of data.

Searching and Indexing Using Elasticsearch

This paper[6], is based on the fast searching technique. Elasticsearch uses the concept of indexing to make the search better and faster. When the query is fired, Elasticsearch searches into the inverted index table to find the relevant data. Elasticsearch can search full-text fields and the most relevant result is returned back to the user. Elasticsearch is a good technology of big data for optimistic searching operations.

Mining E-Commerce Data from E-Shop Websites

The paper[4] has an approach for identifying and extracting product attributes from e-commerce websites. This approach

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Automated Hydroponics with Remote Monitoring and Control Using IoT

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***Abstract*— Today, India wants to be fitter and this health-consciousness drives for healthier food. Vegetables available in urban India are usually highly contaminated with pesticides wrecking our health and the cultivating land instead. Organic Farming as an alternative is not very feasible due to its exorbitant prices. Hydroponics along with our designed system offers a new way of cultivation which promotes all aspects of sustainable agriculture thereby providing an alternative to organic farming. In this paper, we have designed a hydroponic system which ensures higher growth rate with controlled environment. The main function of our hydroponic system is to monitor and to control parameters with the help of actuators present in the system to produce plants and exotic vegetables at a faster rate and by revoking the necessity of the arduous activities generally associated with farming. Apart from that, remote monitoring and controlling of the artificial environment to eliminate the dependency on the natural habitat to ensure year-round availability of all plants and vegetables is one of the main objectives of this project. The project shows that hydroponic systems which are monitored and controlled properly show higher rates of growth and also reduce human dependency.**

Keywords*— *Hydroponics, IoT, Sensors

I. INTRODUCTION

Hydroponics is the process of growing plants in the absence of soil with the help of added nutrients. The roots of the plants are directly exposed to the mineral nutrient solution in the water solvent [1]. This ensures the healthy growth of the plant. Apart from the nutrient solution, regulating the artificial atmospheric conditions is also an important contributing factor in ensuring the growth of the plant, which is generally 25-30% faster with higher yield [2].

Due to constraints of farming areas, farmers hugely depend on intensive farming with added amounts of fertilizers, degrading the quality of soil. Its dependency on the natural elements leaves him in a very vulnerable state to decide the quantity, quality and the type of plant to harvest.

Urban India drives the major vegetable demand of the country contributing effectively in the import of numerous exotic vegetables in high amounts. With close monitoring and the ability to modify and control the specifics of the environment in which the plant is supposed to grow, the producers can effortlessly meet the requirements of the market. Apart from the mass production, our system will also help and prove beneficial to small scale cultivators, urban producers and individuals who want to grow vegetables in their backyard.

II.IDEOLOGY AND APPROACH

The most important ideology behind this project was to collectively use the Greenhouse Principle and Principle of Nutrition Film technique in Hydroponics to maximize the growth of plants [1]. So in order to make this worth executing in our daily lives, we worked on developing a system which was

- Closed and Self Sustainable
- Where Parameters can be monitored easily
- Supported Hydroponics

All these things put together formed the physical structure of the project. But, we also needed data to make the system automatic. Raw data was collected from the system which was monitored beforehand. The data was then processed using Exploratory and Graphical data analysis to determine and form equations so that the microcontroller could predict the required values [3]. Then, with the help of the lead-lag compensating control mechanism, the external system approaches stability.

III.THE ACTUAL SYSTEM

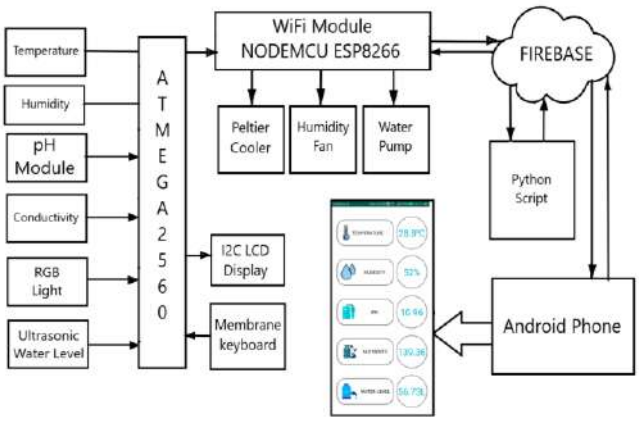

Fig. 1. Functional Block Diagram of Complete system

The main function of our hydroponic system is to monitor and try to control parameters with the help of actuators present in the system. Apart from that, Remote monitoring and controlling are one of the main objectives.

The entire system can be divided into two subsystems (Hardware and the Software). The hardware assembly is responsible for the processes and control over the system. This includes circuitry which contains sensors like temperature and humidity sensor, pH sensor, conductivity plate sensors, all of which will determine the condition of water and the environment where the plants are kept. Along

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Remote Patient Monitoring using Healthband

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Abstract: ***The quantity of old residents is on the ascent around the world. Thus, the quantity of those living alone is likewise liable to increment. At the point when an old individual living alone has a coronary failure or falls at home, no one is around to alarm relatives or the specialist. It can take hours or days for the episode to be found, and the individual might be dead by that point. With this stressing situation furthermore, the developing maturing populace as a primary concern, we have thought of a framework that permits ready signs to be sent either consequently or at the press of a catch. This wearable wristband health checking framework involves a smart wristband gadget that can screen the soundness of an older individual and can discover regardless of whether the individual wearing it is in a health-related crisis and can consequently alert the relatives and specialists if fundamental. The gadget can speak with an advanced mobile phone and is furnished with selective and imaginative highlights.***

Keywords*: Arduino, Remote, Sensor, Health, Monitoring, Parameters, Health band, Database, Server*

I. INTRODUCTION

In India the measure of the elderly population, i.e. people over the age of 60s is fast growing. In spite of the fact that it constituted as it were 7.4% of total populace at the turn of the new millennium. Rising health care costs and an expanding elderly populace are putting a strain on current medical care administrations [1].

Elderly patients, especially those with chronic conditions, require persistent long-term checking to distinguish changes in their conditions as early as conceivable. Major researchers and developers working in health care field have been centered on accomplishing common stage for therapeutic records, checking health status of the patients in a real-time way, making strides the concept of online monitoring, upgrading security and feedback from the patients. This requires creation or upgrading telemedicine services, which can provide required medical and healthcare services to those in need using advanced telecommunication services [2], mobile phone and is furnished with selective and imaginative highlights.

II. RELATED WORK

Telemedicine and health monitoring are developing discipline every day. Research and improvement in this discipline is developing at a magnificent fee with technological advancement. With developing interest of researchers this area has many improvements associated to remote and persistent health monitoring and vital parameters monitoring. In this section of paper, we will discuss about some of many related works in remote health monitoring.

Young-Dong Lee a, Wan-Young Chung b [3] proposed a smart shirt with wireless sensor network compatibility. It is designed and fabricated for continuous monitoring of physiological ECG signal and physical activity signal from an accelerometer simultaneously. The adaptive filtering method is used to cancel noise and tested to get clear ECG signal even though during running or physical exercise of a person. But this Can lead to discomfort and also Noise due to change in weather conditions like rain and snow and also due to sweating is not considered. It has Limited battery life due to sensors and wireless nodes consume more power. Cost is more due to fabrication process.

Jacey-Lynn Minoi and Alvin W Yeo [4] proposed a Tele-Health monitoring system in a rural community through primary health center using internet of medical things. It allows the measurements to be automatically transmitted via wireless 3G network or Wi-Fi. Real time basis monitoring through the sharing of data with improved connectivity and monitoring from anywhere and anytime. It may face security issues. And It requires internet services to work.

III. PROBLEM STATEMENT

Nature of human services benefits in country and urban regions aren't to an extent, as a result of an inadequate number of doctors in rustic zones medical services administrations are exceptionally poor. India contains about 68% of India's populace with half of it living underneath the neediness line, battling for better and simple access to social insurance administrations. Individuals living in country territories can't profit by preventive health administrations because of absence of framework. What's more, with the fast maturing of the total populace, the requirements of the continuous health support are expanding. Notwithstanding incessant heart

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Automated Irrigation System

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***Abstract*— One of the various problems faced by farmers in their day to day farming activities is the constant need to watch over-irrigation. Many times, the farmer must travel several kilometres to reach their fields and irrigation pumps. Hence, a huge amount of time and effort is expended daily in a farmer's life to irrigate the field when this time could be made use by the farmer at other farms such as animal husbandries which requires much more continuous observation and care. Through this paper, a project is proposed where a system is created to completely automate the process of irrigation such that none to minimal human intervention is required. The aim is to set up a wireless sensor network in the field which will collect data about the moisture in the soil and send information to start the water pump if the level goes below the threshold.**

Keywords*— *Wireless sensor network, Automated irrigation, Moisture sensor, Sensor node, Sink node.

I. INTRODUCTION

Irrigation is a very important element of farming practice all over the world and there is no doubt that the farmer is well accustomed to the amount of water that will be required for irrigating a particular crop in a particular soil type. But, many times, the farmer must travel great distances to reach his field daily through dangerous paths and in all weather conditions. All this the farmer must go through just to ON a pump sometimes.

These trips can become double or triple in case of adverse weather conditions such as extreme heat which will not only affect the field but also take a heavy toll on the farmer, mentally and physically. In such conditions, the improper watering to the crop may destroy the crop which could be irreversible. On the other hand, in monsoon or winter season, irrigation in consecutive days may not be necessary and on these days, the farmer might just have to travel to the field to just inspect the crop floor.

The farmer loses a lot of time to travel to the field for inspection of moisture of soil or to just turn on the pump. This time could be used by the farmer to learn new agricultural techniques or spend that time caring for livestock and poultry. Also, in much larger crops, the conditions of the field across the area is uneven. The improper inspection of the crop and the understanding of the amount of water necessary to each part may result in disadvantageous crop yield with unequal production from these different parts.

This paper aims to present a system which can relieve the farmer from continuous and constant inspection of the field, that is to say, reduce the human involvement in irrigation. It would not only help the farmer by easing his job of irrigating the field but will also ensure good quality yield. Due to the precise sensing of the sensors, wastage of water will be prevented, which is a growing concern all over the world especially in India.

Through the proposed system, the farmer will not have to monitor the field as irrigation happens automatically as and when required. A wireless sensor network will be used to set up the network and do the job. The wireless network that has been spread over the field successfully establishes communication between various nodes in the field and the decisions are hence made upon the parameters that are to be determined by the soil and crop type.

Section II of this paper constitutes a methodology where the two parts of the proposed project will be defined. Section III includes basic block diagrams to visualize the system design. Section IV explains the process of implementation of the proposed project. Some basic connections between the various components will be a part of this section. Section V will include the various components that were used in the making of the system along with each of the component's short descriptions. Section VI will give the result of the project. Section VII will list some applications of the project. Finally, Section VIII will give a conclusion to this paper on our project followed by Acknowledgements and References that have been used in the paper.

II. METHODOLOGY

The proposed system is to set up a smart network over the entire field including the source of water and the pumping. The system will ensure two situations, one when the moisture content of the field is below a threshold it will command the motor pump to turn on the pump to water to that particular part of the field. Second, when the required moisture is reached, another command will be sent to turn off the pump and hence cutting the water source to the field. The system will also be able to do because of the following functionalities:

- While the water is being supplied, the sensor node of that particular part of the field waits for a certain duration of time, then continues to check the moisture of the same part again as a cross-check before moving onto next.
- When the desired level of moisture is achieved by the field, another message is sent to the sink node to stop the water supply.
- Then, the control moves to the next part of the field.

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An Interactive Healthcare Bot with Personalized Diet and Disease Guidelines Recommendation for Women

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Abstract: ***Recently people pay more and more attention to how to effectively and efficiently analyze the result of regular physical examinations to provide the most helpful information for individual health management. Womaniyaa is a platform where women can find a solution to their innumerable problems. Here they will get to know about the detailed scenario of their health status and can interact with a medical bot. This bot has facilities like providing a diet plan based on BMI and age and home remedies based on the symptoms.***
Keywords: Women, Health, Diseases, Home remedy, Diet plan, Fitness, Yoga, Dialogflow, NLP, Natural Processing Language.

I. INTRODUCTION

In every society, the ladies community wasn't given due attention, especially on the health aspect. In most societies, women are the most deprived sections of all the health facilities. They are the foremost affected groups right from conception to the top of their lives in terms of poor medical aid during pregnancy, after delivery as a baby, as a girl, and as a lady. They suffer from poor nourishment, medical aid, education, and moral support. Health is concerned with the qualitative improvement and it is not subject to the exact measurement. Women experience more episodes of illness than men and are less likely to receive medical treatment before the illness is completely advanced.

Table 1 **Number and distribution of the world's women and girls by age group and country income group, 2007**

	Low-income countries		Middle-income countries		High-income countries		Global total
Age group	000s	%	000s	%	000s	%	000s
0–9	300 768	50	241 317	40	57 456	10	599 541
10–19	267 935	45	263 464	44	61 577	10	592 975
20–59	580 014	34	875 052	51	276 140	16	1 731 206
60+	86 171	22	183 099	48	115 681	30	384 952
Total	**1 234 888**	**37**	**1 562 932**	**47**	**510 854**	**15**	**3 308 673**

Source: United Nations Population Division.[3]

From the above Table1, it is observed that most of the world's women live in low- or middle-income countries, almost half of them in South-East Asia and Western specific regions. Only 15% of the world's 3.3 billion females board high-income countries.

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ImaginAR - Shaping the Future

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Abstract: ***With the advent of social media, various new technologies have emerged that provide users with unending entertainment. The most eventful of them being augmented reality. The proposed project aims to implement AR technology in such a way that AR technology adds information to the user's current environment, in order to make an activity or experience more meaningful. The project combines various modern-day technologies to implement an app that can be used to entertain people and create creative content. The project leverages Augment Reality to create an app that will make use of technology very seamless. This project will be a founding stone for further research in the field of Augmented Reality.***
Keywords: Augmented Reality (AR), Virtual Reality(VR), Software Development Kits(SDK), Android, Ios, Mobile Devices, Edutainment, Google AR Core.

I. INTRODUCTION

ImaginAR is a user-friendly app that uses Google AR Core to deliver a best-in-class augmented reality experience to users thus bringing AR to their fingertips. ImaginAR is the platform where your imagination comes to life. ImaginAR lets users play with Augmented Reality like no other app. Users can use various modes of the app to create high-value content seamlessly and within seconds.

A. Augmented Reality

Augmented reality (AR) is an interactive experience of a real-world environment where the objects that reside in the real-world are "augmented" by computer-generated perceptual information, sometimes across multiple sensory modalities, including visual, auditory, haptic, somatosensory and olfactory.[1][2]

Augmenting reality gives the power to enhance all the life experiences of the user. Throughout history, humans have always looked for ways to bring their imagination to life. It started with words then stories followed by sculptures, paintings all the way to photographs and movies. And then with the dawn of the age of computers, it all changed with a ferocious pace. Now photographs and movies can be seen on handheld mobile devices and this opened up a whole new world of possibilities. With the help of AR, now, all that people ever imagined will come to life. Virtual space can be mixed with the real-world in multiple proportions to create a customized immersive experience for users. Real-world objects can be replaced with virtual objects to study their behavior under various circumstances.

This is done by superimposing a digital twin of the real-world object onto itself and then removing the actual object from the virtual space. (a.k.a. Diminished Reality)

The goal of augmented reality systems is to combine the interactive real world with an interactive computer-generated world in such a way that they appear as one environment. As the user moves around the real object, the virtual one reacts as it is completely integrated with the real world.

Milgram et al 1994, introduce the reality-virtuality continuum that defines the term mixed reality and portrays the "link" between the real and the virtual world (Figure 1). If the real world is at one of the ends of the continuum and VR (i.e. computer-generated, artificial world) is at the other end, then the AR occupies the space closer to the real world. The closer a system is to the VR end, the more the real elements reduce.

For example, the AR systems using Optical See-through Displays are placed closer to the real world compared to AR systems with Video-mixing (Figure 1). If the real world can be augmented with virtual objects, it is logical to expect that the virtual world can be augmented with real scenes (views, objects). Such an environment is called augmented virtuality. On the reality-virtuality continuum, AV occupies the space closer to the VR environments.

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IOT based Accident Prevention and Detection System using GSM-GPS, Eye blink, and Alcohol Sensor

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Abstract: ***Accidents are major issues these days. There are 2 basic reasons: Several accidents occur due to rash driving caused by drunken drivers. The second kind of accident occurs due to the sleepy-eyed condition of the person driving while driving long distances in the dark while not taking correct sleep. The eye blink sensor monitors the sleep state of a person and alerts the driver using a buzzer when an uncommon sleep state is detected. Accidents because of the associate degree alcoholic state of the person can be controlled and prevented with the assistance of an Alcohol sensing element assembled on a steering wheel. Accidents may be detected employing a vibration sensing element and a vehicle can be located by a GPS module. Accident alerts are then sent to the rescue team.***

Keywords: Arduino UNO, Eyeblink sensor, Alcohol sensor, GPS, GSM, Accident, Location, Drowsy, Vehicle safety.

I. INTRODUCTION

For reducing accidents, the reasons behind it must be understood. According to the records it is found that many accidents take place due to rash driving caused by the alcoholic state of drunken drivers. The second type of accident occurs due to the fatigue condition of the driver while driving a long distance at a stretch or driving at night without taking proper sleep. According to a report presented by the Ministry of Road Transport and Highways Government of India in 2011, 4.97 lakhs of road mishap have occurred, which is 1 accident per minute. Out of which 1.42 lakhs of people were found dead. It is also very common where accident victims do not get any medical help in time because of a lack of accidental information to nearby authority. The situation remains mostly unattended at night and in the streets where traffic is very low. In some cases, lives could have been saved if the medical team would have arrived timely. There are also cases where mishap occurs due to crossing a certain speed limit. In this project, all the major possible conditions have been taken care of.

No. of Accidents and No. of Persons involved: 2002-2011					
Year	No. of Accidents		No. of Persons		Accident Severity*
	Total	Fatal	Killed	Injured	
2002	407497	73650(18.1)	84674	408711	20.8
2003	406726	73589(18.1)	85998	435122	21.1
2004	429910	79357(18.5)	92618	464521	21.5
2005	439255	83491(19)	94968	465282	21.6
2006	460920	93917(20.4)	105749	496481	22.9
2007	479216	101161(21.1)	114444	513340	23.9
2008	484704	106591(22)	119860	523193	24.7
2009	486384	110993(22.8)	125660	515458	25.8
2010	499628	119558(23.9)	134513	527512	26.9
2011	497686	121618(24.4)	142485	511394	28.6
*Accident severity: No. of Persons killed per 100 accidents					

Table 1: Year-wise mapping of the accident [5]

From the above Table 1, it is observed that road accidents are increasing every year. The details of causes of accidents as given by Government of India is due to the driver (77%), weather conditions (1%), vehicle condition (2%), pedestrian fault (2%), cyclist fault (1%), road condition (2%), others (14%). It is also very common where accident victims do not get any medical help in time because of the lack of accidental information to nearby authorities [6]. Various solutions have been proposed for this problem in papers [2] to [10], but our system provides an effective and efficient solution to all the above problems.

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Programmable Time to Digital Converter for Nuclear Timing Spectroscopy System

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***Abstract*—The paper describes a new method of time interval measurement using digital technique. Incoming time interval T1 between START and STOP pulse is converted to equivalent voltage V1 using the ramp generator and further elongated into time period T2 using the ramp of opposite polarity. Time period T2 is made sufficiently long so that it can be counted using crystal controlled oscillator and a counter. TDC offers time interval measurement range upto 3276.8 µs. Improved resolution of 25 ns has been obtained using clock frequency of 20 MHz. Designed TDC is programmable, hence range of time interval measurement can be changed by selecting proper ramp slope. TDC makes use of 16 bit dual, parallel, multiplying DACs to generate precise currents which decide ramp slopes. Temperature drift and reference voltage drift is self compensated.**

Keywords— Time To Digital Converter, Nuclear Timing Spectroscopy System, Time Interval Measurement Introduction

I. INTRODUCTION

Time interval (TI) between two physical events needs to be measured in nuclear timing spectroscopy system. These physical events could be gamma rays reaching the detectors. Conventional nuclear timing spectroscopy system is discussed in [1]. Detectors produce linear analog pulse corresponding to the interaction of gamma rays in the detectors. This linear pulse is converted into logical pulse by Time pick-off circuits. These pulses are given as START and STOP pulses to Time to Digital Converter (TDC). TDC produces digital code output corresponding to the time interval between START and STOP pulses. To measure this TI between START and STOP pulses, various methods have been explored [3], [4], [5] and have been summarized [2].

A new method for TI measurement using digital technique is proposed in this research paper.

II. NEW SYSTEM

TI can be measured using digital method i.e. using Positive and Negative slope generator, as shown in **Fig. 1**. At the arrival of START pulse, positive slope generator starts building ramp at the output using Reference Input 1 (negative voltage V-). During time interval T1, ramp increases in positive direction. Ramp slope and voltage magnitude is decided by the designed components of positive slope generator.

When STOP pulse is received, Reference Input 2 (positive voltage V+, having opposite polarity w.r.t. Reference Input 1) is connected to negative slope generator. Ramp starts decreasing in the negative direction during time interval T2. When ramp crosses zero reference voltage (ground line), it is detected by Comparator. Time interval T2 (when ramp is decreasing) is digitally counted by counter. So higher the input time difference between START and STOP pulse, ramp increases in positive direction to large magnitude of voltage, hence time required for negative ramp to reach zero voltage reference is more and so the digital counter output increases in proportion to this time interval.

Depending upon the range of the time interval measurement the positive slope generator circuit will generate calibrated slopes and accordingly negative slope generator circuit will also generate corresponding calibrated negative slopes. These slopes will be decided depending upon the range and resolution required for TDC. Programmable TDC is used to change the slope of the ramp.

III. DESIGN OF THE SYSTEM

System is designed and implemented as shown in **Fig. 2**. Digital-to-Analog Converter (DAC) is used to generate precise current by selecting appropriate digital code at its input. It is 16-Bit, dual, parallel input, multiplying DAC. DAC reference voltages are provided using voltage reference source. Further DAC output current I1, I2 is connected to the input terminals of integrator using analog switch. During time interval T1 (as shown in **Fig. 1**), current I1 flows through the input terminals of integrator, providing positive going ramp output. This ramp is connected to two comparators, comparator 1 and comparator 2. Comparator 2 threshold voltage is sourced using voltage divider. STOP pulse can be generated at various time instances by varying threshold voltage of comparator 2. When STOP pulse is generated, DAC current I2 gets connected to integrator and current I1 is disconnected using analog switch. So integrator starts developing negative ramp at the output.

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Analysis of constant amplitude modulation (CAM) of Goppa coded OFDM (G-OFDM) signal for reducing the PAPR of OFDM system

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***Abstract*—** Portable devices, especially small in nature, are an essential part of the 5G system. With the advances of technology, they have substantial communication capabilities and fast computing abilities but the demand for high data rate services causes a drain in energy of these devices. Other than green communication and engineering, the performance of the communication network cannot be improved for the future devices. Since these devices are constantly used for voice communication and also requires good connectivity, multimedia and entertainment capabilities, the battery lifetime poses a problem to the power amplifier (PA) which consumes most of the power in the devices and their base stations. The PA should accurately scale the demand of high data rates or data bandwidth of these systems. Therefore, actual power requirement in radio engineering and the power consumption is not at tandem with each other. An efficient way of powering the radio signal is eventually required for sustainable communication systems. It is known that OFDM based systems have several applications in wireless communications due to its spectral efficiency and robustness against multipath fading. But the multicarrier aspect of OFDM signal is characterized by high peak-to-average power ratio (PAPR), which if not taken care of will render PAs inefficient and cause distortion in the transmitted signal. In this research, a constant amplitude modulation (CAM), Goppa coded OFDM (G-OFDM) system is suggested which would not only exploit the channel coding importance of Goppa codes but also the peak power would be made equal to the mean power forcing PAPR value to reduce to 0 dB by reducing the amplitude and phase fluctuations of OFDM signal prior to bandpass conversion.
Therefore, the PA can operate at saturation levels with increase in coverage of transmitted signal due to increase in average transmitted power. The increase in PA efficiency will enhance battery life of the devices.

Index Terms—constant amplitude modulation (CAM); Goppa coded OFDM (G-OFDM); Goppa code; power amplifier (PA)

I. INTRODUCTION

Orthogonal frequency-division multiplexing (OFDM) is a technology supporting 5G. The high data rate signal is divided into several low rate subcarriers in parallel thus increasing the symbol duration in OFDM multicarrier modulation and reducing the dispersive time of multipath delay spread. OFDM signal is a sum of several subcarriers linearly modulated resulting in a fluctuating envelope. Due to the constructive or destructive combination of the amplitude of its signal, average power may be low but intermittent high-power spikes may be there. This gives rise to high PAPR. PAPR depends on *N* i.e. the number of OFDM subcarriers and *M*, the order of modulation of the subcarriers.
Analysis of constant amplitude modulation of Goppa coded OFDM (G-OFDM) signal for reducing the PAPR of OFDM system is presented in this paper. Related works done is discussed in section II. Methodology is given in section III. Observations and related graphs are given in section IV. And finally, in section V conclusion is provided.

1.1 RELATED WORK

When *N* symbols of OFDM align in phase there may be high absolute peak power which is *N* times the average power and can result in a high PAPR which would imply that high PAs in wireless system would be inefficient as it would behave nonlinearly leading to in-band distortion, increased the bit-error ratio (BER) and out-of-band radiation [1]. The PAPR reducing techniques[2], [3] used so far could be broadly classified as schemes causing distortion for example clipping, peak windowing; distortion less schemes like partial transmit sequences (PTS), selective mapping (SLM), coding, tone reservation and signal transformation methods like companding, discrete cosine transformation etc. OFDM with channel coding are less susceptible to wide spread delays of multipath propagation. As suggested in [4], [5] the use of coding scheme in multicarrier modulation also reduces peak envelope power with additional bits in the data symbol which would also be utilized for forward error correction. Several types of codes had been tried like convolutional codes, Reed Solomon codes, low density parity check codes etc. Therefore, Goppa codes had been tried earlier [6] to analyze the effect of coding with PAPR reduction. But not all data words after Goppa coding showed good PAPR reduction. Therefore, further reduction methods were tried like the impact of modulation schemes on peak power [7] but a substantial improvement was not observed. Even subcarrier mapping through zero padding showed reduction of PAPR in only selected codewords [8] leading to a search for a general solution for PAPR reduction for Goppa coded data. In this paper, the amplitude fluctuations of an OFDM signal is eliminated using constant amplitude and continuous phase modulation by combining special full wave sines and cosines instead of IFFT for orthogonality of subcarriers and passing the parallel stream of data through a phase modulator in CAM-GOFDM.

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Research paper

Comparison on Difference in Conventional Electronic Device and IoT (Internet of Things) Enabled Sensors Readings of Vital Signs in Patients

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Abstract

The comparative study was carried out on difference in reading of conventional bedside monitor and IoT (Internet of Things) enabled sensors recordings of vital signs like temperature, heart rate and spo2 in patients of PKC hospital, Vashi. The study was conducted on selected 10 patients. For each subject conventional device and IoT sensors readings of temperature, heart rate and spo2 were recorded for 5 minutes for 3 days. Readings from conventional devices and IoT sensors were recorded simultaneously. Data included readings of temperature, Spo2 and heart rate. Total samples collected are minimum 324 and maximum 330.Clinically approved results are present in the paper. The recordings were compared to know difference between conventional device readings and IoT enabled sensors reading. The study findings discovered that there is no momentous difference between the conventional device readings and IoT based sensors readings.

Keywords: *vital signs, conventional readings, IoT enable sensors*

1. Introduction

Vital parameters of any human body are the signals of survival. All these vital parameters can
be continuously measured and monitored by different sensors [1]. Functioning accuracy of any human body can be accessed by using these vital parameters [1]. Range of vital parameters changes with two factors age and health condition of a person [1]. Patient's observations are important they allow progress of patient to be monitored and prompt detection of change in patient's treatment for better recovery.

Vital signs are the evidence of the current physical functioning of the body. Vital parameters are immediate and resourceful way of tracking a patient's health status and will help in assessment of patient's response to a treatment. Vitals parameters need to be measured frequently. There is only partial information

available regarding the frequency with which vital parameters should be recorded this is based on survey of nurses, clinical practice reports and expert opinion [2]. Monitoring these parameters is an important task in the satisfactory care of seriously ill patients. Heart patients require monitoring of heart rate and spo2 continuously. Generally these parameters are recorded by nurses, physician, and physician's assistant. Healthcare expert's has responsibility of interpreting these readings, identifying abnormalities from person's normal state and judging effect of current treatment on patient's body[1].
Continues monitoring of patient is a very important task in care of critically ill patients. ICUs, CCUs, operation room and anaesthesia ward needs the continuous observation of the patient [3].The conventional, manual method

requires a considerable amount of time. Current investigation shows that the monitoring and recording of the five vital signs manually is most of the times partial which has the potential to worsening health condition of a patent [4]. Whereas continuous electronic monitoring is beneficial and it alarms patients health is deteriorating [6]. For measuring these parameters more accurately hospitals are using bedside monitors from different vendors like OLAMPUS, GoodHealth etc. All sensing devices are bundled in bedside monitor is attached to the patient's body. It displays the body's vital parameters in the form of continuous waveforms or numbers. Some of the common functions to be monitored are blood pressure, heart rate and ECG, breathing rate, body temperature and Spo2 [5]. Few of them have wired and wireless central monitoring system with local storage of data [6]. With these entire advancement milestone achieved is local storage of all vital parameters.
Bedside monitors are monitoring vital parameters all the time. These parameters never directly send to doctors or nurses or caretaker of patient on their hand hold devices (like mobile). No analysis is performed on this data to alert patient's health status. Data reading and it's reporting to the doctor is still a manual process in most of the hospitals. Nurses, Assistant doctors are observing those parameters and reporting them to doctors. In the era of IoT and mobile sending real time vital parameters of critically ill patient to doctor will help to give better treatment to the patient [7]. IoT enable health care system reduces chance of human errors, delay in communication and helps doctor to give more time in decision making with correct interpretation [8]. We decided to study this and to come up with a solution so that patient

Cardiac Arrest Prediction to Prevent Code Blue Situation

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Abstract - *Cardiac arrest is defined as the abrupt loss of functioning of the heart in a person who may or may not have been diagnosed with heart disease. It can occur suddenly, or in the wake of other symptoms. If appropriate steps are not taken, cardiac arrest can prove to be fatal. The main cause of cardiac arrest may be irregular heart rhythms. These irregular heart rhythms are called arrhythmias. Ventricular fibrillation is a common arrhythmia associated with cardiac arrest. Ventricular fibrillation occurs when the heart's lower chambers suddenly start beating frantically and do not pump blood. Since cardiac arrest is a major emergency situation, hence Hospitals use code names to alert their staff about an emergency. Code blue is a universally recognized emergency code. Code blue refers to a medical emergency occurring within the hospital.*

Key words: **Decision Trees, Neural Networks, Random Forests J48, Learning Vector Quantization, Fuzzy, Arrhythmia, Code Blue.**

1. INTRODUCTION

The death rate in India due to cardiac diseases is continuously rising whereas in the United States of America this rate has significantly declined. The main reason for the deaths in India is cardiovascular diseases. This underlines the need for efficient cardiac arrest prediction system that taking into account the patient's health record determines the possibility of suffering from cardiac arrest. In this project, we planned to develop a predictive model using machine learning algorithm namely neural networks. This is a supervised machine learning technique. The important purpose of this predictive model was to reduce the computation cost and obtain more accurate results efficiently. Back Propagation Algorithm which is an Artificial Neural Network methodology, was employed.

2. LITERATURE SURVEY

A plethora of work has been done in the field of medical science to develop an efficient system to predict cardiac arrest.

Meghna Sharma and Ankita Dewan in their paper have compared various techniques that can be implied to predict heart diseases. On comparison, they found that the Back propagation algorithm is the best methodology that can be used to develop the required system. In order to solve the drawback of the back propagation algorithm i.e. local minima, they have suggested using Genetic Algorithm as an optimizer.[1]

Varun Kathuria and Prakhar Thapiyal have taken into account the ECG readings of the patients and accordingly have developed a model using supervised learning technique which divides the patients into various cardiac arrhythmic classes. Their main aim is to detect the presence of cardiac arrhythmia and accordingly distinguish it into 13 different classes. [2]

Sheetal Singh, DK Sharma, Sanjeev Bhoi, Sapna Ramani Sardana, in their research paper on code blue situation provide information about general principles of Code Blue. Along with it, they have also employed Naïve Bias Algorithm, J48 Algorithm to predict the possibility of a cardiac arrest. They have conducted their experiment first by taking into account all the attributes available in the patient records and then after performing the attribute selection process.[3]

SY Huang, CH Cheng, PS Hong, AH Chen, and EJ Lin proposed Learning Vector Quantization Algorithm for predicting the presence of heart disease. Learning Vector Quantization Algorithm is a commonly used Artificial Neural Network learning Technique. They have into account 13 unique features from the patient's record and accordingly have trained their model. Hence using these 13 parameters for computation they have developed the heart disease prediction system. The accuracy of the model with which it predicts heart diseases was nearly 80%. [4]

Thendral Puyalnithi and V.Madhu Vishwanathan have used methods like k-fold Cross Validation and Leave One-out. They have utilized 75%of the dataset for training and 25%of the dataset for testing. The methods prescribed above were used for all four algorithms viz. Support Vector Machine, Classification Trees, Random Forest and Naive Bayes.[5]

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Be My Third Eye - A Smart Electronic Blind Stick with Goggles

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Abstract - *In the era of technology where each and every person strives to be independent in order to survive in this competitive world, Being independent is the utmost priority to almost all the people. Our project is designed to provide this independence to the visually challenged people. This project gives them helping end to commute safely and securely. This act as a Third Eye for the visually challenged people and make their difficult life little bit simple and safe. The project consists of Ultrasonic sensors and IR sensor used for detection of obstacles like staircase, wall and other objects. After the detection of an obstacle, it alerts the user by beep sound of the buzzer. It also detects the motion of objects using a PIR sensor and generates beep sound if motion is detected. It also consists of an emergency location tracking module which sends messages in cases of any accidents to the relatives of the blind user along with the current location of the user using GSM and GPS module.*

Key Words: **Blind Stick, Third Eye, Electronic Stick, Smart Stick, Electronic Travel Guide, Guide Cane,etc..**

1.INTRODUCTION

Vision plays an important role in human being's life. Humans get almost 83% of the information from the environment via sight. According to the 2011 statistics by WHO, there are 285 billion people have a visual impairment and among them 39 are blind and rest have low vision. The traditional methods for the people with a visual impairment include white walking canes and guide dogs. The most common drawback of these traditional methods are necessary skills and training required that makes them inaccessible to use.

With the recent developments in hardware and software, many intelligent solutions have been introduced to help the blind person navigate independently. While such existing systems do help in outdoor navigation, but the need to provide accurate results and effective performance of the system gave rise to the need for improvement with additional components to provide accurate obstacle detection. Hence, the objective of this project is to provide independence to the visually challenged people by providing a smart electronic walking aid solution which is simple to use and easy to understand. There are many existing canes that are built to help the visually blind to independent.

1.1 Literature Survey

The authors Ayat Nada, Samia Mashelly, Mahmoud A. Fakhr, and Ahmed F. Seddik have proposed the solution that uses a microcontroller, ultrasonic sensor, IR and water sensor for detection of close obstacles, small obstacles and water respectively. It uses a warning message to alert the user about the obstacles ahead.

The authors Do Ngoc Hung, Vo Minh-Thanh, Nguyen Minh-Triet, Quoc Luong Huy, and Viet Trinh Cuong have proposed the solution that uses atmega microcontroller which gets sensor data and it into the distance. The distance is then sent to the Android via Bluetooth.

The author Muriel Pinto, Rose Denzil Stanley, Sheetal Malagi, Veena Parvathi K., Ajithanjaya Kumar M. K have proposed the solution that uses atmega controller, detects the obstacle and vibrate in three intensity.

The authors M.F. Saaid, A. M. Mohammad, M. S. A. Megat Ali has proposed the solution that detects the obstacle and alerts the user with beep sound. The beep sound has a pattern depending on the distance of the obstacle. The pattern is coded in the microcontroller.

The authors G.J. Pauline Jothi Kiruba1, T. C. Mohan Kumar2, S. Kavithrashree3, G. Ajith Kumar have proposed the solution that uses sensors, gsm-GPS module, wifi module. Many sensors are used for different purposes. The wifi module is to provide internet connectivity to track the location with the help of GPS and gsm is to send the location to the contact number. The heartbeat and temperature sense the heartbeat and temperature and upload to the cloud.

Traditional methods used by visually impaired were proved inefficient in providing safe and secure navigation to them. This arises the need for new technologies that can provide safety and security to the visually impaired people.

E-Voting Using Blockchain With Biometric Authentication

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ABSTRACT: *ELECTION is a process of establishing democracy in the country. It is also one of the most challenging task, one whose constraints are remarkably strict. There has been the extensive adoption of Direct-recording electronic (DRE) for voting at polling stations around the world. Starting with the seminal work by Chaum, published in IEEE Security & Privacy in 2004, research on end-to-end (E2E) E-voting has become a thriving field. Informally, the notion of being E2E verifiable refers to have two properties: First, each voter is able to verify if their vote has been cast as intended, recorded as cast. Second, anyone can verify if all votes are tallied as recorded. By contrast, in the traditional paper-based voting system, a voter cannot verify how their vote is recorded and tallied in the voting process. In traditional voting process, a voter goes to polling station and shows his/her voter Identity card and after finding his/her name in eligible voters list he is a given to vote the candidate of his choice.In the case of EVM(Electronic Voting Machine) their security is a big challenge before the officials. Thus the system depends on the trustworthy individual at the polling stations and during counting, thus leading to the introduction of the automated paperless secure e-voting system.*

This project mainly focuses on developing an E-Voting system which is much more secure, verifiable and does not involve the requirement of too many trustworthy individuals at every level.We aim at using Blockchain to make voting much secure and also using ring signature and Fingerprint Authentication for additional security.

Key Words: *Blockchain, Secure Voting, Biometric Voting*

Introduction

The central issues of any e-voting system are considered to be authentication and privacy. Citizens cast their votes in the polling station on EVM(Electronic Voting Machine) which can be tampered and so it is a challenge for central government, police and election commission to make sure that no tampering is done by keeping these machines secure. Also after the voting ends it takes time for election commision to release the results as vote counting takes time. This voting system is inefficient and takes a delay in counting the votes. Thus our project aims at developing the voting system which is more secure and reliable and much more automated than the current system.The current voting system is not secured as EVMs can be tampered also the user does not end to end verified. Fake IDs are made on the name of people who are dead and votes are cast. Thus a system with more security and reliability is required.

So we propose a system which makes use of Blockchain to cast and store votes and to authenticate users we will be using biometric details such as a fingerprint.

Firstly blockchain technology was used within Bitcoin and is a public ledger of all the transaction. Blockchain consists of several blocks associated with each other. The blocks are related because the hash values of the previous block are used in the next block creation process. The effort to change any block's information will be more difficult because it must change the next blocks. The initial block is called the genesis block. These transactions are stored by a Blockchain in a block,the block eventually becomes completed as more transactions are carried out. Once the block is complete it is then added in a linear,chronological order to the blockchain. Also, our system will make use of ring signature which makes sure that votes cast are as intended and tallied as cast.

Current Voting Methodology

India, one of the largest democratic country in the world with the population of 133.92 crore makes use of Electronic Voting Machines(EVM) for its voting process. However for Presidential Elections India uses paper Ballot method as only the people elected democrats vote for the President. EVMs are under the control of Election Commision of India(ECI) which aims at conducting fair elections in the country. It distributes the

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Analysis and Prediction of Child Mortality in India

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Abstract - *Reducing the mortality rate and increasing health awareness is one of the aims of the planners of development and decision makers. For the policies to be made in the correct direction, it is necessary to analyse the mortality rates and the reasons behind the variation. The aim of this study is to extract patterns in rate of child mortality based on socio economic attributes such as: birth rate, fertility rate, mother literacy and undernourishment. Also, detailed study of diseases such as malaria, diarrhoea etc. pertaining in infants and their contribution towards child mortality is performed. The analysis of PHCs available to fulfil the requirements is necessary for maintaining good health and reducing mortality rates. Geospatial analysis of exact locations of PHCs can be further used to formulate need of more PHCs and predicting their locations.*

Key Words: **child mortality, mortality rates, PHC, machine learning, geospatial analysis**

1. INTRODUCTION

According to Sustainable development goals research, 17 thousand fewer children die each day than in 1990, but more than 5 million children still die before they turn 5 each year. Reducing the mortality rate and increasing health and mortality issues is one of the aims of the planners of development and decision makers. In this way, extracting parameters and their effect on rate of mortality is very important. For ensuring proper enforcement of the policies, it is necessary to obtain frequent and accurate results of the areas. Traditional methods like census and various surveys usually consumes many days or even months to analyse the areas. Thus, we aim at performing exhaustive analysis and presenting our findings in form of graphical representation along with designing a predictive model for the same.

2. LITERATURE SURVEY

The study by AK Singha, et al [1] shows that infant and child survival depend on a host of socioeconomic, environmental, and contextual factors. The distribution of infant and child mortality and their determinants vary across genders, socioeconomic groups, and geographical regions. The author A Singh et al [2] states that poverty and malnutrition exacerbate the risk of infants and children to various infectious diseases like diarrhoea and pneumonia, and heighten the probability of death, particularly among children with low birth weight. The studies have documented that poor economic status of household, low female literacy, poor nutritional status of mother, young age at marriage of mother, large family size, low autonomy of women, and inadequate access to health care services typically lead to disproportionately higher risk for the health status of mothers and their children. According to S Khare et al [3] malnutrition is one of the global health problems especially in the area of child survival. In developing countries, malnutrition is one big problem which is directly or indirectly responsible for half of all deaths worldwide among children under the age of five. According to G Toscano et al [4] parental education, income per capita and health service indicators are the three most important determinants of child mortality. Author V Suriyakala et al [5] concluded that socio-economic factors like fertility rate, national income, women in labour force, expenditure on healthcare and female literacy rates influence the infant mortality rates. The study by C Lahariya, et al [6] states that Neonatal conditions (33%), pneumonia (22%), diarrhea(14%) are the leading causes of infant deaths in India. It addresses the issue regarding neonatal infant mortality that is due to inadequate access to basic medical care during pregnancy and after delivery which is a major cause of infant mortality in India and offered an approach for using data mining in classifying mortality rate related to accidents in children under five.

3. DRAWBACK OF EXISTING SYSTEM

Elimination of child mortality has been the concern since many decades and greatest in countries like India. There are many organizations to help reduce child mortality and many policies implemented to help the nation overcome child mortality, but one of the main problems is finding the impact of various attributes on mortality. The variation of child mortality with respect to different areas is not provided so major actions can be taken to improve the living environment. Also, there is no exhaustive study of diseases which are prevalent in children under the age of five.

4. METHODOLOGY

Data collection and data set preparation: The data collected was based on child mortality according to various attributes.

Developing algorithms: We applied ML Algorithms for analysing mortality rate over areas in a period of time and various affecting attributes. A machine learning model was developed for mortality rate prediction based on various attributes. Algorithms used are: Linear Regression, Random Forest, and Decision Tree.

Facial Expression Recognition using Preprocessing and Hybrid network

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Abstract: Facial expression recognition is rapidly becoming an area of intense interest in computer science and human-computer interaction design communities. The most expressive way humans display emotions is through their facial expressions. The core module of our emotion recognition system is a hybrid network that combines recurrent neural network (RNN) and 3D convolution network (C3D). Recently, fully-connected and convolution neural networks have been trained to achieve state-of-the-art performance on a wide variety of tasks such as speech recognition, image classification, natural language processing, and bioinformatics. For classification tasks, most deep learning models employ the softmax activation function for prediction which minimizes cross-entropy loss. In this paper, we propose a small but consistent advantage of replacing the softmax layer with Support Vector Machine in the hybrid network. This approach minimizes a margin-based loss instead of the cross-entropy loss. Also, preprocessing steps such as synthetic sample generation, rotation correction, cropping, down-sampling, and intensity normalization play a major role to train samples that have limited data set. The purpose of this system is to evaluate the facial expression and classify their expressions into one of the following emotions: angry, disgust, fear, happy, neutral, sad and surprise.

Keywords - Face Expression Recognition, Preprocessing, Recurrent Neural Network (RNN), Long Short-Term Memory (LSTM), 3D Convolution Neural Network (C3D), Hybrid CNN-RNN and C3D Network, Support Vector Machine (SVM).

I. INTRODUCTION

Facial expression recognition is an important topic in the fields of computer vision and artificial intelligence owing to its significant academic and commercial potential. It is an area where a lot has been done and a lot more can be done. With great progress in intelligent systems in recent years, expression recognition remains the most important problem for human interaction. Expression recognition is challenging due to the difficulties for definition and classification of emotion expressions for different people without contextual or psychological information. Facial expression recognition is not a theoretical field but finds practical applications in many fields. Coupled with human psychology and neuroscience it can come up as an area which can bridge the divide between the more abstract area of psychology and the more crisp area of computation. Its associated research is minherently a multidisciplinary enterprise involving a wide variety of related fields, including computer vision, speech analysis, linguistics, cognitive psychology, robotics and learning theory, etc. A computer with more powerful expression recognition intelligence will be able to better understand human and interact more naturally. Many real-world applications such as commercial call center and affect-aware game development also benefit from such intelligence. Possible sources of input for expression recognition include different types of signals, such as visual signals (image/video), audio, text and bio signals. For vision-based expression recognition, a number of visual cues such as human pose, action and scene context can provide useful information. Nevertheless, the facial expression is arguably the most important visual cue for analyzing the underlying human emotions.

This paper is further organized as follows: Section II provides an overview of related work on Facial Expression Recognition. Proposed Architecture is discussed in Section III. Methodology of the system is explained in Section IV. Expected results are presented in Section V, leading to conclusions in Section VI.

II. RELATED WORK

In [1], authors Manglik et al. proposed two phases in Facial Expression Recognition. The first phase is image processing and the second phase is setting and training of the neural network. The image processing phase or the preprocessing phase involves five steps. In the first step, the image of the face is normalized. The normalized image is subjected to a grayscale transformation in the second step. The third step is performed by partitioning of the transformed image in two portions: the upper half and the lower half. In the fourth step, a frequency analysis of the normalized image is performed in the upper half partition. This tracks the position of the eyes and the eyebrows. Contouring is performed to trace the shape of the eyes and the eyebrows. In the fifth step of the first phase, a further frequency analysis in the lower half reveals information about the nose, the mouth, and the cheeks. The contours are vectored to obtain a feature vector. In the next phase, this feature vector is used for setting and training of the Hopfield Neural Network. The advantage of this method is that it is computationally inexpensive. The method is the one which appears more natural and a bit easier to understand as the authors tried to relate it with basic mathematics and signal theory. The limitation of this method is that there is only four emotion classification: happy, angry, sad and surprise against neutral. Also, for tracking the position of the eyes, the assumption is that the face should be upright (Up to 30 degrees is acceptable) and the eyes lie in the upper portion of the face.

Authors Sarode et al. implemented a method using 2D appearance-based local approach for the extraction of intransient facial features and recognition of four facial expressions: happy, angry, sad and surprise against neutral as per [2]. The algorithm implements Radial Symmetry Transform and further uses edge projection analysis for feature extraction and creates a dynamic spatio-temporal representation of the face, followed by classification into one of the expression classes. This algorithm achieves an accuracy of 81.0% for facial expression recognition from the grayscale image. This method describes a more robust system for facial expression recognition from static images using 2D appearance-based local approach for the extraction of intransient facial features, i.e. features such as eyebrows, lips, or mouth, which are always present in the image. The advantage of this method is that it has low computational requirements. The limitation of this method is that there is only four emotion classification: happy, angry, sad and surprise against neutral. Also, frontal view of the image should be available for classification.

SENSORS IN AUTOMOBILE AND ASSOCIATED MECHANISMS: A REVIEW

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Abstract: In this paper we have completed an extensive survey on sensors and associated systems used in automobile applications. This article describes the various types of sensors used, their characteristics and utility for unique functions in an automobile. Additionally, we intend to create a comprehensive catalog of the multitude of sensors available in the market to help the consumer make an educated choice while customizing their application. The primary selection criteria for every sensor based on their compatibility with the surroundings is also addressed in detail. Furthermore, this paper aims to emphasize the importance of appropriate sensor selection to help achieve enhanced performance in the automobile sector.

Index Terms – ABS, ACU, Automobile, CAS Compatibility, IoT, Safety, Sensors

I. INTRODUCTION

Nowadays the automobiles have undergone revolutionary changes when compared to their predecessors, the integration of electronic components within vehicles have been pivotal in bringing about this revolution. In today's date, a wide array of electronic sensors that are used to aid as well as monitor various parameters of a vehicle. This is done so that the user gets proper information of the various aspects of his vehicle so that optimum performance can be ensured and the maintenance required for the vehicle can be implemented right away without any delays. To speak about the areas of application of sensors within a vehicle, we can observe them right from the tires of the vehicle to the engine of the same. This wide range of applications suggests that the sensors chosen should be of proper quality and the user should understand what purpose these sensors stand to serve. The sensors, if employed on their own, will be nothing but instruments which collect data, the important aspect is to answer the question of 'What can be done with this data?'. As an answer to the question, an overview of some of the most important applications of sensors inside an automobile is elaborated upon. These applications fall under the category of necessities within a modern vehicle. The major applications spoken about here are the Anti-Lock Braking System(ABS), The Tire Pressure Monitoring System(TPMS), the Collision Avoidance System, the Parking System and Airbag Deployment. These aspects are the selling points of cars today and are few of the most influential aspects that a consumer considers while choosing a vehicle. The sensor data is extracted and interpreted by a microcontroller employed within any system and depending on the set-points specified within the microcontroller program, a control action is taken and the parameters are regulated. This control action is important in safety applications of the vehicle. The aforementioned systems are elaborated further with respect to their mechanisms of operation, compatibility and cost.

II. LITERATURE REVIEW

Yanxia Zhang, Hayley Hung published a paper on '**Using topic models to mine everyday object usage routines through connected IOT Sensors**'- arXiv: 1807.04343v1. **[1]** This paper deals with the recording of sensor data involved in an IoT system & its subsequent organization into a pattern referred to as topic model. By allocating specific identities to various objects namely, chair, dining table, remotes, et al. That are a part of a home automation IoT system, sensory data can be recorded and then used to develop a mesh of routine behaviors. This would assist a specific group of people: third level adults (65 and above) in various daily activities. We plan on using the data models and behavioral sensor patterns mentioned in this paper to help us figure out a method of selection for different sensors in any IoT system.

Madakam, S, Ramaswamy, R. and Tripathi, S. (2015) published a paper on '**Internet of Things (IoT): A Literature Review'** in Journal of Computer and Communications, 3, 164-173. **[2]** By studying this paper, we understood the basic structure of an IoT system especially the different layers involved. Various technologies are used while implementing an IoT system and each technology requires different devices with unique specifications. By reviewing the contents of this paper pertaining to the diverse technologies in IoT, we will apply this understanding towards understanding sensor specifications and compatibility for many other IoT systems.

Tarikul Islam, Member, IEEE, S. C. Mukhopadhyay, Fellow, IEEE and N. K. Suryadevara, Senior Member, IEEE published a paper on '**Smart Sensors and Internet of Things'. [3]** This paper is a course overview on the newly added subject of IOT and sensors to the curriculum of the aforementioned university. It discusses the scope of IOT as a field of study and speaks of the role of sensors in it. It describes various methods of sensor fabrication, their characteristics and application. For example, it speaks of the static and dynamic characteristics of a sensor and describes certain classes such as fractional order sensors, surface acoustic wave sensors. It also speaks about the relationship between WSN's (wireless sensory networks) and the IOT (internet of things).

Smart Tourism Application

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Abstract *—Most of the research done is in the extent of creating a personalized application for providing recommendations to the user covering different tourist places in Mumbai. Information is the key and displaying the correct information for a specific query from a collective database can provide ease for the user. This paper provides the solution for such respective cases. This application contains collective information of each place and can be called by the user to display specific query by the means of chatbot. Our proposed application provides a friendly interface for the user to operate by building a common platform for all sorts of queries.*

Keywords *— Python, Chatbot, Kivy, Sql Database, Natural language processing*

I. INTRODUCTION

The modern Internet provides tourists with huge possibilities for searching interesting information and planning their activities. Recently it shows that the information and communication technologies allow tourists to get interesting information via the Internet. Smartphones are mainstream in this area with active iOS and Android devices surpassing 700 million globally by now. Global Mobile data traffic is growing rapidly to an impressive share of 13% of the Internet traffic in 2012. In accordance with about 50% of existing tourism recommender systems is designed for mobile devices. As has been the case with other information and communication technologies, tourism has manifested as one of the most well suited sectors to mobile technology and mobile applications. There are four main mobile travel applications categories: Online Booking, Information Resource, Location Based Services, and Trip Journals. Each of the categories have their own mobile or web applications individually but none of them provide a single application to guide through all four of the categories. Our application objective is to provide a single medium for all.

II. LITERATURE REVIEW

Tourism industry features that tourism industry has specific features which explain its importance for economic (regional) development and its inclination toward IT systems which is beneficial for developing countries.[6]

Tourism is a leading industry worldwide, representing approximately 11 percent of the worldwide GDP (according to the World Travel & Tourism Council's tourism satellite account method). Furthermore, tourism represents a cross sector (umbrella) industry, including many related economic sectors such as culture, sports, and agriculture, where over 30 different industrial components have been identified that serve travellers. In addition, tourism greatly influences regional development, owing to its SME (small- and medium-sized enterprises) structure and relatively small entrance barriers. For example, in the European Union, the hotel and restaurant sector accounts for more than 1.3 million enterprises.[6]

This is approximately 8.5 percent of the total number of enterprises, and 95.5 percent of these enterprises are small (with one to nine employees). Also, because tourism is based on mobility, the supply and demand side forms a worldwide network, where production and distribution are based on cooperation. In addition, it is an information-based industry, so the tourism product is a confidence good, where at the moment of decision-making, only information about the product not the product itself is available. The problem with these statistics is that they refer to different meanings and varying definitions of e-business and ecommerce. Some definitions distinguish between the two, while others view them as the same, and all have their own variables and measurement methods. [3] Even more problematic is that the definitions are all transaction- and business oriented. [3]

They ignore that the web applications are also a medium for creating communities, learning new things, and having fun things that don't always result in business. The Web also encourages user interaction; users can build their own sites to share their travel experiences. Thus, another traveller rather than hotel management or a travel agency might provide the most valuable information about a vacation resort.[6] Whereas other industries have a stronger hold on doing things traditionally, the travel and tourism industry has always been open to new

Self-Stabilizing Spoon Using Fuzzy Controller

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Abstract: The main objective of this research is to develop a "smart" spoon using existing technology. Similar design, using programmable open source boards as controllers and vibration Sensors and servers act as input and output devices, respectively. The goal is to achieve a similar device having tremor stability performance similar to current technology. However, within a smaller budget, the cost of the consumer is lower. The basic idea is to use active cancellation (such as noise canceling headphones) to stabilize larger scales motions.

I. INTRODUCTION

Picking up a utensil to feed one's self is a luxury that people take for granted. For others with neurological conditions causing tremors, this basic activity can be a source of frustration and embarrassment. 'Smart Spoon' tries to eliminate that problem. Parkinson's often have trouble with tasks like writing, brushing teeth, or shaving. Eating can become a particularly difficult task since it becomes hard for Parkinson's sufferers to steadily pick up a spoon full of food. Parkinson's disease (PD) is a long-term degenerative disorder of the central nervous system that mainly affects the motor system. The

WATER LEVEL MONITORING SYSTEM

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Abstract - *In today's global scenario, water wastage and water shortage are an over rising problem. With the world population rising minute by minute, the need for water is increasing and therefore water conservation is the need of the hour. This paper proposes a solution for the soaring water problems. Today's industries need huge amount of manpower for system supervision. We have come out with a solution where we use sensors to measure the water level of the storage system and be informed about the same, saving human efforts. Here, sensors are fit in the storage tank at different levels. The sensors are further connected to a microcontroller. The sensors detect the water level and inform it to the microcontroller which displays the storage tank status on the Liquid Crystal Display (LCD). A gate mechanism is also attached to this system which is triggered when the water level reaches the brim of the storage system.*

Key Words: **Microcontroller, Motor, Gate mechanism, Electrode, liquid-crystal display**

1. INTRODUCTION

Water scarcity and water wastage is an increasing problem in a country like India. In this paper we have tried to provide an aid to this problem. Embedded systems are now-a-days playing a vital role in Engineering design process for efficient analysis and effective operation. Due to time complexity in electronic aspects embedded systems have become a major part of our daily life. So therefore, with the help of embedded systems we have designed a project which can measure the water level of a storage tank and display it on the LCD. This not only provides us with the required information about the status of the water tank but also helps and reduces the manpower required in this whole process. Our project is a contribution towards the solution for water scarcity problems. Also, the application of embedded systems reduces the probability of error caused by human intervention.

2. LITERATURE SURVEY

In an analytical study conducted by the Delhi Committee of the Associated Chambers of Commerce and Industry of India (ASSOCHAM), it has been revealed that there has been a substantial increase in the wastage of water due to numerous reasons. According to ASSOCHAM, the percentage of water wasted has been increased to an alarming 40% as compared to the previous year. On February 11, 2018 the British Broadcasting Corporation (BBC) put Bengaluru on a list of 11 major cities in the modern era having maximum water related problems. The BBC blames a spike in population growth and new property developments, Bengaluru's struggle to manage its water and sewage systems, and a colossal waste of drinking water due to poor plumbing. Also, many villages in the interior of Maharashtra and many other states are facing major water shortage due to drought and water supply mismanagement. Our system is an initiative to help curb or at least reduce these water wastage and scarcity issues throughout the nation [1].

Delhi Jal Board had taken a decision to punish the consumers for overflowing tanks. Water consumers who switch on their motors to fill their overhead tanks and then forget to switch them off have to pay the respective penalties [2].

3. PROPOSED MODEL

3.1Block Diagram:

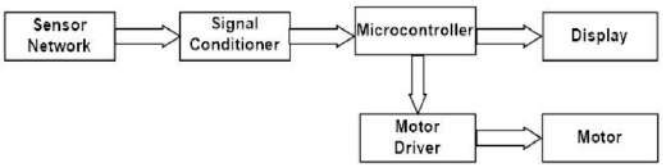

Fig 1 Block Diagram of water tank level monitoring and pump control system.

The proposed system uses five sensors to sense various levels of the storage. Whenever the water level rises or decreases and comes in contact of any sensor then the circuit is complete and current flows due to which the corresponding transistor conducts and circuit is closed. The output of the sensor circuit triggers the microcontroller. Whenever the water level rises above the highest level or decreases below the lowest threshold level then the sensor circuit triggers the microcontroller. According to the code written and burnt in the microcontroller, it will drive the DC motor. The motor driver is provided to drive and control the motor. An LCD is provided to inform the user about the status of the water level in the tank [3].

3.2 LCD

LCD modules are very commonly used in most embedded projects, the reason being its cheap price, availability and programmer friendly. There are a lot of combinations available like, 8×1, 8×2, 10×2, 16×1, etc. but the most used one is the 16×2 LCD. 16×2 LCD is named so because; it has 16 Columns and 2 Rows. It will have (16×2=32) 32 characters in total and each character will be made of 5×8 Pixel Dots. Each character has (5×8=40) 40 Pixels and for 32

Automated waste management system for smart cities

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Abstract :Waste management is an issue for the past few years and with the developing technology that has been a boon to the society,this issue can be handled in a more smarter way.Segregation and recycling of waste is one the solution which can be combined with technology so that waste disposal in cities is minimized. This paper discusses an automated waste management system for smart cities.It consists of two parts:first is an alerting mechanism when the level of waste has reached its maximum limit for timely collection of waste and second part is the segregation of waste once it is collected.

Index Terms **- GSM,IR-Sensor,Inductive sensor,Capacitive sensor,float &sink**

I.Introduction

A smart city is the one that uses technology to manage its resources and monitor its activities which includes smart management of water,waste management,energy management,traffic management and many similar things.A big challenge in the urban cities is that of waste management as there is a rapid growth in the rate of urbanization and thus there is a need of sustainable urban development plans[2]. Smart waste management is an important aspect of a smart city. Uncontrolled dumping of wastes on outskirts of towns and cities has created overflowing landfills, which are not only impossible to reclaim because of the haphazard manner of dumping, but also have serious environmental implications in terms of ground water pollution and contribution to global warming. Burning of waste leads to air pollution in terms of increased TSP and PM10 emissions[1]. Without an efficient solution for waste management,the pollution due to waste cannot be controlled.

India is facing a huge challenge in waste management. Approximately 65 million tonnes of municipal solid wastes per year. But from them only 43 million tonnes (MT) is collected, 33 MT is dumped in landfill sites and rest 12 MT is sent for treatment[4].So the solid waste generated has to be segregated and managed properly which will in turn give environmental and economic benefits.With changing policy requirements, new sustainability and recycling goals and improved technology, cities across the globe are joining the “smart cities” movement to become more efficient in managing solid waste.For example in India,the city of Nagpur has come up with various solutions for the management of solid waste.Los Angeles-based Ecube Labs Co., for example, is using solar-powered waste compacting bins, data analytics and a resource management platform to help cities optimize the efficiency of their waste collection value chains.Separating the various useful elements like metal,plastic and paper from the collected waste and recycling them will provide economic gain for waste which otherwise would have been dumped.

II.Block Diagram

Part A: Smart Dustbin

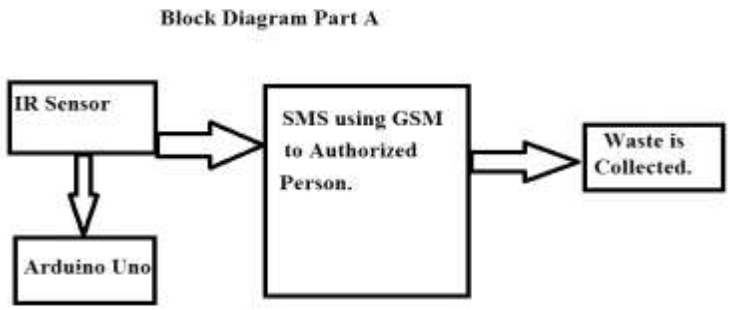

Fig 3.1 Block Diagram of Smart Dustbin

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R-Pi based Real-time Weather Monitoring System

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Abstract - *Weather Monitoring plays a pivotal role in our everyday lives. Manual methods of weather monitoring are cumbersome, time-consuming and are not feasible in remote areas. Using the tenets of R-Pi and embedded system design, a Real-time Weather Monitoring System shall be designed, which will eliminate manual intervention. In this project, there are two sections-hardware and software. In the hardware section, various sensors will be incorporated to measure the intensity and level of rainfall in different regions. These sensors will be interfaced with Arduino which will collect the required data from them, following which it will be transmitted to the Raspberry Pi via a GSM Module. The software section incorporates an FTP Client-Server Interface, wherein the real-time weather-related data will be sent to the FTP Client, which is the Raspberry Pi itself, from Regional Meteorological Centre, Mumbai, India. Both these streams of data, obtained from the hardware and software modules of this project, will then be processed by the Raspberry Pi, and sent to relevant organisations, so that they can take precautionary measures in event of any unforeseen conditions, using bulk messaging servers. Both the hardware and software aspects of this project contribute to developing a potent weather monitoring system.*

Key Words*: *Raspberry Pi, less maintenance, GSM, economic viability, real-time

1. INTRODUCTION

Manual methods of recording weather phenomenon are highly cumbersome and unreliable. Moreover, these cannot be used in remote areas. This project aims to create a R-Pi based system for monitoring weather-related phenomenon and generating real-time updates using embedded system design-based hardware setup and the FTP-based Client interfaced with the server at Regional Meteorological Centre, Mumbai. An amalgamation of sensors incorporating raindrop sensors as well as level sensors will be interfaced with Arduino which will transmit the collected data to the heart of the system, the Raspberry Pi via a GSM Module. The real-time data from the Regional Meteorological Centre will also be sent to the R-Pi which will carry out further processing and send the real-time weather updates using bulk messaging servers.

2. LITERATURE SURVEY

An Automated Rainfall Monitoring System (S.P.K.A Gunawardena, B.M.D Rangana, M.M Siriwardena, Prof Dileeka Dias, Dr Ashok Peries, Department of Electronic and Telecommunication Engineering, University of Moratuwa).[1]

The automated rainfall monitoring system addresses the need for obtaining timely, accurate information which is critical for the agricultural sector, using a widely available communication technology, the cellular network. Rainfall is monitored via rain gauges (remote stations) interfaced to GSM radio module which can send the rainfall information embedded in an SMS (Short message Service) to the central station. The data transfer is initiated either by the remote station or by a request from the central station. There can be a large number of remote stations communicating with the central station. The data received is extracted, sorted and saved in the central database.

The data may thus be made readily available to any interested party via the Internet. By using the existing cellular infrastructure, the rainfall data communication inherits its reliability. The main drawback of the system is its high dependability on the cellular infrastructure.

Water Quality Monitoring using IoT

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Abstract- *In today's times, due to urbanization and pollution, it has become necessary to monitor and evaluate the quality of water reaching our homes. Ensuring safe supply of drinking water has become a big challenge for the modern civilization. Therefore, it has become crucial to capture data in real time instead of relying on traditional methods that involve collecting water samples, testing and analysing them in laboratories which are not only costly but also time consuming and lack speedy distribution of information to relevant authorities for making timely and informed decisions. In this paper, we propose a low cost system for real time water quality monitoring and controlling using IoT. This system consists of various sensors such as the pH sensor, turbidity sensor and temperature sensor which are interfaced with Raspberry Pi through Analog-to-Digital converter (ADC). Based on the data collected by the sensors and processed by the Raspberry Pi, the relay mechanism directs the solenoid valve to either continue or stop the flow of water from the overhead tank to houses. This entire process takes place automatically without human intervention thus saving the time to handle the situation manually.*

Keywords: **Water Quality, pH Sensor, Turbidity Sensor, Temperature Sensor, ADC, Raspberry Pi, Internet of Things, Drinking Water**

1. INTRODUCTION

We consume water every day. It is an essential part of our lives. Therefore, water should be checked now and then. Since water has a direct effect on life on earth; it has become crucial to check whether the water is in a good condition to use. Checking the standard of water requires a great deal of hard work. Since water dissolves most of the materials that exist on Earth, it is very difficult to determine the amount of the matter mixed in it. Water being a universal solvent varies from place to place, depending on the condition of the source of water and the treatment it receives. The WHO (World Health Organization) estimated that, in India, around 77 million people are suffering due to not having access to safe drinking water. In fact, 21% of diseases in India are related to unsafe drinking water. Also, more than 1600 deaths alone are caused due to diarrhoea in India daily.[2] Therefore, it has become necessary, with the evolving technology, to devise a quick and efficient method to determine the quality of water.

In order to ensure the safe supply of the drinking water the quality needs to be monitored in real time. Our project focuses on monitoring factors such as the pH value, turbidity and temperature of water which can be verified on a daily basis. The normal method of challenging Turbidity and pH is to collect samples manually and send them to laboratory for a water quality check. However, it has been seen that the samples are unable to reach the water quality examining in real time. We propose a low cost system for real time water quality monitoring and controlling using IoT. The system consists of physio-chemical sensors which can measure the physical and chemical parameters of the water such as Temperature, Turbidity, pH and Flow. First, water contaminants are detected by these sensors. Then the data sensed by the sensors are converted to a digital format using an ADC and sent to a Raspberry Pi module. The sensor values are processed by the Raspberry Pi module and sent to cloud. Finally the sensed values are visible on the cloud via cloud computing. Also, according to the sensor values, the flow of water in the pipeline can be controlled.

There are a lot of other parameters which can be found in water, but these three parameters turbidity, pH and temperature are crucial in determining the quality. These parameters are considered the main parameters for water quality testing. As a whole, this project contributes to determining the quality of water in a convenient, compact and user-friendly method.

Face Recognition Home Security Using Raspberry Pi &IOT

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***Abstract*— Home security is a growing field. To provide security to home, face recognition system can be implemented using different image processing methods. A standard USB camera captures the image to identify the person. It is a system that identifies the visitor. If the door recognizes the visitor, it will greet them by name, and door will be unlocked and opened. If they are not identified the door will remain locked. The system will perform the detection and recognition rapidly in real time. This project adds mainly four features: security, safety, control and monitoring to home automation. Firstly the system needs a face authentication for the user to be able to enter the home (locked/unlocked). When an unauthenticated person tries to log in, the face will be captured and would be sent to owner via Gmail as an attachment. The system also supports remote home control.**

Keywords— Face Recognition, Image processing, IOT, Raspberry Pi, Pi Camera

I. INTRODUCTION

Home Security has become a solemn issue in the society. Anyone can be harassed in its own house. Older security systems can't tackle some situations like hacking, break down in the system. Unwanted persons like thieves, murderers and some known criminals will try to intrude in the home any time they want. Also we know that the gadgets nowadays are not that secured and hence can be easily hacked. Even intruders have found their way to take over these gadgets. So to avoid such situations, we have to develop the system in such way that no one should get an intrusion the system. The use of IoT will enhance some security level as well as it will help in accessing and controlling the system remotely. Therefore we are trying to develop a face recognizable automated door unlocking system using an IoT. [2]

IoT will enable sensing, actuating and communication in the system. System can be made automated easily. So we can go on developing a smart home by extending this security system. To develop this we will use a Raspberry Pi micro-controller board for system development, a pi camera module for face recognition and a programmable stepper motor to open door lock. [4] We Will Install appropriate Linux based Raspberry pi operating system on raspberry pi microcontroller board. For the door unlocking system, we will place a stepper motor at door latch. This motor will be program made in such a way that when they stem authenticates the person in front of the camera, the motor will rotate to open latch. We will use image processing technology to authenticate the person to enter in home. For image processing, we will use pi camera module. Pi camera module is attached to Raspberry pi, and it aids to store various faces in the databases. When someone wants to enter in home, he should stand in front of the camera. Camera will recognize the face and compares with the faces stored in the Face recognition database if the face matches, the door will be automatically unlocked. If the face does not get matched, then a call and message will be generated through GSM module to owner of the house, indicating the owner about the visitor in front of the door. Owner can check his Email to check who the visitor is. Owner can authenticate the visitor by controlling the door lock remotely via call or message. [5]

II.BLOCK DIAGRAM AND WORKING

The block diagram comprises of the following units:

A) Raspberry Pi 3 model B:

Raspberry Pi is an ARM based credit card sized SBC (Single Board Computer) created by Raspberry A1900084285 Pi Foundation. Raspberry Pi runs Debian based GNU/Linux operating system. Raspberry Pi Foundation has announced a new version Raspberry Pi 3.

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CapSearch - " An Image Caption Generation based search"

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Abstract - *Due to the increasing use of social media, more and more data is collected in the form of images which will be useful only if we can determine what it represents. Searching for images is not as easy as searching text data. We intend to make it easy and accurate by searching for images based on their captions. We have implemented a Flask web app with a machine learning model at its core. The model generates captions using VGG16 and Convolutional Neural Network along with RNN. The model is trained on Flickr-8k dataset. Web app retrieves images based on a user's search query.*

Keywords: Convolution Neural network, Feature extraction, Object recognition, Image Caption Generation

1.INTRODUCTION

Searching for images is not as easy as searching text data. Images can be searched only if there are titles and are classified by humans. Since there are billions of images it is not possible to entitle it by hand every time.

Its purpose is to mimic the human ability to comprehend and process huge amounts of visual information into a descriptive language and store it for future retrieval. Search by example relies solely on the contents of the image. The image is analyzed, quantified, and stored in a database to retrieve similar images.

2. Related Work

Earlier image captioning methods relied on templates instead of a probabilistic generative model for generating the caption in natural language. Present applications use the internet to send/upload image data and then return indexed captions. This requires high bandwidth and data usage which we tend to reduce and optimize for better and fast user experience.

Our model is inspired by Show and Tell which uses GoogLeNet CNN to extract image features and generate captions using Long Short Term Memory cells. We differ from their implementation to optimize for real-time scenarios. Show, Attend and Tell makes use of new developments in machine translation and object detection to introduce an attention-based model that takes into account several "spots" on the image while generating the captions. They extract features from lower convolutional layer instead of extracting from the penultimate layers, resulting in a feature vector of length 14 × 14 × 512 for every image.

2.1 Methodology

Beam Search

Beam Search is an algorithm that explores the most promising predictions that would accompany the image. It takes the top N predictions and sorts them according to the probabilities. Thus it always returns the top N predictions. We take the one with the highest probability and go through it till we encounter <end> or reach the maximum caption length.

CNN for image embedding

The feature extraction of the image is done with the help of CNN's. (Convolutional Neural Networks).We use the VGG16 model for feature extraction.

Generally, CNN is used for image classification. In our case, we use CNN as an encoder for image feature extraction and use its last hidden layer as an input to the RNN decoder(LSTM) for caption(sentence) generation.

RNN

This is the next part of the image caption generation. a recurrent neural network (RNN) is typically viewed as the main generation component. The image features are injected into the RNN.

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Skin Disease Detection Using Image Processing with Data Mining and Deep Learning

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Abstract - *Skin diseases are hazardous and often contagious, especially melanoma, eczema, and impetigo. These skin diseases can be cured if detected early. The fundamental problem with it is, only an expert dermatologist is able to detect and classify such disease. Sometimes, the doctors also fail to correctly classify the disease and hence provide inappropriate medications to the patient. Our paper proposes a skin disease detection method based on Image Processing and Deep Learning Techniques. Our system is mobile based so can be used even in remote areas. The patient needs to provide the image of the infected area and it is given as an input to the application. Image Processing and Deep Learning techniques process it and deliver the most accurate output. In this paper, we present a comparison of two different approaches for real-time skin disease detection algorithm based on accuracy. We have compared Support Vector Machine (SVM) and Convolutional Neural Networks (CNN). The results of real-time testing are presented.*

Keywords: **Convolutional Neural Networks, Support Vector Machine, Eczema, Impetigo, Melanoma, Multilevel Thresholding, GLCM, 2D Wavelet Transform**

1. INTRODUCTION

Skin diseases have a serious impact on the psychological health of the patient. It can result in the loss of confidence and can even turn the patient into depression. Skin diseases can thus be fatal. It is a serious issue and cannot be neglected but should be controlled. So it is necessary to identify the skin diseases at an early stage and prevent it from spreading. Human skin is unpredictable and almost a difficult terrain due to its complexity of jaggedness, lesion structures, moles, tone, the presence of dense hairs and other mitigating confusing features. Early detection of skin diseases can prove to be cost effective and can be accessible in remote areas. Identifying the infected area of skin and detecting the type of disease is useful for early awareness. In this paper, a detection system is proposed which enables the users to detect and recognize skin disease. In this system, the user has to provide the image of the affected area, the input image then undergoes preprocessing which involves filtering to remove the noise, segmentation to extract the lesion and then feature extraction to extract the features of the image and finally classifier to detect the affected area. For classification, Support Vector Machine (SVM) is used. On the other hand, deep learning algorithms have a competency to handle large datasets of complex computation hence, Convolutional Neural Network (CNN) is also implemented as a part of research area to detect the affected area of skin. Comparison between SVM and CNN is also represented with accuracy and confusion matrix. This paper proposed the solution for detecting the skin diseases viz. Melanoma, Impetigo and Eczema.

2. ARCHITECTURE

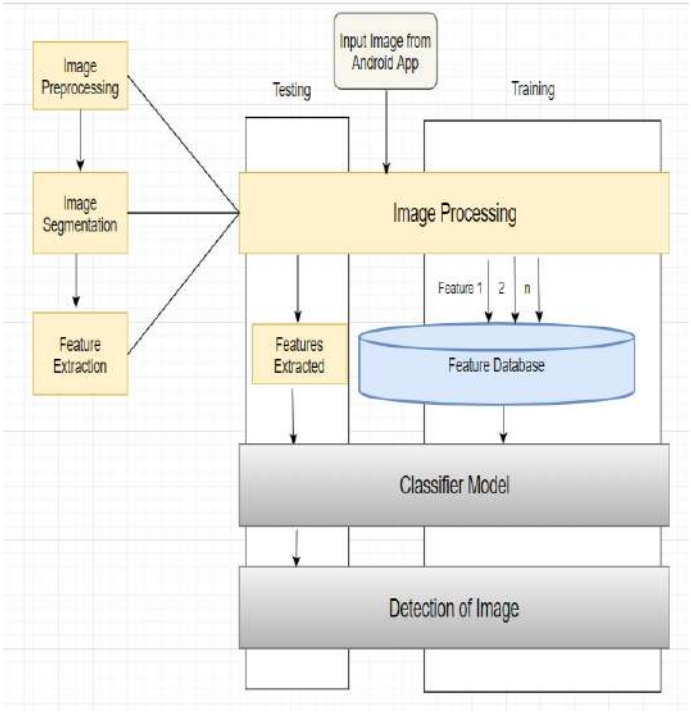

Fig -1: Architecture of System

A. User uploads image of the affected area using the mobile application
B. Image processing unit receives uploaded image at the backend where following steps will be performed on image.
   a. Pre-processing of image
   b. Segmentation to extract skin lesion
   c. Feature Extraction to extract the features
C. Classification model uses extracted features for detection of affected area.
D. Result will be shown to the user in mobile application.

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Output regulation using new sliding surface with an implementation on inverted pendulum system

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Non-minimum phase system
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ABSTRACT

In this paper constant reference output tracking is achieved using second order sliding mode (SOSM) control. To achieve tracking a new sliding surface is proposed and to ensure sliding motion super-twisting control (STC) is employed. The proposed sliding surface is more general, and it can be used for constant reference tracking in both minimum phase and non-minimum phase systems. The proposed method is validated on the unstable non-minimum phase inverted pendulum system and also the results are compared with the first order sliding mode control (SMC) in simulation and experimentally both.

1. Introduction

Output regulation is one of the classical control problems and for the class of non-minimum phase systems the problem becomes more difficult [6,17]. In earlier work, Francis and Wonham [14] introduced internal model principle to solve the tracking problem for linear systems by incorporating the dynamical model of the plant in an exosystem that generates the reference signal. Further, this work is generalized by Isidori and Byrnes [18] by identifying the acceptable dynamics on a particular center manifold.

Sliding mode control (SMC) has been a topic of great interest to researchers since it's inception as it offers simplicity in control structure, robustness and insensitivity to a class of disturbances [5,13,16,19,31,32,33].

Numerous work on SMC in the direction of output regulation has been found in literature such as a work by Edwards and Spurgeon [12] addresses observer based design, high performance control using nonlinear sliding surface by Bandyopadhyay and Fulwani [1]. In recent work by Bandyopadhyay and patil, reduced order SMC design method for continuous-time systems has been addressed in [2] and for discrete-time system in [27].

Numerous literature found on the control of electro-mechanical systems via the first or higher order SMC. For instance, see [7,8,20,34,35]. However, in most of the cases, first order SMC may not be acceptable for the discontinuous nature of the control as it leads to chattering. Chattering may excite unmodeled dynamics, which may hinder the stability of the system or may lead to actuator failure. To make the first order SMC continuous, saturation function can be employed instead of switching function. However, use of saturation function loses the robustness properties.

Many authors came with different design procedures that eliminate the chattering effect viz. [3,24]. Using higher order sliding mode (HOSM), it is possible to suppress the chattering effect without losing the robustness property [21–23]. Therefore in this article, super-twisting control (STC), which is one of second order sliding mode controls, has been employed. This ensures the finite time reachability of the trajectory on the proposed sliding surface. For more on STC design, refer [4,10,26,30].

Often output tracking in SMC framework is achieved via stabilization of the error between the system and the desired state trajectory, while the desired state trajectory is generated using exosystem. In this article, an effort is made to propose a method for output tracking that involves a novel switching surface and second order sliding mode controller without an exosystem. This paper essentially contributes,

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High Performance Super-twisting Control for State Delay Systems

Deepti Khimani* and Machhindranath Patil

Abstract: This paper addresses the design of conventional sliding mode and super-twisting controls for the uncertain system with state delay to achieve the improved transient response. To ensure the stable sliding motion two approaches are proposed. In the first approach, LMI conditions using Lyapunov-Krasovskii functional are derived to guarantee the stability of the sliding motion. In the second approach, we propose the sliding mode control based on a nonlinear switching functional, with which the sliding motion is governed by delay-free dynamics. Effectiveness of the proposed design approaches are shown through numerical simulation of reheat power system.

Keywords: Delay systems, Lyapunov-Krasovskii method, nonlinear sliding surface, sliding mode control, super-twisting control.

1. INTRODUCTION

Many practical systems involve time delays or aftermath in their operations, also their performance is degraded by disturbances. Over the past few decades, literature has grown up enormously that addresses the problems in the state delay systems, especially on the stability analysis and controller design, refer [1–3] for survey.

The stabilization of time delay systems can be broadly classified as delay independent stabilization and delay-dependent stabilization. In delay independent designs, a controller can be designed for the stability of the system regardless of the amount of delay. On the other hand, in the delay-dependent designs the size or the upper bound of the delay is required. In [4], necessary and sufficient conditions for delay-dependent asymptotic stability via Lyapunov's direct method for a continuous and discrete linear time-delay systems has been derived and further the results have been extended to the large-scale time-delay systems.

In sampled- data systems, the discrete-time controller can also be modeled as a continuous-time controller with time-varying delay. In [5], robust exponential stability and reliable stabilization, which is based on Lyapunov-Krasovskii functional and linear matrix inequality (LMI) for a class of continuous-time networked control systems (NCS) with sample-data controller has been addressed while observer- based control problem has been found in [6]. The fault-tolerant sampled-data control design for linear continuous-time-delay systems with strict dissipativity has been found in [7] and passivity-based resilient design for Markovian jump systems using adaptive mechanism has been proposed in [8].

Time delay often degrades performance of the system while presence of the disturbance may worsen the situation further. To achieve robust output regulation various techniques are available in literature such as H-∞ control based output regulation in [9, 10] or adaptive output regulation in [11]. Sliding mode control (SMC) is one of the popular robust control designs, which is well known for it's ability to completely annihilate the matched uncertainties [12, 13].

Numerous articles found in literature that explores the strength of SMC for delay-systems. In [14], proof of stability is given for both delay-dependent and delay-independent SMC designs. SMC design for switched delay systems is addressed in [15] and SMC design for multi-input state delay systems with deadzone nonlinearity has been found in [16]. Design of output feedback Integral SMC for time-delay systems with mismatched disturbances has been proposed in [17] and observer based adaptive SMC for a class of nonlinear uncertain state-delayed systems in [18].

The main drawback of SMC is the discontinuous nature of control. Therefore, it may have implementation issues in certain practical situations as high frequency switching results into chattering [19]. To avoid chattering effect, super-twisting control (STC) can be designed, which is a continuous controller that inherits the robustness property from conventional first order SMC against the matched uncertainties [20–22].

To achieve the high performance transient response with small rise-time without overshoot, design of the composite nonlinear feedback has been addressed in [23] and

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REGULAR PAPER

Reduced-order sliding function design for a class of nonlinear systems

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Citations: 1

Abstract

In this paper, the design of first order sliding mode control (SMC) and twisting control based on the reduced order sliding function is proposed for the robust stabilization of an class of uncertain nonlinear single-input system. This method greatly simplifies the control design as the sliding function is linear, which is based on reduced order state vector. The nonlinear system is represented as a cascade interconnection of two subsystems driving and driven subsystems. Sliding surface and SMC are designed for only the driving subsystem that guarantees the asymptotic stability of the entire system. To show the effectiveness of the proposed control schemes, the simulation results of translational oscillator with rotational actuator are illustrated.

A NOVEL DESIGN OF THREE-STAGE INSTRUMENTATION AMPLIFIER FOR IMPROVEMENT OF DYNAMIC RANGE AND FREQUENCY RESPONSE

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Abstract : This paper proposes the new design of three-stage instrumentation amplifier consisting of five op-amps. A new stage has been added at the input of conventional instrumentation amplifier (IA) which consists of two op-amps and associated circuit to compensate DC offset voltages present in the signal applied at the input of IA. This method makes use of injection of external currents using constant voltage sources. In this proposed configuration, it is possible to compensate for large values of the offset voltage without degrading frequency response of IA. The IA using this method was constructed and tested, and results have been reported in the paper. Experimental results show that the proposed three-stage IA can be used to compensate unwanted DC offset voltages present in the input signal without affecting its differential gain and common mode rejection ratio (CMRR) characteristics with significant improvement in dynamic range. Unlike RC coupled IA, this IA circuit does not require matched components for superior performance and also results in better frequency response and wide dynamic range.

Index Terms **- Three-stage instrumentation amplifier, frequency response, differential gain, CMRR, dynamic range**

I. INTRODUCTION

Instrumentation amplifier is commonly used for amplification of differential signals in presence of large common mode signals because of which it has numerous applications in the field of low level signal processing including biomedical instrumentation [1].
AC coupling circuits are used commonly to remove unwanted DC offset voltages present in the input signals. But due to finite tolerances of compensating components R and C, common mode input appears as differential signal and gets amplified by high differential gain, resulting in poor CMRR and reduction in dynamic range [2],[3],[4]. Also, low frequency signal components are also attenuated [5].
A new method was also described to compensate these DC offset voltages without R-C network [6],[7] as shown in Fig.1. Based on the theory discussed in [6],[7], a new design of IA has been proposed in this paper.

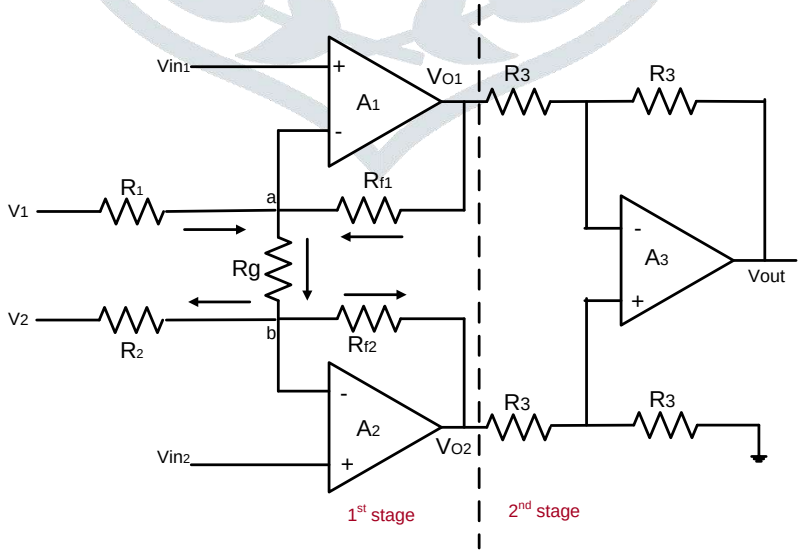

Fig. 1: Instrumentation amplifier with new method of DC voltage compensation [6].

Here, loss of dynamic range due to amplification of DC components present in the input signals of IA was recovered by injecting currents in opposite direction at inverting terminals using constant voltage sources of equal amplitude and opposite polarity [7].

Image Processing Techniques Used In Machine Learning

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Abstract - There are usually two reasons why Human beings process or conduct computations on pictures:-
1) In-order to highlight or bring out certain features in an image or 2) To process the image in a manner where a machine is able to read and pick up patterns for learning. An image is an electronic representation to a real world object. It can typically either be a bitmap image which is an image constructed by a small unit called as bit, a single dot carrying certain intensity. Club several such dots of varying intensities together and you have a picture ready. In contrast, vector images are constructed from lines and curves which can be used to construct scalable geometric images. Besides these two types, images can be further classified into different types based on their characteristics such as greyscale images, 2D or 3D images, bit depths classified based on no. of pixels such as 8 bits, 16 bits, 32 bits etc. Reiterating intentions of processing images, each of these image formats would have different applications depending on their characteristics. This paper will discuss the different pre-processing techniques that an image is subject to before it can be used further.

***Key Words*: Image processing, image pre-processing algorithms, image segmentation, image contrast, transformations, edge detection**

1.INTRODUCTION

Following are steps we follow for image Processing:-

1. Image Acquisition- It is done through many mediums such as cameras, live videos, phone cameras or other sources such as the internet: blogs, social media, websites, image libraries etc. In this stage, image obtained is raw or in case of the internet there may some processing already done.

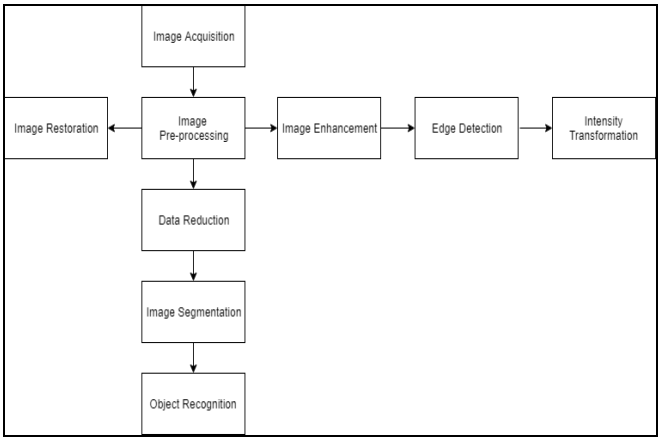
2. Image Pre-processing- The stage we will focus on the most in this paper. Purpose of pre-processing could be many. It could be to reduce noise, or normalize the data, changing the depth ratio. Mainly it is to do some process, which will make the subsequent processes simpler.

3. Data Reduction- Ideally means compression techniques. Post performing computations on an image, its image size usually increases. An image is compressed so that it occupies limited bandwidth or memory space.

4.Image Segmentation- It partitions an image in fundamentals such as edges, contours, shapes etc.

5.Object Recognition- A label is assigned to an object based on the descriptions gathered about the image. Eg- Car, Dog etc. Description could be boundary or regional representations. Boundary refers to external or corner shape and styled characteristics and regional refers to internal characteristics.

Fig -1: Steps in Image Processing



2. PRESENTING THE IDEA

Though any technique can be used in pre-processing stage depending on how you want to edit the image, certain operations typically done in this step include intensity transformation, improvement of image data by enhancing or distorting certain features in the image, geometric transformations such as rotation, scaling, translation etc. Hence, we will discuss some of them here, though some may seem left out.

1.Image Restoration- Image restoration is done to improve the quality of the image from problems such as blurring, noise, unfocused image etc. It can be called a type of image enhancement but where Image Enhancement is more subjective, Restoration techniques are usually more objective. We can use certain filters which can help to restore an image using signal to noise ratios.

2.1.Weiner Filter- Is an inverse filter. Uses liner technique and does restoration for deconvolution, where an image is blurred by a lowpass filter. This filter is sensitive to additive noise. It tries to balance both blurring as well as noise.

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Interoperability of Electronic Health Record

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Abstract: ***We are creating interoperability of health record from the perspective of Indian Medical care system, patients visit several doctors, throughout their lifetime right from visiting a primary health center to community health. Health records get generated with every clinical meet during the inpatient or emergency visits. However, as it is paper based most of the health records or EHR. But there are certain barriers to it. The idea behind any technology or a invention is to make things simple and easy for everyone. To Store the health record of patients to digital system and accessing the record whenever required and it will be so simple that even people in rural area can run it and can achieve interoperability of that record without affecting the security and privacy of the user.***
Keywords: Interoperability, International classification of disease, Electronic health record, Snomed, Health Level 7

I. INTRODUCTION & THE INTEROPERABILITY PROBLEM

Healthcare is far more behind many other high risk-industries in its attention of ensuring basic patient care. An Electronic Health Record Systems (EHR) is the central information system of a hospital. Generally, EHR system incorporates various other subsystems such as patient management systems, financial and personnel departments as well as communications and user's capabilities in order to process and manage all patient services effectively. The EHR system of a Hospital should be able to process patient information from various departments, such as radiology, pathology, admissions, wards etc. Different departments have various formats, and models of information which make it difficult for the interoperability of an EHR. The patient care is poorly achieved due to incorrect or inefficient exchange of patient records between different users, which also hampers the privacy and confidentiality of medical information resulting in redundant use of resources. There exist many terminologies, due to which the problem of interoperability becomes difficult to solve. Safe transfer and interpretation of medical data can be ensured only with the use standardizations. WHO (World Health Organization) has developed a standard known as ICD "International Classification of Diseases". The ICD is originally designed as a healthcare classification system, providing a system of diagnostic codes for classifying diseases, including nuanced classifications of a wide variety of signs, symptoms, abnormal findings, complaints, social circumstances, and external causes of injury or disease. This led to the development of standards, such as HL7 which is a message-oriented framework used for the interoperability of EHRs by standardizing and automating hospital information processes. HL7 is now an accepted standard in many countries, for the interoperability of medical data. This project has combined HL7 standards to illustrate a stable framework for the interoperability of EHRs in the evolving field of modern hospital environments..

II. STANDARDS

A. ICD

ICD is a medical classification list by the World Health Organization (WHO), which contains codes for diseases, signs and symptoms, abnormal findings, complaints, social circumstances, and external causes of injury or diseases. Work on ICD-10 began in 1983,became endorsed by the Forty-third World Health Assembly in 1990, and was first used by member states in 1994. Currently, 11th revised version of the ICD codes is being used by countries which was released in June 2018. Its development has taken place on an internet-based platform that is still being used as the maintenance platform for discussions, and proposals for updates of ICD. Users can submit an evidence based proposal. The updation proposals are processed in an open transparent way with reviews for scientific evidence, usability and utility in the various uses of ICD. It is presumed, that no need will arise for national modifications of ICD-11, due to its richness and flexibility in the reportable detail.

Common complaints the about the ICD-10 were, the long list of potentially relevant codes for a given condition which were confusing and reduced it's efficiency. In ICD-11 WHO tried to overcome this problem.ICD-11 invokes a more advanced architecture than it's former versions, consistent with its generation as a digital resource. ICD-11 comes with an implementation package that includes transition tables from and to ICD-10, a translation tool, a coding tool, web-services, a manual, training material, and more. All tools are accessible after self-registration from the maintenance platform.

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A Comprehensive Study on Waste Segregation Techniques

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***Abstract*-With ever increasing urbanization and growth all over the world, we need a stable and sustainable development plan. One of the vital parts of the urban development plan is proper waste management in which waste collection is a very complicated process which involves efficient management of the entire system, beginning with the collection to the dumping of wastes hygienically. Segregation of collected waste is essential due to the fact that if all waste materials such as polythene bags, old furniture, and e-waste get mixed up in the landfills, it could lead towards contamination of the land through leaking toxic substances. Wet waste fraction is converted either into compost or methane gas. Compost can replace chemical fertilizers demands, and biogas can be used as a source of energy. The metallic, plastic and paper waste can be reused or recycled. An automated waste segregation process is the most basic requirement for kick-starting management process. Thus in this paper, we have compared various automated waste segregation processes implemented using different technologies.**

Index Terms - Urban development, biogas, e-waste, automated waste segregation.

INTRODUCTION

In today's world common problem faced in waste collection and dumping is mainly: overflowing garbage bins and waste segregation as per its type. Nearby 62 million tons of waste is generated each day by 377 million people living in urban India of which 45 million of waste is left untreated and disposed of unhygienically causing severe health problems and environmental degradation [1]. A rage of notable inflation in the municipal solid waste generation has been registered. worldwide due to overpopulation, industrialization and economic growth and overflowing landfills are impossible to reclaim because of the improper disposal of wastes on outskirts of cities causing vital environmental entanglement in terms of water pollution and global warming causing a reduction in average lifetime of the manual segregator [2]. In India, ragpickers and conservancy staff play a crucial role in the recycling of urban solid waste and have higher jejuneness due to infections of the skin, respiratory system, gastrointestinal tract, and other allergic disorders. This can be diminished if segregation takes place at the source of the municipal waste generation which will also give a higher quality of the material is preserved for recycling thereby recapturing more value from the waste. This not only reduces occupational hazard for rag pickers but also reducing the processing time of segregating the waste after collection. The economic value of the waste generated is realized after it is recycled completely and there are different techniques available to recycle and reuse the municipal solid waste. When the waste is segregated into basic categories such as wet, dry and metallic, it has an intense perspective of improvement, and accordingly, recycled and reused. Thus in this paper, we have done a comprehensive survey of different existing techniques for automation of waste segregation [3][4].

I. CATEGORIES OF WASTE

Waste can be classified into different categories. Moreover, some types of wastes can be recycled and others may not.

2.1.Liquid Waste– Liquid waste is usually found both in homes as well as in industries. It includes dirty water, wash water, organic liquids, even rainwater, and waste detergents.

2.2.Solid Waste– Solid waste can include items found in your household along with commercial and industrial locations. Commonly broken down into several types.

2.2.1. Paper Waste– Includes packaging material, newspapers, cardboard, etc. Paper can be recycled and reused thus should be disposed of in recycling bin.

2.2.2. Metals– Mostly generated as industrial or household waste. It can be recycled thus should be preferably disposed of separately.

2.2.3.Plastic waste– Consists of bags, jars, bottles, etc. that can be found in the household. It is non-biodegradable, but most of them can be recycled. Plastic should not be mixed with regular waste, it should be sorted and placed in a separate bin. Recycling of plastic overcomes energy usage up to 90%.

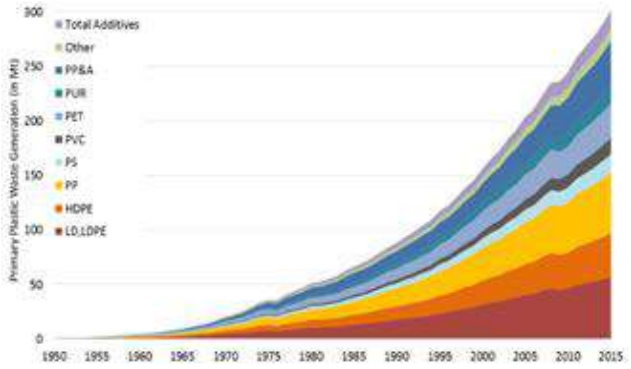

Fig 1- Primary plastic waste generation.
Source-https://cosmosmagazine.com/society/global-plastic-waste-totals-4-9-billion-tonnes

Above figure shows different types of plastic waste generated from 1950 to 2015. It was observed that PP&A, PUR, and PVC contributes the maximum to the plastic

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Realtime Indoor Location-Based Passenger Tracking System using Bluetooth Beacon for Airport Authority

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Abstract: ***For years, airport operators have tried to make visitor experiences a little better. Security & quality of service provided is always been an important part of airport management team. For example, Security and quality of service shows the growth from a preliminary target operations and facilities, into a chief focus on remitting a passenger-absorbed service proficiency. The project was galvanised by the requirement to assess the whole airports performance stationed on the complete security aspect from arrival to departure terminals and vice versa, this need has not been so far addressed by people. For this reason, with Bluetooth beacons, airport operators will get the chance to connect better with their passengers. In the proposed system, we have developed a real-time position locating system with the help of the Bluetooth Low Energy (BLE) technology to pillar the collaborative communications by using star topology option to increase the suitability of the suggested beacon proposal. We have used a range-average algorithm that measures the shortest distance. The execution result dipits that our beacon will detect the presence of passengers at certain time and locations, and then the passenger current location will be sent to the administering server via reader/gateway through the broadcast from the beacon. Moreover, the administering server will generate alert based on location which are marked as restricted area.Thus, our system successfully implements indoor positioning using BLE beacons technology thereby providing most efficient and completely automated airport security system.***

Keywords: Bluetooth Low Energy, Real Time Location Services, Range-Average Algorithm , Alerts , Airport Security, Indoor Positioning, Readers, Beacons.

I. INTRODUCTION

Real-time location systems (RTLS) are becoming much more used since wireless technologies started to provide the necessary infrastructure to develop useful services. Real-time location systems cites to a general region of technology which permits to decide the current position of an object of interest based on real-time information collected through a wireless device or set of devices of some nature [1]. When speaking about RTLS systems,we mainly can have two perspectives systems are built upon: server-based and client-based RTLS systems.

And they mainly differ on whether the object being located is moving or standing still. The global positioning system (GPS) was one of the first well-known cases of RTLS to track vehicles but currently we assist this technology being used in outdoor environment in several scenarios such as logistics applications, transportation management or land-based transports. In the case of client based system, the positioning of the wireless device is made right in the direction of the device and normally it uses an application which examines the signals from Wi-Fi or access points, LED or Beacons and usually also comprises of a database in which the signal strength is recorded. Asset tracking depend of its nature and location. Indoor environment changes radically the technologies that can be used and almost excludes GPS and cellular based systems due to their lack of signal. In these type of conditions, different technologies are considered like Wi-Fi or Radio-Frequency Identification (RFID) or the recently developed Bluetooth Low Energy (BLE) technology.

Some existent scenarios that use some of these technologies include equipment tracking, real time personnel finding, patient and guest finding [2], among others. Some of these scenarios represent typical server-based RTLS scenarios that is characterized by devices which have Wi-Fi built-in and enabled in them, or have a Bluetooth enabled tag / Bluetooth enabled beacon which is transmitting a unique key that will be recorded by a specific device that transmits it to a server that calculates positioning using a specific algorithm or techniques. Server-based scenarios are totally adequate and currently very used for asset tracking in Airports.

Let's consider a feasible scenario of the proposed system. A company which is providing services to the airport & the company constructs an real-time locating system by placing adequate number of smart BLE Beacon and wireless Beacon Receiver in the

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Advanced Rescue Operation for Incidents and Disasters

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***Abstract:** In previous years, due to increase of traffic and roads hazardous there are a lot of accidents which causes a huge loss of lives because of various reasons. Main factors contributing to such major losses are that the accident or incident is not detected and no emergency facilities are provided to the victim at the right moment. Also, the emergency facilities are not coordinated between each other, In this paper we would suggest a system that would help saving lives by detecting the incident with the help of real- time images clicked by people or camera that would be installed on every location. The real time snapshots would undergo some deep learning algorithms to extract the services they require at the time of incident. Once the incident is verified the emergency facilities would be provided to them through our system that connects the services in no time loss. We would then calculate the shortest and the safest route to save the victim so that the victim should reach the hospital containing facilities to accommodate the incident in no time loss. Our system would be targeting the crucial problem society is facing and many emergency services are facing because of lack of coordination between them. This system would increase the life expectancy of the people by saving them with the casualties that happen and saving them with no loss of time.*

***Keywords:** Accidents, Disaster Management, Real-Time Snapshot, deep Learning, Coordination, Routing, Emergency Services, Efficiency.*

I. INTRODUCTION

The exponential growth in vehicle industry has shooted up the casualties occured due to mishaps. There is substantial pressure on the amount of resources available as compared to demand of infrastructure facilities. The number of hospitals, ambulances and other facilities need to be utilized efficiently in order to cope up with the increasing demand.

According to Times of India report of 2018, 40% road accident victims in 2018 died due to excessive loss of blood Figure[1]. The main reason for death of road accident victims is severe bleeding, resulting in hypovolemic shock. This could be prevented by speeding up the rescue operation and providing technical assistance to the subjects. First aid care teams have been prevalent in chicago since 1995. They train teams of volunteers of providing first aid to the nearby victims. However, first aid is not sufficient in many casualties and non-professionals cannot be trusted for saving person's life. Hence, it's not an appropriate solution. We have been working for one year to come up with a system that could automate the entire rescue services. The system consists of mobile applications connected to remote database servers.

II. RELATED WORK

Previously many authors have worked on aiding rescue services focusing on bottlenecks in relief operations, such as emergency facility location, vehicle routing, evacuation planning, etc [06]–[09]. The advancement of information technology with Cloud, machine learning and robotics enables to automate a variety of operational tasks in decision-support systems (DSS). Wallace and Balogh [02] demonstrated a system for automating decision making in rescue operations. They focused on planning and controlling the rescue operation using their system. DSS is meant to take decisions using available information without human intervention. DSS for rescue operations must deal with unsuitable and adverse environments. Oxendine, Sonwalkar & Waters written an article discussing on the disaster response and evacuation planning for the borough of Manhattan, New York City, New York [14]. They primarily use mobile application data for solving the challenges of achieving evacuation planning objectives for any densely populated city stem. It provided for shortest path and network routing functions but lacked in automation of the rescue operation.

The figure[1] shows TOI report of the major issues of death in India. The death due to excessive bleeding can be majorly reduced by bringing advanced rescue operations as purposed in this paper. Some countries found a major problem and have came up with many technological advancements to eliminate this problem by providing radio frequency channels to communicate and trying to make route for ambulances so that no occurrence of loss of life could be possibly because of not proper medical emergency services. But under-developed and developing countries are still facing this issue because of different factors. The rescue operation becomes inefficient and victim often reaches late to the hospital.

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Artificial Intelligence based Bank Cheque Signature Verification System

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Abstract: ***Signatures are one of the feature which distinguishes a person's identity. But to make it as a conventional method to emerge it with the current trends of technology we will try to automate the signature system in order to make it more reliable and efficient. In this project, we present a simple approach of offline signature verification, where the signature is done on paper and then it will be transferred to an image format by capturing it with camera of mobile phone or tablet. For identifying the signature, we will first do some statistical calculations aiming to extract the features from the signature and then we train the captured signature images using some classification algorithm on these features from different signers. And at last, the extracted features from the tested signature are compared with the previously trained features and we know the identity of the signer.***
Keywords: Image Preprocessing, Feature Extraction, Training and Testing, Signature Recognition, Signature Verification.

I. INTRODUCTION

Signatures can be widely used as one of the biometrics which can be used to increase the security. As security has become one of the most important part of our life today. In banks, signatures of a person is one of the factor which is used to check the authenticity of user and whenever the person wants to carry out some transactions the signature is used to verify the identity of the user. Nowadays, verification of signatures are done by staff members of the bank and there is more chance that the signature of a genuine person can be forged by someone else. But this is not a precise way of doing it as forgery cannot be detected easily with naked eye.If forgery is not detected then the possibility is high that the customers will suffer from lot of loss and also it will give a bad impact on bank's reputation. So, our proposed system will make this process automate and it will be more accurate to test the signatures of a person.

Our system will focus on offline signature verification. where the signature of a person will be captured using camera and then it will used as a image to test with the signatures of users which are previously stored in the database. Classification of signatures are done on the basis of the features extracted from the image of the signature. For this our proposed system comprises of two phases training phase and testing phase. During training phase, preprocessing, feature extraction and classification of signature as genuine or forge is done and then during testing phase we will test the signatures based on the details stored in the database.

II. BASIC OPERATIONS

A. Pre Processing

In this phase, we will do some preprocessing steps to remove the noise from images and make it noise free. we have used RGB to gray to convert the colour images to gray shade so as it can be easier during feature extraction. we have also used resize function which will resize all the images to predefined size it will act as a bounding box for each image. As when we scan and upload the images there is possibility that all the images will not have same size so in that case resize function will do resizing of images.

B. Feature Extraction

After preprocessing next step is to extract the features from the captured image. In this phase all the local pattern features, text features from the image are extracted and later it will help in classification of genuine or forged signatures of a person. From one signature image it will extract 3776 features and then it will stored and shown in a matrix form later it will be used for training.

C. Classification

After the extraction of features are done then we will do classification. classification is necessary because it is the only step after which we will be able to predict the signature as genuine as forged. classification is done using SVM classification algorithm we will also set some threshold value which will be used for classification as if the threshold value of testing image is greater then the specified threshold value then it will show that the signature is forged.

Journal Papers
for
Academic Year : 2017-18

GENERIC MEDICINE RECOMMENDER SYSTEM

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***Abstract*-- With the growth of pharmaceutical industries cheaper medicines are now available in the market called Generic Drugs. Generic medicines are those which contain the same active ingredient in the same quantity as that of a brand-name medicine. Generic medicines therefore have the same effect on the body in terms of curing disease as the brand-name medicines.**
But doctors normally prescribe the branded medicines so we should have a system from where we could get the names of the generic medicines.
This paper demonstrates a generic Medicine Recommender System for Doctors/patients which basically maps and recommends Generic Medicines having the same constituents as that of branded medicine prescribed by the doctor. Along with this it also builds awareness about Side effects, Dosage and cost of the medicines.

Keywords: Generics, Collaborative Filtering, Scraping.

INTRODUCTION

With the growth of pharmaceutical industries cheaper medicines are now available in the market called Generic drugs. But these medicines are not prescribed by the doctors though they have the same effect as that of the brand medicines. So, patients spend more money on the brand medicines. The proposed project is relevant as it has a socio-economic impact on the society as it recommends the name of the generic medicines having the same constituents as that of the brand medicines.
The proposed solution helps Doctors/patients by basically mapping and recommending Generic Medicines having the same constituents as that of branded medicine prescribed by the doctor. Along with this it also builds awareness about Side effects, Dosage and cost of the medicines.

Drawbacks of Existing Systems:

1.1mg

1mg is an android application which has a list of generic medicines. But this system
does not have any recommender system. The System only lists the names of the generic medicines.

2. Jan Aushadi

Jan Aushadi is a website which is recently hosted by the National Informatics center and is maintained by the pharmaceutical department. This the first website which is hosted after the initiative taken by the prime minister. As this website is hosted recently it has limited data and it does not has a recommender system.

LITERATURE REVIEW

This paper [1] shows that Recommendation algorithms are best known for their use on e-commerce Websites, where they use input about a customer's interests to generate a list of recommended items. Many applications use only the items that customers purchase and explicitly rate to represent their interests, but they can also use other attributes, including items viewed, demographic data, subject interests, and favorite artists. In this paper, recommendation algorithms are shown to personalize the online system for each customer. The system radically changes based on customer interests, showing programming titles to a software engineer.

Another system [2] proposed in this paper focuses on Text detection in images or videos is an important step to achieve multimedia content retrieval. In this paper, an efficient algorithm which can automatically detect, localize and extract horizontally aligned text in images (and digital videos) with complex backgrounds is presented. The proposed approach is based on the application of a color reduction technique, a method for edge detection, and the localization of text regions using projection profile analyzes and geometrical properties. The output of the algorithm are text boxes with a simplified background, ready to be fed into an OCR engine for subsequent character recognition. Our proposal is robust with respect to different font sizes, font colors, languages and background complexities. The performance of the approach is demonstrated by presenting promising experimental results for a set of images taken from different types of video sequences.

[3] A robust algorithm that detects text from natural scene images and extracts them regardless of the orientation is proposed. All existing methods are designed to operate under a certain constraint, like detecting text only in one direction. Maximally Stable Extremal Regions (MSER) detector is chosen to extract binary regions since it has proven to be robust to lighting conditions. An enhancement technique for MSER images is designed to obtain clear letter boundaries. Images are then fed into a Stroke Width Detector and several heuristics are applied to remove non-text pixels. Afterwards, detected text regions are fed into an Optical Character Recognition module and then filtered according to their confidence measure. The recognition of

CRIME DATA ANALYSIS

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Abstract: Criminal Analysis is a systematic approach for identifying trends in a given data set and analyzing the trends to come to a conclusion. Given a data set of suspects, our system can give predict which suspect has the most chance of committing the particular crime, which means the police department will know on which suspect the most focus should be driven. This paper present the use of Data Mining to extract previously unknown and useful information from the provided data set. The proposed system identifies through its dataset and the algorithm developed, the most probable culprit. This prediction thus reduces the time complexities involved in narrowing down on the suspect and the culprit. This paper further evaluates the individual criminal statistics that would help the police forces to resolve the crime effectively.

Keywords— Crime, Prediction, Machine Learning model, Suspects.

I. Introduction

In today's world crimes are on the rise, misuse of technology and various socio economic factors have led to global increase of crimes.

Analysis of the crime scenario, the data obtained and determination of probable suspect is a challenge. The existing crime analysis system work on the traditional mechanisms, processes and methods.

The process of criminal identification in India is commonly executed using traditional method. The police stations use a database system to store the criminal information and access the database when criminal information is required.

Crime patterns are changing all the time and growing. The crime data previously stored from sources has a tendency to increase. The management of this data and analysis of the data is very difficult. Thus it can be said that crime data analysis is fundamental to effective prevention of crime. Knowing more information about the criminal will help significantly in the Analysis process [1]. To solve the above mentioned problems, data mining techniques and machine learning algorithms are needed to extract trends from the data [2].

However to improve traditional system ,a system has been proposed that operates on utilizing criminal data and its analysis. The analysis basically means storing the criminal data in a particular format, analyzing the stored data to find criminal and deriving conclusions from the analyzed data. This would ensure law enforcement function which involves systematic analysis for identifying and analyzing criminal and its trends in crime and disorder [3].

II.Relevance Of The Proposed Work

The Proposed work is relevant to the Government Agencies Such as Police and other security personals. The Proposed work would Help the Officers to do the analysis on the Criminal and find the probability on the list of the criminal with highest probability to do the crime. This will save the time and can help to solve the case faster.

III.Literature Review

A thorough literature survey was performed to get a better understanding of the topic, models developed and noted their advantages and drawbacks, and highlight the necessary developments [3][4].

In Many of the models developed previously they are just focusing on the Geographic information science which helps them to Visualize the Number of the crime in a particular region on the maps [5] which can't we used for prevention of crime. Or we can say that there is no method/model to find out the probability of the criminal which can greatly help in reducing the crime by focusing on that criminal.

According to the International Association of Crime Analysis (IACA), "Crime analysis is a process in which a set of quantitative and qualitative techniques are used to analyze data useful to the police agencies and their communities. A wide amount of research has been done in the domain of crime data analysis [6].

According to IACA various types included are 'Crime Intelligence Analysis', 'Tactical Crime Analysis', 'Strategic Crime Analysis ' and 'Administrative Crime Analysis' [7]. Based on the literature survey conducted it was observed that the existing models operate under GIS system while also needs to be involved in the crime on finding out the probability of suspects [8].

There are several web based crime mapping systems available on the internet however majority of them are custom made for legislative authorities in different countries and those systems are not accessible to parties outside the particular law enforcement authorities [9].

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Proposed System for Iota Based Prepaid Electric Billing Meter

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Abstract: *The curve for the demand for electricity in India has always been on the increasing side while the curve for the supply has been on the decreasing side. This paper proposes an IoT based prepaid electric billing meter with an objective to let the end user know his/her real time consumption of electricity. This will enable users to make a conscious effort to reduce consumption. The end user can track his/her real time consumption of electricity on the web interface with a unique login id and password. The end user can also recharge from the same interface. This real time awareness of consumption will also help end user to control his/her electricity theft.*

Keywords: *cloud-based infrastructure, IoT based electric meter, prepaid electric meter, Raspberry Pi.*

I. Introduction

The electricity billing system has been post-paid over the years in India. While in case of mobile system it is both, prepaid and post-paid, and the analytics shows that prepaid users have lesser phone bills as compared to post-paid. With this analogy of telecom system, the electricity billing system can also be made prepaid and can prove helpful for keeping a check on the consumption of electricity in India.

The non-linearity in the graph of availability versus requirement for electricity has been eventually increasing in the past few years in India. Due to the post-paid billing system, people are not aware of the way or amount of electricity (real-time) they are using it on daily/monthly basis. Real time statistics can be very helpful for this. The consumption of electricity and the above scenario can be controlled by introducing the prepaid billing facility in the electric meter.

The IoT based prepaid electric billing meter will be connected to the web-interface through a cloud-based infrastructure. In addition, the same interface will be used for recharging and tracking real time electricity purposes. The whole system is designed in such a manner that null balance will lead to electricity cut-off. Also, special measures are provided in times of emergencies when payment of bill is not possible.

II. Existing Systems

The post-paid electricity billing system already involves a lot of labour work and efforts. The major disadvantage with this system is the possibility of human error, the person taking readings may make a mistake. In addition, the current system is a post-paid one; we know the bill only at the end of the month. There is huge scope for electricity theft [2]. Accuracy is also an issue. In spite of this post-paid billing system, few prepaid systems have been proposed and developed.

One of the method that has been proposed [2] was based on using Microcontroller and which uses the Recharge Card of various ranges like □50, □100, etc. and meter can be recharged using keypad present on it. The measures taken to reduce the control the electricity theft by developing the prepaid system [1] using GSM/GPRS infrastructure in which the recharge can be done through SMS and here as well the Microcontroller is used. Getting the readings from the electric meter is one of the challenging tasks in developing such prepaid systems and hence one of the ways that is proposed in one of the existing system[3] is by using camera to capture the image (of reading), captured image is pre -processed to get display plate and characters are recognized by processor Raspberry Pi using contour algorithm, by taking difference between two readings of consecutive months billing is done and is sent to the consumer using GSM / GPRS[4] wireless technology. Another system[8]] integrates the ZigBee protocol in Raspberry Pi using Python and using Python the raw data is converted into a .CSV file which acts as input to the MySQL database and the data is uploaded on the website.

The technologies like GPRS has almost become outdated and the internet is getting cheaper day by day especially in a developing country like India. Hence, the prepaid system with cloud infrastructure is necessary to

HEALTH AND FITNESS ASSISTANT

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***Abstract*:** A personal trainer is a fitness professional that provides motivation needed to reach your target. Personal Trainer plays a vital role in your fitness success. When the target is selected, the trainer will instruct appropriate workout methods and helps in overall development of his client. But all of this comes at great cost. Generally, more qualified the Trainer is, the more personal sessions will cost. This paper enables us to understand how the need for the Personal Trainer can be fulfilled in a web app, by using machine learning algorithms. This app will be able to learn about your diet and customize a diet plan according to type of workout selected. It will also be able to produce custom workout plans for the user based on their recent activities throughout the day, in the last week or the last month. Each plan will bring you closer to the body and healthy lifestyle the user want.

IndexTerms - Machine Learning algorithms, Web App

Introduction

People nowadays have got more conscious about their health. They consult a dietician or a personal trainer regularly so that to make sure they fit all the time. But visiting a dietician or a personal trainer regularly can be costly and time consuming. Moreover a dietician or a personal trainer cannot keep track of the day to day activities of the user in order to give a diet plan and workout routine.So these problems will be solved by the proposed system.

The goal of this system is to provide a personal trainer which suggests a diet plan and workout plan for a particular type of training that is selected. The personal trainer has the ability to take the workouts to an another level irrespective of the ability to remain motivated. When humans are been watched, humans have the tendency to pull, push and act amongst themselves in a better way. These workouts, exercises and training would always be at a greater level, accurate and proper, if that person training them is a professional in fitness and diet. This professional knows the correct exercises and their techniques.
Health and Fitness Assistant (HFA) is a simple to use , user friendly, free web app.
This assistant has been trained, using various machine learning algorithms, to create and implement customised workout and diet plan that are suitable for specific user. Hence this app would create a proper plan and schedule for the users diet and workout sessions according to the goals and target selected by the user using research-proven and published protocols. If the user has not completed or reached his current daily target provided by the web app, the current plan would be customised to the current schedule for the upcoming days. As a result, progress of each day would be monitored and analysed by the system and each day there will be plan and schedule according to the previous activities. Each piece of advice has one motive: to reach the user's fitness goals.

This assistance is for all your health and fitness needs. The diet and fitness section gives information about how you can control your daily diet, and how you can workout and exercise to lead a healthier , better and well-rounded lifestyle.
This system will have an overview “look” to see the improvement they have made.This system is able to learn about your diet and customize a diet plan according to type of workout selected.. The app is able to produce custom workout plans for the user based on their recent activities throughout the day, in the last week or the last month Database will be updated with information like current diet consumed and exercise done. The system will have various tools to compute fitness related parameter like Daily proteins requirement, Food fat, Target heart rate, One Rep max etc.

I. Motivation

There are large amount of mobile applications for weight and diet management. Although, applications for these management are not experimented and checked in many contents as well as there is no support for accuracy. Efficiency, improvements, quality are important in their own aspects. There are handsome, less, few amount of examples of food systems and diet systems that provide to the users nutritional information about proper diet and proper workout plan. We propose HFA(Health and Fitness assistant), a recommender system to improve the quality of life of obese people, healthy people and individuals affected by chronic diet-related diseases. The proposed system is able to build a user's health profile, and provides individualized nutritional recommendation according to the health profile as well as list of exercises to be done in order to lead a healthier life.

Most people lack the knowledge on how to get a good workout. Going to gym frequently, people don't have any support and the information to get proper results. Health and Fitness Assistant, free web app, will get a customised workout with a clear focus on users goals and results. If the user wants to lose weight, tone or tighten muscles, or simply lead a better life, the HFA has a simple

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Printease - A Smart Printing Application: Implementation

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Abstract: *PrintEase - A Smart Printing Application is an android based application which is primarily built for common people so that they can avail printing service at their fingertips. The main purpose behind building this application is to save people's time and provide value added packages to all the users. Value added packages are generated by analyzing the order history and usage of application. By using Data mining concepts users behavior is analyzed. Particle Swarm Optimization (PSO) algorithm is a data mining algorithm that is used for data analysis and generation of packages.*

Keywords: *Data Mining, Particle Swarm Optimization (PSO), Data Analysis, Personal Best, Global Best*

I. Introduction

PrintEase - A Smart printing application is an android based application which uses data mining concepts for analyzing data and generating packages. By analyzing user history and usage of application, Particle Swarm Optimization (PSO) analyzes the parameters and generates the best package available for the group. PSO algorithm provides the best optimal solution for the group. The main purpose of including PSO algorithm in our application is to provide the best packages for users, so that users can use or application more often and save their time.

II. Related Work

A. Particle Swarm Optimization (PSO)

Particle Swarm Optimization (PSO) is an approach to problems whose solutions can be represented as a point in an n-dimensional solution space. A number of *particles* are randomly set into motion through this space. At each iteration, they observe the "fitness" of themselves and their neighbours and "emulate" successful neighbours (those whose current position represents a better solution to the problem than theirs) by moving towards them.[3] Various schemes for grouping particles into competing, semi-independent *flocks* can be used, or all the particles can belong to a single global flock. This extremely simple approach has been surprisingly effective across a variety of problem domains. Particle swarm optimization (PSO) is a population based stochastic optimization technique developed by Dr. Eberhart and Dr. Kennedy in 1995, inspired by social behaviour of bird flocking or fish schooling. [1]

PSO shares many similarities with evolutionary computation techniques such as Genetic Algorithms (GA). The system is initialized with a population of random solutions and searches for optima by updating generations. However, unlike GA, PSO has no evolution operators such as crossover and mutation. In PSO, the potential solutions, called particles, fly through the problem space by following the current optimum particles.[4]

This algorithm takes following values:

1. Global best value
2. Personal Best value
3. Stopping criteria for large scales

1. Global best value: It is also known as gbest value. It increases the rate of aggregation which offers high robustness. Instead of maintaining all the solution of individuals. Gbest offers a facility of maintaining single best solution fitness value. It generally acts like magnet which pulls all the particles towards it.
2. Personal best values: As PSO works efficiently with the group of elements. Instead of taking alone action with the help of swarm the corporate behaviour can be achieved. Let us take the example of flocking birds which are in search of their food. So the target of the whole population is food. Each particle has its own persona best information which guides to reach the target. The personal best is that best position the element has visited which gives the fitness value of swarm.
3. When to stop the large scale optimization of Non- linear data: When the number of iterations may not compatible with large scale. When maximum number of function evaluation is done the CPU time is utilized.

B. Application of PSO:

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Real Time Bus Tracking System

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Abstract: *In the busy metropolitan cities, people don't have time to invest in waiting for transport. Waiting time for transport in such crowded cities leads to less productivity on a whole. People face this problem in their daily life where they have no idea about the current status of their transport. So the proposed solution is an android based application that will help the user to check out the current location of the bus and also will help the user to know how much time the bus will take to reach the current location of the user. The system will use IoT as the basis for the application and basic android application will be interfacing with the updated database to provide the real-time data to the user, hence enhancing the user-experience.*
Keywords: *Android Application, Enhancing, Interfacing, IoT, Proposed.*

I. Introduction

There are buses available for passengers travelling to different locations, but not many passengers have complete information about these buses. Complete information namely the number of buses that go to the required destination, bus numbers, bus timings, the routes through which the bus would pass, time taken for the vehicle to reach its destination location would assist the passengers with various routes, track the current location of the bus and give the correct time for the bus to reach its bus stop. The proposed system deals with overcoming the problems stated above. The system is an Android application that gives necessary information about all the buses travelling in Mumbai. The platform chosen for this kind of system is android, reason being Android Operating System has come up on a very large scale and is owned by almost every second person. As more and more applications of android operating system is developed day by day on large scale ever since it is advent. Android is an open source mobile software environment. There are various problems that require solution such as 'the zone in which the bus is' and 'the recorded time that each bus passed through each zone'. The limitation of this algorithm is that it is not suitable for large cities where both travel time and dwell time could be subject to large variations. Generally speaking, these models are reliable only when the traffic pattern in the area of interest is relatively stable.

II. Literature Survey

These are some of the technical literature in engineering and technology where people have tried to implement similar kind of Systems which are mentioned below with their shortcomings with respect to our Application.

Authors "Mr. Pradip Suresh Mane & Prof. Vaishali Khairnar" have implemented the proposed system Analysis of Bus Tracking System Using GPS on Smartphone's" which focuses more on just Tracking the vehicle module. Wherein a mobile application is used to track the nearby Vehicles & also notifies about the nearby bus stops, so that the people can plan their route & Travel options accordingly & has been implemented in-order to improve the decisions made by general people while commuting considering the "Best Transport Division" The inference drawn by this system is that the main focus is on the android application which provides all the information of the vehicle.

Authors "Mrs.Swati Chandorkar, SnehaMugade, Sanjana Sinha, MegharaniMisal, Puja Boreka" implemented the proposed system "Implementation of Real Time Bus Monitoring and Passenger Information System" track the current location of the bus/vehicle & indicate the normal user about the current location & notifies general user about the natural delay caused during transportation considering any kind of natural calamity. These messages regarding the arrival of the bus is updated on a back-end server, this information is notified to the commuters via a Smartphone app so that commuter can opt for a different route. The inference drawn by this system is that the main focus is on the location of the buses and the delay because of any calamity. Authors "ManiniKumbhar, MeghanaSurvase, Pratibha MAvdhutSalunk" have implemented "Real Time Web Based Bus Tracking System" The proposed system reduces the waiting time of remote users for bus. A system is used to track the bus at any location at any time. All the current information is stored to the server and it is retrieved to remote users via web based application. This system is more user friendly for users to get information visually shown on Google Map. User can freely get this web based application for real time tracking of bus which provide interactive interface environment.This application helps remote user to just wait

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Integrating BCI with Virtual Reality

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Abstract: The purpose of this project is to implement a VR game in which the EEG headset is trained to respond to the stimuli within the game by capturing a player's EEG signals. These EEG signals are generated by the player's emotions such as attention and meditation. Using the values obtained from the EEG headset we will enable the player to control the game using the headset. The main objective of this project is to empower a person with the ability to control any object in a virtual environment by analysing brain wave patterns and applying the resultant data to train the Brain Control Interface(BCI) device. The vision of the project is to make a player free from using hardware plug-ins and control the game using BCI.

Keywords -- EEG, BCI Headset, VR Headset, Unity

I. INTRODUCTION

The BCI (Brain Control Device) is a device which gathers EEG signals from the Brain and helps us establish a direct communication link between the Brain and external Devices. Due to the high temporal resolution and portability of EEG (Electroencephalogram), the BCI system based on it is easy to put into practice. The BCI system transforms the EEG signals to corresponding commands to control external devices. The performance of the device is best implemented in a Virtual Environment as it is a cost-effective method , it gives the feel of working in a real environment , changes can be easily implemented and simulation testing is much efficient than testing it in real environment. The VR (Virtual Reality) technology has the capability of creating an immersive and interactive environment. Meanwhile, it can configure the ideal environment of the BCI practical system at a lower cost. So, the VR technology can be used to achieve the high quality simulated system. Unity3D, as an integrated game engine and editor, is one of the VR technologies. It is known that components are used to develop games in Unity3D, which include mesh component, physics component, audio component, rendering component and script component, etc. Unity3D provides rich resource packages, such as terrain creation tools, common scripts, collision detection, sky boxes and so on. High-level programming languages like C# and JavaScript are used for implementing the script functions [1]. In short, all of these are beneficial to create high-performance multimedia applications or games efficiently.

Rest of the paper is organised as follows: Section-I contains the Introduction. Section II contains the basic overview of BCI and EEG technology. Section-III contains information about an EEG headset, HTC VIVE a VR headseet. Section-IV contains information about UNITY3D game engine to be used to design the game. Section-V contains the Methodology to be followed during the entire game design. Section-VI contains the Conclusion.

II. BCI AND EEG OVERVIEW

Using the BCI system, Artificial Intelligence system, we can recognize a certain set of patterns in brain signals in consecutive stages: signal acquisition, pre processing or signal enhancement, feature extraction, classification, sensory evoked potential and the control interface. Reducing the noise and the artifact processing in the captured brain signals is done in the signal acquisition stage .The task of making the brain signals suitable for future processing is done in the preprocessing stage. Distinguished information in the recorded brain signals will then be identified in the feature extraction stage. After all this processing the signal is then mapped onto a vector containing effective and particular features from the recorded signals. The extraction of different signals coming from various brain activities is a challenging task as they overlap in both time and space.

EEG is the electric activity generated by brain. Our brain contains millions of neurons these neurons. These neurons tend to generate millions of small electric voltage fields .The detection of these aggregate fields is done by electrodes placed on the scalp. EEG is the superposition of many smaller signals. EEG contains different electric frequencies which can be associated with different physical actions and mental states. The different frequency bands are delta, theta, alpha, beta and gamma.

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Prediction of Crop Yield using Machine Learning

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Abstract - *Looking at the current situation faced by farmers in Maharashtra, we have observed that there is an increase in suicide rate over the years. The reasons behind this includes weather conditions, debt, family issues and frequent change in Indian government norms. Sometimes farmers are not aware about the crop which suits their soil quality, soil nutrients and soil composition. The work proposes to help farmers check the soil quality depending on the analysis done based on data mining approach. Thus the system focuses on checking the soil quality to predict the crop suitable for cultivation according to their soil type and maximize the crop yield with recommending appropriate fertilizer.*

Key Words **: Kohonen's SOM(Self-Organizing Map), BPN(Back-Propagation Neural Networks), API(Application Programming Interface).**

1.INTRODUCTION

[10]As per the statistics of 2016 around 272.82 million farmers dwell in Maharashtra. With this myriad number of farmers and increasing suicide rates , we want to help farmers to understand the importance of prior crop prediction, to flourish their basic knowledge about soil quality, understanding location-wise weather constraints, in order to achieve high crop yield through our technology solution. Most of the existing system are hardware based which makes them expensive and difficult to maintain. Also they lack to give accurate results. Some systems suggest crop sequence depending on yield rate and market price. The system proposed tries to overcome these drawbacks and predicts crops by analyzing structured data. [8]The project being "Prediction of soil quality using data mining approach" certainly focuses on agricultural aspects. Being a totally software solution, it does not allow maintenance factor to be considered much. Also the accuracy level would be high as compared to hardware based solutions, because components like soil composition, soil type, pH value, weather conditions all come into picture during the prediction process.

2. LITERATURE SURVEY

[9]Agriculture sector plays a major role in indian economy, as 70 percent households in india depends purely on this field. Agriculture in India contributes to about 17% of Gross Value Added as of 2015-16.But there is a continuous decline in agriculture's contribution to Gross Value Added.Food is essential for life and we depend on agricultural outputs, so farmers play a very important role. The following comparison is shown below :

The study in [1] used Multiple Linear Regression(MLR) technique for crop analysis.Decision tree algorithm and Classification is used to perform analysis of over 362 datasets and provide result.The training dataset here is classified into as organic,inorganic and real estate for predicting the type of soil. Results computed by this system are accurate as well as reliable.

The study in [2] fed data to a Back Propagation Network to evaluate the test data set. Back Propagation Network uses a hidden layer which helps in better performance in predicting soil properties. Back Propagation Network here, is employed to develop a self-trained function to predict soil properties with parameters. This gives more accuracy and performs better than the traditionally used methods ,however, sometimes the system becomes slow and inconsistency is seen in the output.

In [3] two regression supervised machine learning methods are used: Support Vector Machine(SVM) and Relevance Vector Machine(RVM) to show effectiveness in soil quality prediction. a smart wireless device for sensing soil moisture and meteorological data. The wireless device gives an error rate of 15% and 95% accuracy. However, it has not been tested for real time data.

The paper [4] involves a check for Soil Fertility and Plant Nutrient by using back propagation algorithm. The results are accurate and enables improvement in soil properties. It performs better as compared to traditional methods. However, system is slow inefficient and not stable.

According to paper [5], three methods are used which includes Decision tree, Naive Bayes Classifier, and KNN Classifier which analyses soil and predicts crop yield, However rule based induction and SVM can be used for more accuracy as results are not accurate.

3. Proposed System

The system aims to help farmers to cultivate proper crop for better yield production. To be precise and accurate in predicting crops, the project analyze the nutrients present in the soil and the crop productivity based on location. It can be achieved using unsupervised and supervised learning algorithms, like Kohonen Self Organizing Map (Kohenon's SOM) and BPN (Back Propagation Network). Dataset will then trained by learning networks. It compares the accuracy obtained by different network learning techniques and the most accurate result will be delivered to the end user. Along

Deep Neural Network based mechanism to compute Depression in social media users

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Abstract - *Depression is one of the most prevalent Mental Illnesses. The purpose of this paper is to gauge the extent of depression using Sentiment Analysis. To this intent the authors employ Deep Learning Neural Networks to analyze social media posts and capture the emotions and habits displayed by its user. Using CNN the authors plan to be able to better deal with the obscurity which is often an obstacle in Sentiment Analysis. Regression analysis of these habits and emotions over a period of time will be used to determine the Depression Quotient of the user. Depending upon the severity, the user is provided with a detailed prognosis and general advice.*

***Key Words*: Depression, Sentiment Analysis, Deep Learning, Neural Networks, Regression.**

1. INTRODUCTION

According to the World Health Organization (WHO), depression is the fourth largest disease in the world and suicide has been among the top three causes of death worldwide, leading to one death in every forty seconds. Almost every day many cases come up about people attempting to commit suicide due to depression. Almost 30% of internet users look for online healthy discussions mainly related to psychological and social aspects. The objective of this paper is to gauge a person's mental health using their social media activity. Social networks have become a universal means of communication via expression of opinions, sentiments and sharing of different types of information. Most times, individuals are not vocal about their feelings in person. But they express their opinions more openly on social media platforms. Text analysis provides a more conclusive result to understand the inner-workings and intentions of the human mind.

The data for the paper is obtained from the users of social media by a regular input of information in the form of posts. The paper proposes the use of a 3 layered Deep Neural Network[1] architecture to analyze text and determine the emotions and habits displayed by the users. All the posts made during the period of 24 hours will be considered as a single unit or quantum. The analysis and results of all the quanta will then be subjected to regression analysis[2] and the final result will be produced. The result generated will be a score called the depression quotient (DQ), by means of regression plotting. The DQ generated will not only raise awareness about the widespread prevalence of mental health disorders, but also enable the affected individuals to seek the help they require. Based on the depression quotient, personal automated advice will be given to the people which will help them to deal with their problems. Also a prognosis will be offered whether the depression could lead to suicide.

2. REVIEW

Most of the depression self-diagnostic tools available online are in the form of questionnaires. While these are designed by psychologists and can be highly accurate, it is often the users that cheat the system. As has been reported by psychologists interviewed by the authors, patients tend to subconsciously hide their real intentions and feelings when answering these questionnaires.

While systems have been developed to analyze text for emotions exhibited, the informal nature and imprecise use of grammar has been a hurdle in using traditional NLP[3] and Sentiment Analysis[4] tools like the Stanford CoreNLP[5]. Lack of proper grammar is the root of these troubles.

These systems also only use crisp binary classification. They also fail to connect the emotions with their subjects.

3. PROPOSED SYSTEM

3.1 Principle

In order to overcome the mentioned obstacles, the authors propose a system that discards the need of correct grammar. The proposed system takes into account only effects with relevant subject i.e. only when the user is talking about themselves or a subject with direct effect on them. To deal with the ambiguity of language, instead of strict allotment, every token is to be assigned to emotions to varying degrees based on consult from Psychologists.

3.1 Methodology

In order to accurately simulate a real world social media platform, a micro-blogging website is to be designed and deployed for the purpose of data collection. Users of the website posted about their day to day activities and thoughts. The process of collecting data was carried out for a period of 90 days. This raw data was then processed using Natural Language Processing(NLTK)[6] tools in Python to produce word bags[7] and frequency tables[8]. This step comprises of data collected every day and processed

Heart Disease Prediction Using Naive Bayes

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Abstract—The main objective of this research is to develop a decision support in Heart Disease Prediction System (HDPS) using one Data Modelling technique, namely, Naive Bayes. Using medical attributes such as age, sex, blood pressure, ECG graph, etc. It can predict the likelihood of patients getting a heart disease. HDPS is implemented as an application in MATLAB which can answer user queries, it can discover and extract hidden knowledge (patterns and relationships) associated with heart disease from a historical heart disease database. It can answer complex queries for diagnosing heart disease and thus assist healthcare practitioners to make intelligent clinical decisions which traditional decision support systems cannot.

I. INTRODUCTION

As large amount of data is generated in medical organi-zations (hospitals, medical centers) but as this data is not properly used. There is a wealth of hidden information present in the datasets. This unused data can be converted into useful data. For this purpose we can use different data mining tech-niques. This paper presents a classifier approach for detection of heart disease and shows how Naive Bayes can be used for classification purpose. In our system, we will categories medical data into five categories namely no, low, average, high and very high. Also, if unknown sample comes then the system will predict the class label of that sample. Hence two basic functions namely classification (training) and prediction (test-ing) will be performed. Accuracy of the system is depends on algorithm and database used. The healthcare industry collects huge amounts of healthcare data which, unfortunately, are not mined to discover hidden information for effective decision making. Discovery of hidden patterns and relationships often goes unexploited. Advanced data mining techniques can help remedy this situation. This research has developed a prototype Heart Disease Prediction System (HDPS) using data mining techniques, namely, Decision Trees, Nave Bayes and Neural Network. Results show that each technique has its unique strength in realizing the objectives of the defined mining goals. HDPS can answer complex what if queries which traditional decision support systems cannot. Using medical profiles such as age, sex, blood pressure and blood sugar it can predict the likelihood of patients getting a heart disease. It enables signif-icant knowledge, e.g. patterns, relationships between medical factors related to heart disease, to be established. HDPS is Web-based, user-friendly, scalable, reliable and expandable. In our project the main objective is to develop an Intelligent System using data mining modeling technique, namely, Naive Bayes. It is implemented as web based application in this user answers the predefined questions. It retrieves hidden data from stored database and compares the user values with trained data set. It can answer complex queries for diagnosing heart disease and thus assist healthcare practitioners to make intelligent

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PLANT DISEASE DETECTION AND CLASSIFICATION USING IMAGE PROCESSING AND ARTIFICIAL NEURAL NETWORKS

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Abstract - *Agricultural productivity is something on which Indian economy highly depends. This is one of the reasons that disease detection in plants plays an important role in agricultural field, as having disease in plants is quite natural. If proper care is not taken in this area then it causes serious effects on plants and due to which respective product quality, quantity or productivity is deteriorated. Detection of plant disease through some automatic technique is beneficial as it reduces a large work of monitoring in big farms of crops, and at very early stage itself it detects the symptoms of diseases i.e. when they appear on plant leaves .Visually identifying plant diseases is inefficient, difficult, time consuming, requires expertise in plant diseases and continuous monitoring which might be expensive in large farms. Therefore; a fast, automatic and accurate method to detect plant disease is of great importance. Hence, image processing technique is employed for the detection of plant diseases. The implementation of these technologies will lead to improved productivity.*

Key Words*: *Image Processing, K-means Clustering, Artificial Neural Networks, Feed Forward Neural Networks, Cascaded Feed Neural Networks

1. INTRODUCTION

In this paper a software solution for fast, accurate and automatic detection and classification of plant diseases through Image Processing is presented [1]. Identification of the plant diseases is the key to preventing losses in the quality and quantity of the agricultural product. Health monitoring and disease detection of plant is critical for sustainable agriculture. The typical method of studying plant disease is to rely on visually observable patterns on the plant leaves. Visually identifying plant diseases is inefficient, difficult, time consuming, requires expertise in plant diseases and continuous monitoring which might be expensive in large farms. Therefore; a fast, automatic and accurate method to detect plant disease is of great importance. Hence, image processing technique is employed for the detection of plant diseases. The implementation of these technologies will lead to improved productivity India has a diverse agricultural sector. Agriculture plays a vital role in India's economy and over 58 per cent of the rural households depend on agriculture as their principal means of livelihood. Research in agriculture is aimed towards increase of productivity and quality of food. Three are two main characteristics of plant-disease detection machine-learning methods that must be achieved, they are: speed and accuracy. In this study an automatic detection and classification of leaf diseases has been introduced, this method is based on K-means as a clustering procedure and ANNs(Artificial Neural Networks) as a classifier tool using some texture feature set .The aim of this work is threefold:
1) Identifying the infected object(s) based upon K-means clustering.
2) Extracting the feature set of the infected Leaf images.
3) Detecting and classifying the type of disease using ANNs(Artificial Neural Networks).

2. STEP-BY-STEP APPROACH

2.1 FLOWCHART

The Flowchart gives a brief idea of the various stages; which include Image Acquisition, RGB to Gray conversion ,Median filtering, K-means Clustering and disease detection using Neural Networks. Feed forward back propogation and Cascaded forward back propogation are the two types of neural training networks used.We have collected about 38 images of various plant diseases which we are going to detect as our dataset. The diseases are black spot disease, yellow sigatoka disease, frog eye disease , powdery mildew disease, tobacco ringspot disease, tomato plant disease and valedensia leafspot disease.Pre-processing is done to suppress unwanted image data and to enhance some important image features. It includes RGB to Gray conversion, image resizing and median filtering. The infected part of the plant is then highlighted and made to differ from the healthy part using K-means clustering algorithm. After this various features of the diseased plant images are

AUTOMATIC DETECTION OF BLOOD VESSELS AND CLASSIFICATION OF RETINAL IMAGE INTO DIFFERENT STAGES OF DIABETIC RETINOPATHY

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Abstract - *Diabetes is a rapidly increasing worldwide problem which is characterized by defective metabolism of glucose that causes long-term dysfunction and failure of various organs. The most common complication of diabetes is diabetic retinopathy (DR), which is one of the primary causes of blindness and visual impairment in adults. The rapid increase of diabetes pushes the limits of the current DR screening capabilities for which the digital imaging of the eye fundus (retinal imaging), and automatic or semi-automatic image analysis algorithms provide a potential solution. This project aims to automatically detect diabetic retinopathy (DR), which poses a high risk of severe visual impairment. The symptoms of DR are neovascularization, cotton wool spots, hemorrhages, hard exudates, dilated retinal veins and the growth of abnormal new vessels. Their tortuous, convoluted and obscure appearance can make them difficult to detect. In this project a supervised algorithm is used for the retinal image classification. Artificial Neural Network (ANN) is used to classify the retinal image into one of three stages of the Diabetic Retinopathy. During this work, the publicly available retinal image (fundus Image) database DRIVE is used for the analysis of the algorithm.*

***Key Words*: Diabetic Retinopathy (DR), Automatic detection, Supervised Classification, DRIVE database, Artificial Neural Network (ANN), etc.**

1. INTRODUCTION

Retina is the tissue lining the interior surface of the eye which contains the light sensitive cells (photoreceptors). Photoreceptors convert light into neural signals that are carried to the brain through the optic nerves. In order to record the condition of the retina, an image of the retina (fundus image) can be obtained. A fundus camera system (retinal microscope) is usually used for capturing retinal images. Retinal image contains essential diagnostic information which assists in determining whether the retina is healthy or unhealthy.

Retinal images have been widely used for diagnosing vascular and non-vascular pathology in medical society. Retinal images provide information on the changes in retinal vascular structure, which are common in diseases such as diabetes, occlusion, glaucoma, hypertension, cardiovascular disease and stroke. These diseases usually change reflectivity, tortuosity, and patterns of blood vessels. If left untreated, these medical conditions can cause sight degradation or even blindness. The early exposure of these changes is important for taking preventive measure and hence, the major vision loss can be prevented.

1.1 MOTIVATION

Retina is the tissue lining the interior surface of the eye which contains the light sensitive cells (photoreceptors). Photoreceptors convert light into neural signals that are carried to the brain through the optic nerves. In order to record the condition of the retina, an image of the retina (fundus image) can be obtained. A fundus camera system (retinal microscope) is usually used for capturing retinal images. Retinal image contains essential diagnostic information which assists in determining whether the retina is healthy or unhealthy.

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2. SIGNS OF DIABETIC RETINOPATHY

2.1 SIGNS OF DR

Diabetic retinopathy is a microangiopathy affecting the retinal vasculature caused by hyperglycemia. The damage to the retinal blood vessels will cause blood and fluid to leak on the retina and forms features such as micro-aneurysms, hemorrhages, exudates, cotton wool spots and venous loops. Below the significance and appearance of a few of the main features of DR will be described in more detail and corresponding images will be provided. features of DR will be described in more detail and corresponding images will be provided.

1. **Micro-aneurysms:** These are balloon-like structures on the sides of capillaries which arise due to the weakening of capillary walls. Micro-aneurysms appear like isolated red dots unattached to any blood vessel. They are often the first signs of DR that can be detected. See Fig-1(A).

Object Detection Based Garbage Collection Robot (E-Swachh)

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Abstract -*People are busy in their professional life and they forget to pay attention to their surrounding problems, which can lead to many hazards. One of the main problem is Garbage collection. Many times, it has been observed that the garbage which should be inside the dustbin is actually lying outside the dustbin and causing the pollution of the surrounding environment, which further leads to numerous diseases. To solve this problem a human intervention is required which sometimes may lead to hazardous health problems. This paper proposes the method where a robot can be used to clean the polluted areas such as garbage around the dustbin. A Robot is powered by Solar Panel, which again saves the electric power. Robot has the advantages of the powerful image processing and ultrasonic sensor to sense the surrounding area and accordingly action can be taken. An image processing has been used here to avoid interaction with the wild life. An Ultrasonic sensor is used to detect the object and the distance between the object and Robot. The Ultrasonic sensor is also used to employ a movement algorithm for the movement of the robot.*

***Key Words*: Swachh Bharat Abhiyan, Arm, Image Processing , Distance measurement .**

1.INTRODUCTION:

Garbage is the major problem not only in cities but also in rural areas of India. It is a major source of pollution. Indian cities alone generate more than 100 million tons of solid waste a year. In 2000, India's Supreme Court directed all Indian cities to implement a comprehensive waste-management programme that would include household collection of segregated waste, recycling and composting. These directions have simply been ignored. No major city runs a comprehensive programme of the kind envisioned by the Supreme Court. It is not wrong to say that India is on verge of garbage crisis even though 9000crore rupees are allotted for the Swachh Bharat Abhiyan.

Also, Municipal solid waste workers (MSWWs) or refuse collectors, universally expose too many work related health hazards and safety risks, notably allergic and other diseases of the respiratory system. Health impacts could also entail musculoskeletal, gastro intestinal and infectious diseases as well as injuries caused by work-related accidents. These problems come along by developing activities such as construction of houses, offices, and other business areas. The Environment problems occur due to several reasons; they are the low budget allocation on environment management and public awareness in protecting the environment. The Environment issue which comes up from year to year and still cannot be solved is about garbage and waste.

2.METHODOLOGY:

2.1.Motion of Robot :

The robot can travel in the predetermined path by using a combination of motors, drivers, and sensors connected to the Raspberry Pi-3B. This system consists of four geared motors of 10rpm each, motor drivers and ultrasonic sensor.

The ultrasonic sensors act as input to the Raspberry Pi-3B. The motors are connected to the output of the Raspberry Pi-3B through the drivers. The ultrasonic sensors detect the obstacles and the motors are made to rotate based on the pre-programmed instructions in Raspberry Pi-3B.

2.2.Garbage Collection:

The robot Garbage collection system consists of a set of a ARM connected to the motors. The mechanism will not operate for entirety of the vehicle operation and will rotate only for predetermined set of conditions. The main aim of the mechanism is to collect garbage which is of similar dimensions to that of juice cartons, crushed papers, and all light items whose height is between 5 to 10 cms. Mechanism is mounted on the front side of the base with an appropriate ground clearance. When the sensor detects an obstacle, the image processing is used to categorized the object as garbage or any living organism .The object detection is specifically used for safety of animals ,so that they don't get harm . The garbage is pick and drop into a bin which is placed right behind the mechanism. The robot keeps collecting the garbage until it reaches certain height in the bin. Once the bin is filled the collected garbage is disposed to a selected place.

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FREQUENT PATTERN GROWTH METHOD FOR INFREQUENT WEIGHTED ITEMSET MINING

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ABSTRACT

Itemset mining has been an active area of research due to its successful application in various data mining scenarios including finding association rules. Frequent weighted itemsets represent correlations frequently holding in data in which items may weight differently. Infrequent Itemset mining is a variation of frequent itemset mining where it finds the uninteresting patterns i.e., it finds the data items which occurs very rarely. This seminar tackles the issue of discovering rare and weighted itemsets, i.e., the infrequent weighted itemset (IWI) mining problem. Two algorithms that perform IWI and Minimal IWI mining efficiently are presented. This new algorithm is based on the patterngrowth paradigm to find minimally infrequent itemsets. A minimally infrequent itemset has no subset which is also infrequent.

KEYWORDS: Association rules, infrequent patterns, IWI support, FP Growth.

I. INTRODUCTION

Itemset mining is an exploratory data mining technique widely used for discovering valuable correlations among data. The first attempt to perform itemset mining was focused on discovering frequent itemsets, i.e., patterns whose observed frequency of occurrence in the source data (the support) is above a given threshold [5]. Frequent itemsets find application in a number of real-life contexts (e.g., market basket analysis, medical image processing, biological data analysis). However, many traditional approaches ignore the influence or interest of each item or transaction within the analyzed data. To allow treating items or transactions differently based on their relevance in the frequent item set mining process, the notion of weighted item set has also been introduced [7].

A weight is associated with each data item and characterizes its local significance within each transaction. The significance of a weighted transaction, i.e., a set of weighted items, is commonly evaluated in terms of the corresponding item weights [10]. Furthermore, the main itemset quality measures (e.g., the support) have also been tailored to weighted data and used for driving the frequent weighted itemset mining process. In recent years, the attention of the research community has also been focused on the infrequent itemset mining problem, i.e., discovering itemsets whose frequency of occurrence in the analyzed data is less than or equal to a maximum threshold. Infrequent itemset discovery is applicable to data coming from different real-life application contexts such as statistical disclosure risk assessment from census data and fraud detection.

II. LITERATURE SURVEY

The Apriori Algorithm

Apriori was the first proposed algorithm in association rule mining, to identify the frequent itemsets in the large transactional database [5]. Apriori works in two phases. During the first phase it generates all possible Item sets combinations. These combinations will act as possible candidates. The candidates will be used in subsequent phases. In Apriori algorithm, first the minimum support is applied to find all frequent itemsets in a database and Second, these frequent item sets and the minimum confidence constraint are used to form rules. The advantages of Apriori algorithm are as follows:

1. Easy to implement and can be parallelized easily
2. It uses large itemset property

Output Tracking of Nonminimum-Phase Systems via Reduced-Order Sliding-Mode Design

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***Abstract*—In this paper, a method to design the reduced-order sliding-mode control is proposed for the robust output tracking of an arbitrary signal for nonminimum-phase systems. The main contributions in this paper include the design of the reduced-order switching function that ensures the asymptotic tracking of an arbitrary reference signal during sliding motion, the design of the reduced-order sliding-mode controller that enforces the sliding motion in finite time, and the computation of bounds on stable and virtually stable zero dynamics that is required for the output tracking. To show the effectiveness of the proposed design method, results of implementation on the experimental setup of an inverted pendulum system are also presented here.**

***Index Terms*—Nonminimum-phase systems, output tracking, reduced-order control, sliding-mode control (SMC).**

I. Introduction

ASYMPTOTIC tracking of an arbitrary signal is one of the basic objectives of the control system design. If the zero dynamics of the system is stable, all the established controller design methodologies for the stabilization of the system are applicable for the output tracking. However, many of the engineering applications such as flexible-link manipulators [1], [2], aircraft control [3], [4], dc–dc power converters [5], [6], high-speed linear motors [7], etc., have unstable zero dynamics. In such class of systems, the control problem becomes challenging.

The tracking problem in a nonminimum-phase system is twofold: the stabilization of the unstable zero dynamics and the tracking of the reference signal. However, the basic problem in the output tracking of the nonminimum-phase system is to get the bounded solution of the unstable zero dynamics.

There have been a few methods found in the literature to get the bounded solution to the unstable zero dynamics. For instance, the method of stable system center [8], which essentially is the solution of differential–algebraic equations formed from zero dynamics and output equation. Also, a bounded solution of an unstable zero dynamics can be obtained by computing noncausal inverse if the reference trajectory is known *a priori* [9], [10]. In [11], it has been shown that the inverse dynamics solution can be used to compute the feedforward control, as well as a regulator approach [12].

In [13] and [14], noncausal inverse of a trajectory known for some preview time is utilized for online computation feedforward tracking control. However, tracking performance depends on the preview period. To improve the tracking performance, optimal control is found to be employed with the preview-based stable inversion method in [15].

In the case of uncertain nonminimum-phase systems, the presence of disturbance degrades the tracking performance. Such a situation demands the robust controller that minimizes the adverse effect of disturbance on the tracking performance.

To achieve robustness, the tracking problem can be formulated as an H-∞ control problem that essentially finds the feedback control to decouple the disturbance, e.g., see [16]–[18]. Tracking controller performance depends on the predefined L_2 gain between disturbance and the output. Therefore, H-∞-based designs are essentially the controller synthesis for the best performance.

Sliding-mode control (SMC) is one of the attractive design methods, as the design method is simple, and ideally, it annihilates the matched disturbance completely [19], [20]. Various applications are found in the literature that employs the SMC for robust performance, for example, slosh-free motion of partially filled liquid container using a nonlinear sliding surface in [21], motion control of a linear motor positioner in [22], robust control of a piezoelectric-driven nanopositioning system via third-order integral terminal SMC in [23], and a parameter-estimation-based time-varying sliding-mode controller for the multimotor driving servo systems in [24].

Also, the strength of SMC has been explored in the area of fractional-order switching control [25]. Recently, an adaptive sliding-mode technique based on a fractional-order switching-type control for uncertain 3-D fractional-order nonlinear

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Implementation of High Performance Nonlinear Feedback Control on Magnetic Levitation System

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Abstract: This paper presents the design of nonlinear state feedback that ensures high performance step response of magnetic levitation (maglev) system. The controller is designed for a maglev system in such a way that it exhibits the high speed response without exhibiting overshoot. This is achieved by keeping the damping ratio initially small and as the trajectory approaches to the command value, damping ratio is made high to avoid the overshoot in response. The designed controller is implemented on the experimental setup Maglev 730 system developed by ECP systems and results of the experiment are compared with the simulation results.

Keywords: Magnetic levitation system, composite nonlinear feedback, output regulation, state feedback design, linear matrix inequality.

1. INTRODUCTION

Friction between moving surfaces can be reduced substantially using the magnetic levitation principle. Many industrial applications have been found in literature to have used a magnetic levitation in order to increase the overall efficiency of the system. For instance, (Kaplan and Regev, 1976) utilized magnetic levitation principle for high-speed train suspension. Design of magnetic bearings can be found in (Dussaux, 1990), supraconductor rotor suspension of gyroscopes in (Bencze et al., 1996) and wind turbines has been reported in (Hu, 2008; Kumbernuss et al., 2012). Magnetic levitation principle has been discussed in (Kaloust et al., 2004) for launch assist in space missions.

Usually, controllers for such a system are designed primarily to maintain the levitated object at a desired height and the performance during positioning that otherwise can be hindered by inherent nonlinearities. The design methods for linear and nonlinear state feedback controllers have been found in (Barie and Chiasson, 1996) and (El Hajjaji and Ouladsine, 2001), which are based on feedback linearization (Isidori, 2013). For the robustness against the parametric uncertainties, adaptive robust controller design has been addressed in (Yang and Tateishi, 2001). This method essentially involves a two-step control action. First, the levitated object is positioned using PI controller and second, adaptive robust feedback controller attenuates the effect of parametric uncertainties. Design of a robust 2-DOF (degree-of-freedom) controller using quantitative feedback technique and a nonlinear controller for magnetic levitation has been presented in (Nataraj and Patil, 2008) and (Nataraj and Patil, 2010), respectively. Recently, sliding mode control of magnetic levitation is reported in (Khimani and Rokade, 2017).

The maglev system dynamics can be represented by a second order linear ordinary differential equation. If the motion of levitating object is considered to be frictionless then the system can be modeled as undamped, which exhibits an oscillatory response to the desired position. However, the laboratory setup on which experimentation has been done confines the motion of the levitating magnet along the glass rod. This provides a small amount of friction, though negligible. Therefore, the open loop response of the system becomes underdamped that results in decaying oscillations before it settles to the desired position.

In either case, the response exhibits overshoots. Therefore, it is essential to design the controller that does not exhibit overshoots. A traditional approach of the state feedback via pole placement can be employed easily to place poles of the system for overdamped response that does not exhibit overshoot (Bélanger, 1995). However, rise-time of such response is large. To achieve the response with small rise-time without exhibiting the overshoots design of composite nonlinear feedback (CNF) controller is addressed in (Chen et al., 2003) for continuous-time systems and in (Venkataramanan et al., 2003) for discrete-time systems.

In this paper, we have designed and implemented the CNF controller for the Maglev Model 730 laboratory test bench developed by educational control products ECP (2016), which is an open loop underdamped system. An idea of CNF is utilized to achieve the desired position

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Mc^{2}mu- An Android Parental Control

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ABSTRACT: MC2MU is an application designed for **M**onitoring and **C**ontrolling **C**hilds **M**obile **U**sage as children nowadays are over exposed to technology at a very early age. The presence of advanced technology in daily activities increase their skills to adapt to latest trends. However, the user-friendly android applications enable the children to obtain any type of information which may or may not be appropriate for them. We must consider that they are incapable of differentiating what is right or wrong, which may result in serious situations that impact the growth of a child. This paper proposes a system that helps to monitor and remotely control the child activities. Cases have been reported of teenagers running away from home and following strangers, using mobile phone to send Short Message Service (SMS) that consist of inappropriate words among couples, downloading pornographic videos and images, accessing unrated websites, over exposure to social network and so on [3]. It is not feasible to deny a feature like internet browser or messaging to prevent inappropriate use [4]. This paper proposes an android parental control application which enables users to be free from complex interfaces and thus allows monitoring using simple web pages, enabling content filtering without complete denial. This application consists of UI for both parents and children as per the configuration done during installation. The system uses device id of mobile to identify parent and child.
The next section of the paper presents related work on parental control. Section III describes the need of the application with section IV defines the modules as proposed by the paper and section V presents the system architecture. The paper concludes in Section VI.

KEYWORDS: Parental control, monitoring application, android monitoring, MDM and application usage.

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I. INTRODUCTION

MC^{2}MU is an application developed for **M**onitoring and **C**ontrolling **C**hilds **M**obile **U**sage.With the introduction of easily carriable devices like laptops and cell phones, internet has now gone from being a privilege to a necessity. It is also teeming with pages and sites that are inappropriate for the highly impressionable minds of children. Any type of information is available to access using a web browser, which may include dangerous content. Dangerous content generally refers to adult content that should be viewed by ages of 18 and over only. It also includes violence, offensive words, gambling related material [4]. With the boom in video games and android games youngsters are stuck to their phones, now more than ever. Teenagers are very much indulged in spending time on trending applications and games. Kids also, are privy to a lot of information, that might or might not be age appropriate, from social media sites like Facebook, Instagram or video sharing sites like YouTube. The amount of time children spend on these sites has also increased substantially. It is becoming very difficult to track, monitor and limit the children's mobile usages and the content they view. There are a lot of negative effects of spending time continuously in front of laptops, tabs, mobile phones or any other electronic devices, some of which are listed below:

- The creative thinking and imagination of children are hampered. [11]
- Shortened attention span in children.
- Reduced opportunity to develop social skills.
- Children become more passive or aggressive.
- Lack of exercise that can lead to obesity and other negative health effects.

Even though the adverse effect of inappropriate content is a known and accepted fact, there is a startling lack of tools to curb the increasing usage of internet, apps and by association, the mobiles, laptops etcetera. The existing parental control applications notify parent of the apps and games child uses, they do not restrict its use. A system where the parent decides that x hours can be allotted in a week for a game, after which the application do not show up is of utmost importance at this moment. This will not only monitor but also help children to spend more time in productive activities rather than games.

As compared to existing systems that just reports usage of dangerous material to parent, we need a system that blocks content that are considered to be inappropriate. The proposed system blocks such access to in

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Web Accessibility Intensification for Differently-Abled People- A Review

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Abstract: WebAID - Web Accessibility Intensification for Differently-abled people, a review paper by the authors for the need of special people to access web. With the fact sheets of the World Health Organization's Disability and health states that "Over a billion people, about 15% of the world's population, have some form of disability", and "the adults between 110 million and 190 million have significant difficulties in functioning.". The web technology needs to be intensified to accommodate the needs of these people but usually this is not the case. Access to the web is increasingly critical for health related information, access to government beneficial and services, interaction and connectivity with friends and family, and broad commercial and social services that directly affect health[2]. Yet elderly and the young generation with disabilities, are at risk of being left behind due to disability-based digital divide. Although today, various tools and techniques are available to help these people. The authors review the technological architecture available and propose the system which will be helpful for the differently abled people to access web with ease.

Keywords: WebAID, Web accessibility, differently-abled, disabilities, web development, inclusion, WCAG, WAI, ARIA.

Date of Submission: 11-06-2018 Date of acceptance: 26-06-2018

I. INTRODUCTION

Disability in the present day and age is just an unfortunate situation. It makes the way of life for the specially-abled people a bit different but the rise in empathy towards them has come a long way in easing their path. They are now at par with the general populace and can lead a dignified life. This is because of the proactive thinking of the law makers and the society. There are several standards, laws and regulations defined by various authorities such as the Americans with Disabilities Act (ADA) 1990 of the USA, Disability Rights Act 1999 of the UK, Persons who have Disabilities, Equal Opportunities, Protection of Rights and Participation in full Act 1995 of India, and so on. There is also a United States Access Board. The Board's Section 508 Standards apply to electronic and information technology procured by the federal government, including computer hardware and software, websites, phone systems, and copiers. This is issued under section 508 of the Rehabilitation Act which requires access for both members of the public and federal employees to such technologies when developed, procured, maintained, or used by federal agencies.[1] Looking at the current trend, it would not be a baseless assumption, that web technology has also evolved to accommodate the needs of these people but sadly this is not the case. Although today, with the human population of the world being 7.6 billion, 15% live with some form of disability, the numbers proving to be higher in nations which are developing, we can count in one hand the number of accessible websites. Apart from the laws mentioned above, there are many other acts and specifications, for example, WAI of the W3C that are yet not very popular among the web development circles.

II. LITERATURE REVIEW

Recent years have seen multiple articles pop up speaking in favour of making the web more accessible to the differently abled. The importance of access to the Internet in modern life cannot be overstated. According to a recent survey of adult men in the United Kingdom, a plurality of respondents (42%) considers web access to be more important than food or shelter (McEntegart, 2013).The Internet is also becoming a significant complement of—and sometimes substitute for—many traditional businesses, with online shopping complementing brick-and-mortar stores in retail or virtually replacing them in modern home-based entertainment delivery. [2].

Web accessibility [3], states that there are eight components on which the accessibility of websites that are dependent on

i. Natural information such as text, images and sound

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Implementation of Pam Cluster for Evaluating SaaS on the Cloud Computing Environment

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ABSTRACTION: Cloud Computing has emerged as a new paradigm in the field of network-based services within many industries and application domainsand a dynamic computing sharing resources. Cloud computing paradigm has emerged and that is transforming the it industry at huge. In cloud computing, all resources are available as services and accessible through the internet. Especially Software-As-A-Service (SaaS) is service delivery model that support end users to access any software or an application as a service via the internet without installing at locally. The usage of saas has been increased by many users and thus leads to need to evaluate the quality of saas to select the best one that suits to cloud services users. In this paper, a quality model is implemented by using Data MiningPartitioning Around Medoids (Pam) clustering model for evaluating the quality of software as a service (SAAS) in the cloud computing environment.

KEYWORDS: Software As A Service (Saas),Cloud Computing, *Partitioning* Around Medoids(PAM).

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I. INTRODUCTION

Cloud Computing Is a Tremendous Resource Sharing Computing Adopted By Many Organizations inthe Last Decade. The Main Concept of Cloud Computing Has Used Any Resource as A Service. I.E Everything as A Service (Xaas).they are mainly three service models: IAAS (infrastructure as a service), PAAS (platform as a service) and SAAS (software as a service).the SAAS is deployment model where the service end user need not install the software on their local machine even though they use it as it's locally. The SaaS have been using by many vendors as well as providing by many cloud service providers because of its advantages. However, the usage of the SaaS has been increased throughout the globe in the computing world. Hence,many challenges were introduced, one of the main challenges for cloud service users is how to select right service as per their requirements and which one would meet their expectations. In order to deal with this particular challenge, in this paper is a new quality model is proposed to evaluate the qualityof SaaS in the cloud computing environment based on the data mining clustering algorithm.This paper initially describes the importance of data mining pam-clustering algorithm- , then it explains about research methodology adopted for specified challenge. Finally, it explains about partitioning around medoids (PAM) clustering implementation using r-studio with SaaS quality related data.

II. LITERATURE REVIEW

Jerry gao, pushkala pattabhiraman, Xiaoping bai w. T. Tsai presented their research work [7] as new formal graphic models and metrics to evaluate SaaS performance and scalability features. The results shown best potential application and effectiveness of the proposed model for evaluating SaaS scalability and performance attributes only. But not on other attributes, which are also playing an important role for good quality. Zia urRahmanproposed work [8] discussed and proposed a multi-criteria cloud service selection methodology in general. Very important parameters like reliability, trust, reputation, etc. Are not given importance even though they are very critical in the cloud computing environment. Qiang he, Jun Han, its proposed work [9] is used to evaluate the attribute multi-tenancy cloud-based software applications with less scalability.

It may not suitable if number of end users are increasing. Tung-hsiang Chou andwan-ting liu research work [10] presentedthat some of theSaaS dimensions, integrated along with service dimensions of servequl to maintain the standard for customer's service. So that presented work is only benefited with very few attributes of SaaS, not applied to quality parameters. From the literature review, it has been identified that in order to evaluate SaaS, quality six attributes are playing a vital role in evaluating the quality like availability, pay for use, data managed by the provider, scalability, reusability, and service customizability as shown in the figure1.

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Comparative Analysis of Bootstrap and UIkit framework

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Abstract - *Nowadays front-end web framework plays most important role in web development. Front-end web frameworks like Bootstrap, UIkit support responsive web design and different kind of devices. This paper compares Bootstrap and UIkit from developers as well as users point of view. A prototype has been developed using both the frameworks.*

Key Words: Web development, Front-end web framework, Lightweight, Modular, Grid.

1.INTRODUCTION

These days web applications are developed for different purposes like Ecommerce, Blogs, social networking etc. Front-end framework plays important role in web development. A front-end web framework has standard classes and scripts for making development easier. It combines HTML, CSS and Javascript for effective designs and animation effects. These frameworks also help in making designs responsive. All frameworks differ in many factors, which are shown below with the help of analysis, small prototype and its outcome.

2.BOOTSTRAP

This is the most popular, free and open source front-end web framework in web development. It was originally named as Blueprint and released as an open source project on 19th August 2011. The latest version is Bootstrap 3, released on 19th August 2013. It is based on Grid system. It supports the latest versions of Google Chrome, Firefox, Internet Explorer, Opera, and Safari (except on Windows). For comparison purpose, I have used Bootstrap 3.3.7 as it uses flat design and mobile first approach.

3.UIKIT

This is a lightweight and modular front-end framework, used to develop fast and powerful interfaces. It is created by YooTheme in the year 2013. This is one of the underrated frameworks that is lightweight, modular. It supports both LESS and SaSS pre-processors. This framework is also built using CSS3 and Javascript. It also provides some interesting components which are not in Bootstrap.

4.DIRECTORY STRUCTURE

A directory structure makes developer's task easy. Figure 1 and Figure 2 depict the directory structure of Bootstrap 3.3.7 and UIkit 2.27.4 respectively. Both the frameworks follow same directory structure; but they differ in sizes. As directory structure of both the framework is so simple, it becomes easy for developers to search for files during development.

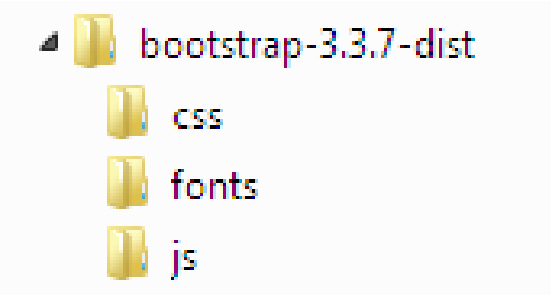

Fig -1: Directory structure of Bootstrap 3.3.7

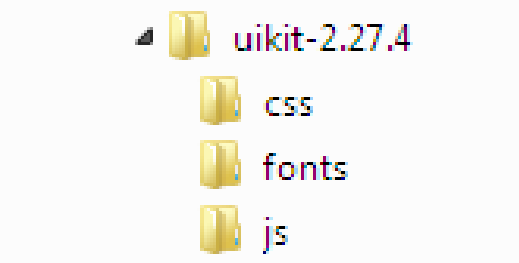

Fig -2: Directory structure of UIkit 2.27.4

5.DATEPICKER COMPONENT PROTOTYPE

The Datepicker component is the mostly used form component in almost every application. Bootstrap does not provide class for Datepicker, so it has to be coded through JQueryUI; but UIkit has predefined class for Datepicker.
The outcome of developed prototype is shown in Fig -3 and Fig -4 for Bootstrap and UIkit respectively.

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Architecture and Analytical Study of Magento

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Abstract - *In recent years there is lot of development in e-commerce sector. Developing and managing a web store is critical part of such development. Today there are many e-commerce development platforms like WooCommerce, Big Commerce, Magento etc. In this paper we will be discussing about magento system. To the extent of our knowledge, this paper is the first one describing how to set up a web store and some important features of magento. Magento is an open source platform that was initially suitable for large retailers. Retailers or organizations who are involved in e-commerce need affordable and easily maintainable system. Magento is designed to meet these needs. The store can be customized according to the business needs. This paper suggests how magento can improve in analytics*

Key Words: analytics, caching, e-commerce, magento, module

1.INTRODUCTION

Over couple of years use of online shopping has been increased and it has become a part of our day to day life. Managing e-commerce website takes a lot of efforts. However with platforms like magento one can manage their website with minimal efforts. Magento is an open source e-commerce platform. It is exclusively written in PHP. Magento uses Zend framework which is based on object oriented programming and MVC architecture [4]. For database magento uses MySQL. The system comes with lot of built-in features required for creating and managing the store. There are two versions of magento; community edition and enterprise edition. Magento community edition if free of charge but the latter is not. Enterprise edition offers services such as magento support which offers 24*7 professional technical support and scalability which allows you to grow your website without any limit.

2. SETTING UP MAGENTO

Main requirement for Magento is LAMP (Linux, Apache, MySQL, and PHP). Install all the softwares using following commands [5][9]:
APACHE: sudo apt-get install apache2
MySQL: sudo apt-get install mysql-server
PHP: sudo apt-get install php libapache2-mod-php
Apt-get is the powerful linux command to install and upgrade software packages.
Magento installation is pretty easy. After you installed the prerequisite softwares, download and install it graphically. You can add a theme suitable to your business from magento admin panel.

3. MAGENTO STRUCTURE

Each Magento project consists of follows below structure [1].

- Block contains files that are used to display data in template files.
- Files inside Model folder contain business logic of a module and database interactions.
- etc folder contains xml configuration files that defines module and route for a module.
- Controller is the folder where the controller related PHP classes are stored. Those classes contains code that responses for GET and POST actions. Their method also global config.xml file for the layouts and blocks to load. It calls the controller action specified in a URL.
- Sql contains files that are used to create, update SQL tables.

Fig - 1. Folder structure of Magento Module

It is suggested that not to make any change in files inside core folder, because it is core magento folder. All the

Automation Testing of Web based application with Selenium and HP UFT (QTP)

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Abstract - *Software testing is one of the most important phases of Software Development Life Cycle and main objective to find bugs and ensure quality of the software. Software Testing can be done manually or can be automated. Manual testing is done by tester without any tool. In automation testing is done with the help of automated testing tools. The objective of the paper is to compare two automation tools, Selenium and UFT in context of testing web based application.*

Key Words: Software Testing, QTP, UFT, Selenium.

1. INTRODUCTION

Software testing has different goals and objectives. The main goal is to find defects in a project created by a programmer while developing project. It is a process of checking and evaluating product in order to maintain quality of final product and to verify that every part of project satisfies its requirements as mentioned by the client in the Business Requirement Document (BRD). It is an integral part of SDLC. It is always a good practice to introduce testing as early as possible in the SDLC. This gives a sufficient time for the QA Analyst to build manual and automated test cases both.

There are two types of testing: Manual testing and Automation testing. The selection of testing that to be done manually or with automated tool totally depends upon project requirement, budget associated with project and also which testing is benefited to the project.

Manual Testing is done by tester. Tester acts as an end user and uses various features of product. Manual testing may take more time or we can say it may be more time consumable.

In manual testing chances of human errors are high as compared to automation. Automation testing covers all the problems of manual testing. Automation testing automates the steps of manual testing.

2. AIM OF STUDY

2.1 To know about Automation Testing
2.2 Knowledge of Automation Testing framework
2.3 Knowledge of Automation Testing tools
2.4 Evaluation of tools based on some parameters

3. RELATED WORK

Testing of software can be done in both Manual as well Automation. However, depending on the total budget, skilled resources available, necessity to implement automation, current SDLC process being followed and various other factors on which decision is made to implement Automation testing or not.

3.1 Below are some points which highlight automation in comparison with manual testing:

- Automation test scripts run faster and require less human resources.
- It is also beneficial in situations where there are frequent changes in the AUT.
- If there are certain test cases which needs to be tested mandatorily for any other feature added then in such situation Automation testing is very much beneficial.
- Automation testing reduces manual intervention for certain processes there by for e.g if there are 4 Manual testers then the work done by them can be done by one Automation tester who will design test scripts to replicate the same procedures followed by the Manual testers.
- Automation testing is very much useful for testing the final build or the final product which will be further moved on UAT as a next phase in SDLC.
- Even though the initial cost of automation is high. Once implemented it proves to be beneficial investment to the company.

3.2 Test Automation Framework

Automation framework is work environment or facility which contains all the set of rules and careful planning to write the scripts in a manner which results for less effort spent in the maintainability of them.

It adds an advantage by which we can ensure the re-usability of the test scripts. Any changes in application, the scripts need little or no updating to cope up with that change. Each of the frame work has its own pros and cons depend under which circumstances these are being adopted by the Testing Team or Test Lead.

There are four kinds of automation framework which are the most widely used in industries:

3.2.1 Modular

The framework divides the entire AUT into number of logical and isolated individual modules. These modules can be individual

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Cleaner Drone

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Abstract - *Cleaner drone is a system designed to locate garbage in an area with help of drone. The drone comes with high quality camera and a GPS tracker in it. The drone will follow a pre-assigned path to which it will be assigned. It will locate potential garbage material and send snapshot of the same along with its GPS location. On the server side, analysis of the image sent by drone will be done with help of Computer vision technology that mainly involves segmentation, recognition and reconstruction. If garbage is found in an image, the server will check for cleaners stationed nearby and give an alert for garbage collection to the one with closest proximity. The cleaner who received alert will go to the location and update the status after cleaning garbage. For verification, a checker drone will monitor status at those specific locations where garbage was located. It will check whether garbage was cleaned properly or not. This endeavor will contribute to the 'Swachcha Bharat mission' of the government by keeping the area neat and clean with the help of regular drone surveillance.*

Key Words*: *Cleaner drone, detector drone, checker drone, cleaner

1.INTRODUCTION

A detector drone will start its work from location, say x which is predefined in the database. It will continuously capture images and send it to server. Drone will follow the pre assigned path and will keep sending images of that area. Server on the other hand, will receive image captured by drone. Captured image will be processed with the help of image processing algorithms in computer vision technology. The captured image will be segmented and each segment will be compared with datasets of garbage images. If any garbage object is recognized, an alert will be generated by the system. On receiving alert, server will check for closeness of cleaners (to the location where potential garbage is detected). Server will send alert message to the cleaner who is closest to the garbage location. The cleaner will receive an alert message from the server on his smartphone with garbage location information. When the cleaner will select, view location, a directed path will be provided to him to reach that specific location. Once the cleaner reaches the location, status update window will be enabled on his mobile screen, wher e he is supposed to update the status as 'Cleaned', once cleaning work has been finished. If he carries insufficient equipment to clean the garbage or requires an additional hand, he will select 'Help' option which will connect him to his superior through a call. After a certain timeslot (say 30 minutes) the checker drone starts flying from its current location to those specific locations where garbage was located by detector drone & system had verified object as garbage. Checker drone will verify if the cleaner has cleaned the place or not. A single checker drone is assigned supervision of multiple detector drones. Fig.1 explains working of Cleaner drone.

2. WORKING OF DRONE

2.1 Detector Drone

Drone starts flying from location it is currently stationed at. It follows the path which has been programmed into it by system. The drone is fit with a small camera on the dorsal side. It will click pictures at periodic intervals as decided by operator. These images are sent to the server. The server does the work of identifying garbage in the images sent by the drone. If garbage is detected, the image is saved with its GPS co-ordinates. Server activates Swachh Bharat app, which locates cleaner with closest proximity to area where garbage has been detected. The image is then sent via app to the cleaner. The cleaner accepts the job and starts his journey. His journey is tracked till he reaches the location. He updates his status at location. If it's a false call, he reports it. On completion of the job, he clicks a picture and sends it to the server with status updated as complete. Else, if there is incomplete manpower or equipment; request for the same is sent. There will be multiple Detector drones assigned to an area depending on the budget, the level of efficiency expected and size of the area segment.

1.2 Checker Drone

It checks whether the garbage detected in areas are cleaned or not. The drone revolves in the area allocated and hence does not follow a linear path. It verifies and validates the garbage cleaning process. In contrast to the Detector drones, the checker drone is singular. It monitors the work of all detector drones working in the designated area. Thus, cross validation of work by the cleaner.

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Identification of Urban Waterlogged Areas along with its Prediction

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Abstract*: *Waterlogging is a natural phenomenon where water gets accumulated in an area which results to damage and destruction of material things which causes setback in our day to day lives. We are proposing a system that uses a set of hardware and Google Cloud Platform in such a way that it identifies water logging problem in a particular area. The Web Application displays different areas with various severity colour codes. It also does the analysis based on previous year reports and does predictions of waterlogging severity. The prediction of waterlogging is done using machine learning algorithm where a target variable helps us to determine the score of waterlogging in a particular area. In order to simplify the work of BMC officials we have developed a notification module along with Facebook chatbot which will simplify the identification of waterlogged areas for them.

Keywords: Waterlogging, Decision tree, Google Cloud Platform, IoT, prediction.

I. INTRODUCTION

Now as we are aware of what is waterlogging which that mainly occurs by rainwater gets accumulated in a particular area and what are the problems associated with it we will deal with how to cope up with this problem and steps to mitigate it[1]. One of the major cause of waterlogging is the improper maintenance of drainage system which results to sanitary and heavy traffic problems. Some of the other causes of waterlogging includes the high tides ,which mainly cunts if the area is closer the coastline, area's height etc. The studied region for this paper is chembur. Currently the system in action to get rid of it quiet simple and based on the severity in the region and phone calls from native peoples. Until now the disposal of this surplus water was purely based on its own passage through manholes which is very unreliable as they can get choked anytime, so have come with a solution to deal with this problem, to identify the waterlogged area we will be placing ultrasonic sensors[2] and esp8266 (microcontroller with wifi modules)[3] on the street lamps as they are at a safe height. Also they will have continuous source of electricity.

These sensors will collect the change in height levels data, continuously within time intervals of 15 minutes(variable) and send the data to server. Here the data is stored in database and analyzed for severity and various reports generation.

The responsible authority is informed about the water-logging condition through push notification. He/She can then remotely give command to start the pumps or inform the drainage cleaning groups to clear out the sewers of that area. Furthermore this data of the previous years are collected and is analyzed for predictions in long terms, medium term and short term. The accuracy of predictions is cross-checked by comparing it with actual value and predicted value.

II. NEED OF THE PROJECT

In the last couple of years there has been a need of a system that not only identifies waterlogging but also predicts it. It has been observed that waterlogging during the rainy season has caused more number of live damages, also material damages to our society. So it is a high time to build such a system that helps the BMC officials to act fast in cases of waterlogging, so that no human live or material damages are caused.

Thereby, we propose a system where we actually track each and every area for changes in the water level and based on that we classify them as low, medium and high. This helps in notifying the BMC officials about the current level and the quick action they need to perform based on that severity.

Also when the water logging occurs, there are multiple people trying to report, hence creating a chaos therefore the area goes unreported many a times, so we have developed Facebook chatbot where a user can report waterlogged area anytime, anywhere without any delay.

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Stylometry Based Authorship Identification

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Abstract: ***"Every person is unique", we have been hearing this since ages. Every person has a unique identity, a unique fingerprint, a unique retina and a lot more. These features play a vital role in identification of individuals for security purposes. Unfortunately, when it comes to security of written pieces or words from an individual, these primary unique identities are futile. One cannot identify a writer from a written piece of text on the basis of retina or fingerprint scans, sometimes even the signature can be forged, in such situations for security purposes and intellectual property rights it becomes very important to identify the true author. Stylometry plays an important role in this. Every author has a unique style of writing, measure of this style of writing is called Stylometry. This paper proposes to identify authors from text based on their style of writing. First a data set consisting of articles, short stories and emails will be used to train the system for multiple authors, then a random text would be given to the system to identify the author correctly, if the author predicted by the system is similar to the author claimed then the information is authentic otherwise the author claiming to be the writer is a fraud. For stylometry, over the ages, many features have been focused on, but this paper proposes new features to be used for this purpose. While writing, there are many unconscious styles that are incorporated by the author, these features have been unnoticed till date, but can play a vital role in accurate and fast identification of authors. These features include: 'intellectual property right', 'chapter length', 'the importance of a word with respect to the other words in a document' and frequency of particular words per thousand words. The algorithms used to train the system can be Decision tree, Naive Bayesian or Multilayer Perceptron.***

Keywords: feature extraction, data set, Decision tree, artificial intelligence, machine learning, supervised learning, word2vec, sentence2vec, doc2vec.

I. INTRODUCTION

Various attempts have been made to identify author using stylometry. Most of the attempts made use of similar feature extractions but different data sets and algorithms. Every system had a drawback that couldn't be overlooked. Jose Hurtado, Napat Taweewitchakreeya, and Xingquan Zhu in their paper[1] used multilayer perceptron, random forest, SVM and k-nearest neighbour for training the data. Here the MLP learner, combined with the six categories of stylometric features, provides better performance over other classifiers and baseline approaches however Random forest and k-nearest neighbours give low accuracy and only few authors can be identified accurately. While in [2] Kohonen Self Organising Maps and backpropagation is used which is suitable to capture an intangible concept like style and in this fewer input variables are required as compared to the traditional statistics but this can be implemented only for small number of authors. [3] seems to cover all the drawbacks of [1] and [2] and other related works. [3] uses LDA and Naive Bayes for classification which enables it to do semantic analysis of corpus however it brings in a new drawback with it: to classify a new unknown document it would be necessary to reprocess all documents including new ones, this is an onerous and time consuming task. Thus this paper proposes a new methodology that

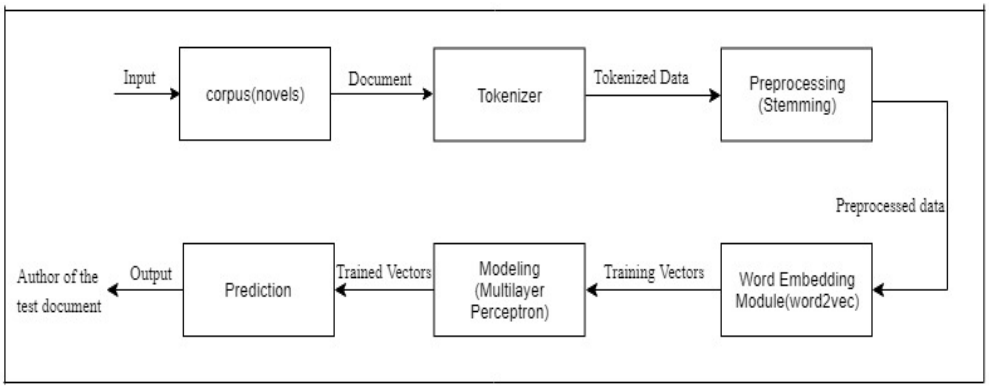

Fig 1. Block Diagram of final developed system

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Interoperability of Electronic Health Record

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Abstract: ***Healthrecord of an patient to be clinically significant it needs to be from birth, not less than. As one progresses through one's life, every record of every clinical encounter represents a health associated event in one's life. Each of these records may be important or not at all required depending on the current problems that the person is suffering from. Thus, it becomes necessary that these records be available, arranged as a when person visit doctor, and be clinically relevant to provide a summary of the various healthcare events in the life of a person. An Electronic Health Record (EHR) is a digital version of patient's medical records that get generated during any clinical encounter and make information available instantly . In this paper we present interoperability of EHR without affecting privacy of individual.***
Keywords: HealthRecord, Interoperability, Medical

I. INTRODUCTION

From the perspective of Indian Medical care system, patients visit several doctors, throughout their life time right from visiting a primary health center to community health. Health records get generated with every clinical meet during the inpatient or emergency visits. However, as it is paper based most of the health records are either lost by the patients or remain in the supervision of health care providers and gets destroyed. As per the maintenance period of medical records generally followed by hospitals is 5 years for out-patient records and 10 years for in patient records. Medical records are however retained permanently. In India we have some intention of EHR. But there are certain barriers to it. The idea behind any technology or a invention is to make things simple and easy for everyone.

To Store the health record of patients to digital system and accessing the record whenever required.So simple that even peoples in rural area can run it and to achieve interoperability of that record without affecting the security and privacy of the user.

II. METHODOLOGY

A. MongoDB

MongoDB is a free and open-source cross-platform document-oriented database program. It is classified as NoSQL database, It uses JSON like structure with schemas.

Healthcare provider chains have huge amount of patient data. it is a challenge to store style of structured and unstructured information that is needed, ranging from basic patient info and medical histories to science laboratory results and MRI pictures. ahead, the shortage of centralization makes it difficult for health professionals and patients for accessing right info at the correct time. victimisation MongoDB, aid suppliers will produce an application that gives 360 degree read of the patient, doctor, procedures and alternative sorts of information during a lone data store.

and conjointly aid supplier chains will serve additional patients in minimum time. Features of mongoDB

1) *Ad hoc queries:* MongoDB supports field, regular expression searches , vary queries,. Queries can return us specific fields of documents and conjointly embody user-defined javascript functions. Queries may be organized to come back a random sample of results of a given size
2) *Indexing:* Fields in an exceedingly MongoDB document will be indexed with primary and secondary indices
3) *Replication:* MongoDB provides high accessibility with duplicate sets. a duplicate set consists of 2 or additional copies of the info. every duplicate set member could act within the role of primary or secondary duplicate at any time. All writes and reads ar done on the first duplicate by default. Secondary replicas maintain a duplicate of the info of the first victimisation integral replication. once a primary duplicate fails, the duplicate set mechanically conducts AN election method to seethat secondary ought to become the first. Secondary's will optionally serve browse operations, however that information is barely eventually consistent by default.
4) *Load balancing:* MongoDB scales horizontally victimization sharding. The user chooses a sherd key, that determines however the information in an exceedingly assortment are distributed. the information is split into ranges (based on the sherd key) and distributed across multiple shards. (A sherd could be a master with one or a lot of slaves.). as an alternative, the sherd key is

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A Proposed System on Detecting Stress Based On Social Interactions on Social Networks

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***Abstract* – Stress is essentially humans' response to various types of desires or threats. This response, when working properly, can help us to stay focussed, energized and intellectually active; but if it is out of proportion, it can certainly be harmful leading to depression, anxiety, hypertension and a host of threatening disorders. Cyberspace is a huge soap box for people to post anything and everything that they experience in their day-to-day lives. Subsequently, it can be used as a very effective tool in determining the stress levels of an individual based on the posts and status updates shared by him/her. This is a proposal for a website which takes the Twitter username of the subject as an input, scans and analyses the subject's profile by performing Sentiment Analysis and gives out results. These results suggest the overall stress levels of the subject and give an overview of his/her mental and emotional state. The tool used for analysis of the social media account is Rapidminer. Rapidminer is an environment for various data mining and machine learning procedures with a very effective and simple GUI.[1]**

Keywords- stress; Sentiment Analysis; Rapidminer

1. INTRODUCTION

Social media can be considered as a goldmine for Sentiment Analysis. An active social media user shares the majority of the details of his/her life online. This accounts for a large database on which algorithms can be applied for analysis. There are various social networking sites these days namely, Facebook, Twitter, LinkedIn, Pinterest, Instagram, Tumblr, Reddit, Snapchat, WhatsApp, Quora etc. The fact that there is a need for so many different platforms itself speaks volumes about the number of social media users. The stress detection model is developed by scanning and analyzing the Twitter profile of the subject. The extraction, collection and analysis of these tweets is done using a free software, Rapidminer. The proposed website takes the twitter handle of the client as an input. Subsequent stages of data mining and analysis will be efficiently carried out by Rapidminer, owing to its expedient GUI. In the final stage, the website gives an overview of the stress level of the user and remedial steps, if necessary.

II. METHODOLOGY

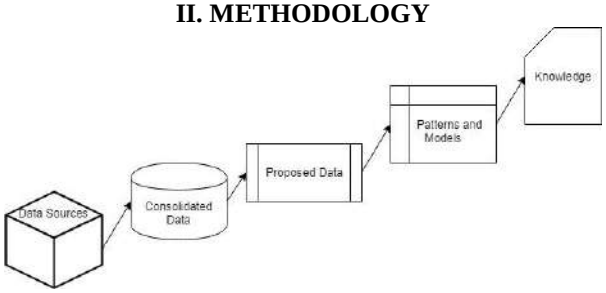

Fig 1: Data Mining and Extraction process

Twitter data can be extracted using an SSIS package followed by loading it into an RDBMS and creating a small table to show the garnered tweets. This process creates a saved method to recognize the sentiment of the tweet based on the keywords. Being an elementary approach, it still does the work of analyzing tweets merely by using SQL. Therefore, a more erudite methodology for extraction namely Rapidminer is employed.

A. Data Mining and Extraction

A good amount of tweets have to be extracted to form a database. Tools like Zapier, Google Docs and GDocBackUpCMD are handy for the same. Zapier allows collaboration amongst different web applications. It is thus used to extract tweets in a Google Docs spreadsheet and then copy the data to the local environment for mining. An empty Google sheet is created and three different columns are named as follows: 'twitter_handle' for the twitter handle of the user; 'date_posted' for tracking the date on which the tweet is posted and 'content' for the content of the tweet. Once the framework of the spreadsheet is ready, we proceed to building the zap.

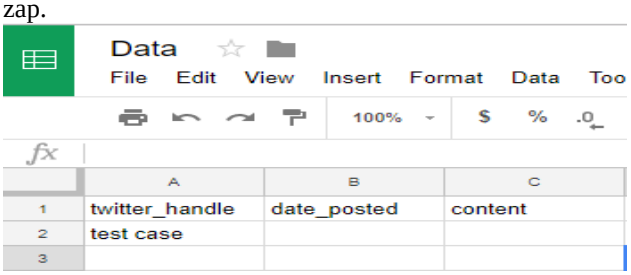

Fig 2: The empty Google Spreadsheet

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Comparative Analysis of Different Machine Learning Algorithms to Detect Cyber-bullying on Facebook

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Abstract: ***Offensive language on social media has unfortunately become a common occurrence among users. The motive is to detect offensive language in a user message, post or comment and take necessary actions for the same. This is called as offensive language filtering. In this paper, we provide a comparison of different algorithms to build a solution through which Facebook users can find their cyber bullies and report them. The entire process consists of six stages: data collection, pre-processing, sessionization, ground truth, feature extraction and classification. Using machine learning algorithms for pre-processing and classification of the data and tools like Facepager and Pycharm, we have evaluated the processing, usage and accuracy of three major classification algorithms which are Naive Bayes, Support Vector Machine and Neural Networks.***
Keywords: Naïve Bayes, Support Vector Machine, Neural Networks, Facebook, Facepager, tokenization, word-sense disambiguation, sentiment analysis, subjectivity, polarity, cyber-bullying.

I. INTRODUCTION

Anomaly based forensic analysis of social media refers to analysis on Facebook data using machine learning algorithms. The aim is to build a web application that will proactively detect and report cases of cyber-bullying and personal security intrusion on social media platforms (here, Facebook) using machine learning algorithms and behavioural analysis. The sub goals of our project are data collection, pre-processing, sessionization and crowd sourced labelling. The application can be used for identifying theft, theft of public data, public defamation, cyber stalking, bullying and other criminal activities on such sites. The anonymous nature of social networking applications can be leveraged by malicious users. Our focus is on conduction of forensic analysis on one of the most popular social media applications in the recent times, i.e. Facebook. The application has the ability to stop cybercrimes happening at a full-fledged rate.

II. PROBLEM DEFINITION

This project focuses on conducting forensic analyses on some of the widely used social networking applications like Facebook, Instagram to name a few. This analysis will be aimed at analysing offensive comments with the motivation of cyber-bullying posted on these applications and backtracking them to the offender. The extent, significance, and intention of the data that could be found and retrieved. If so, the suspect will be found guilty of a cybercrime since there will be a solid evidence to prove the activity was performed by him. This application includes pre-processing and analysis of data via various models of Machine Learning like Naive Bayes, Support Vector Machine and Artificial Neural Networks. The development of such an application has the ability to stop and reduce the rate of subjugating that has been happening online at a full-fledged rate. Our goal is to compare three classification models used in the development of a web application that will proactively detect and report cases of cyber-bullying and personal security intrusion on social media platforms like Facebook, Twitter, etc. using the concepts of behavioural analysis and machine learning. Further, a block action or report will be generated on the basis of the supporting evidence found through Forensic Analysis of social media sites First, a tool called “Facepager” is used to get the data from Facebook. It gives access to different posts, pictures, comments and emoticons of various public profiles on Facebook using which the training and testing data are formed. With the help of pre-processing algorithms, the raw data is converted into executable form. The pre-processed data is then classified using the machine learning algorithms- naive Bayes, support vector machines and neural networks for sentiment analysis. A comparison of these three classification algorithms is done on the basis of the processing, performance and the accuracy of each of the them. The polarity and subjectivity of each algorithm is found and plotted on a graph to compare. Also, based on the frequency of the bad words, a word cloud is generated. The bad word which has the highest frequency will have a bigger size compared to the words whose frequency is less.

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Digital Forensics

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Abstract*: *The recent development in Information Communication Technology (ICT) has made changes in every aspect of our Life. These changes are taking us towards the dream of "DIGITAL INDIA". The positive influence of Digital world on Knowledge, trade and business and Communication is no doubt remarkable. However, the dark side of it deteriorates its peaceful usage that is Digital Crimes .Digital Crimes are defined as any illegal activities practiced by or done via digital device. Unlike "traditional "crimes Digital crimes present a real dilemma due to the fact that criminals' identity may be hidden. Digital Forensics along with the process of finding the digital evidence and tools used in digital forensics.
Keywords: Information Communication Technology (ICT), Digital Crimes (DC), Data Analysis (DA)

I. INTRODUCTION

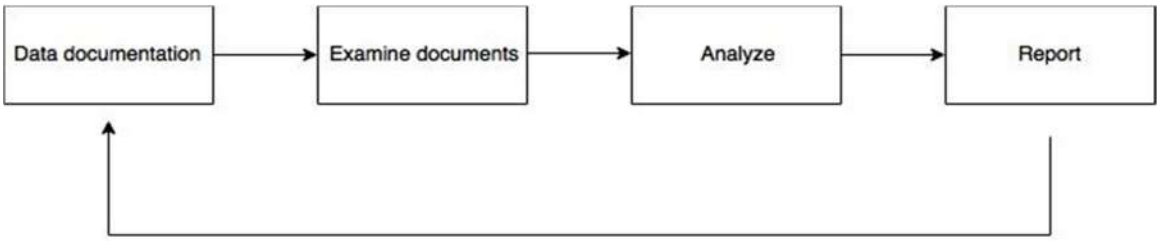
Computer forensics is the application of investigation and analysis techniques to gather and preserve evidence from a particular computing device in a way that is suitable for presentation in a court of law. The aim of computer forensics is to perform a systematic investigation during maintaining a documented chain of evidence to catch in exactly what happened on a computing device and who was responsible for it.

Forensic investigators typically follow a standard set of procedures: After physically isolating the device in question to make sure it cannot be accidentally contaminated, investigators make a digital copy of the device's storage media. Forensic scientists collect, preserve, and analyze scientific evidence during the course of an investigation. While some forensic scientists travel to the scene to collect the evidence

themselves, others occupy laboratory role, performing analysis on objects brought to them by other individuals.

II. METHODOLOGY

A text message corpus has been developed and basic experiments were conducted in order to show information about the corpus and to demonstrate natural language processing (NLP) principles and machine classification based on supervised learning algorithms. Applicability and limitations of the corpus are discussed. A simple methodology for extracting features from the corpus is proposed.



A. Mobile Forensics

Mobile device forensics is a sub-branch of digital forensics relating to recovery of digital evidence or data from a mobile device. It differs from Computer forensics in that a mobile device will have an inbuilt communication system (e.g. GSM) and, usually, proprietary storage mechanisms. Investigations usually focus on simple data such as call data and communications (SMS/Email) rather than in-depth recovery of deleted data.

B. Network Forensics

Network forensics is concerned with the monitoring and analysis of computer network traffic, both local and WAN/internet, for the purposes of information gathering, evidence collection, or intrusion detection. Traffic is usually intercepted at the packet level, and either stored for later analysis or filtered in real-time. Unlike other areas of digital forensics network data is often volatile and rarely logged, making the discipline often reactionary.

A Survey on Various Techniques of Data Mining For Prediction of Diseases

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Abstract*— *Healthcare today is of utmost important. In this survey, some relative information have been collected about various techniques of data mining in healthcare. Data mining is the most frequently used technique in healthcare industry for disease prediction. Different data mining techniques are covered under this survey namely clustering, mafia etc. With data mining it is possible to detect various disease that go undetected many times due to human error. Automation of system using data mining will really prove a boon for the healthcare industry. The systems provide automation through which human effort is reduced and accuracy of predicting the disease in time is achieved.

***Keywords*— Disease prediction, data mining, healthcare, Naive Bayes, J48, k-means based MAFIA algorithms.**

I. INTRODUCTION

This document is a template. For questions on paper guidelines, please contact us via e-mail.Disorders caused in human body lead to various diseases. Today these diseases are increasing day by day due to which the death ratio of people dying due to diseases is nearly about 56.4 million deaths per year, which is almost 54% of the total population. Therefore taking care of one's health is very important. Healthy lifestyle is need to be maintained in order to achieve a good health one must consume good nutrition and have physical activities to stay fit to avoid these diseases. This will reduce the risk of chronic diseases and will help in promoting overall health. Therefore health prediction systems are required so that when something goes undetected we can take help of these type of systems and diagnose these diseases in a time frame where they can be easily treated and cured. Earlier such type of systems were not available which reduced the human effort in predicting the diseases. Also there were no databases where the patient's history can be stored and other related medical information. Therefore, systems that were available at that time were not accurate and were producing faulty or erroneous results and were leading to confusion. Thus arrives the need to upgrade the system so that all the in capabilities of the previous system could be concealed. Today's system can predict the diseases of the patient and also can have an online doctor to help on the basis of what diseases he or she is suffering. But the disadvantages of such systems may be that they are not fully automated and require doctors for full diagnosis for patients suffering from serious diseases. Also these systems can be time consuming as it requires large data to be collected to start the diagnosis of the diseases. But the benefits of this system can overcome the existing problems. Consider a scenario where a patient is given medicine for some treatment but the doctor does not know whether the patient has some allergy from some drugs as the history of the patient is not available but with these systems this part of error is erased as history of the patient is recorded by these type of systems.
Different methods can be used rather than data mining and even they are a bit efficient in comparison to data mining technique. The other techniques used can be clinical data. In clinical data staple resources are collected for prediction, here only the current data is collected ignoring the history of the patient thus this can prove a drawback of this system. Another method to predict the diseases can be big data. Big data analyses the unstructured as well as the structured data generated from the databases of the healthcare management systems. These systems tend to give an accuracy of about 90% which is very overrated for such method as it does not fulfil the said percentage in performance. Thus data mining used frequently in these systems is slightly more efficient than these methods. In countries like USA, UK, AUSTRALIA, CANADA, they have such systems which are centrally linked to the

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Research Article

FIREWALL BASED ON THE CONCEPT OF SDN

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A R T I C L E I N F O

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Open-Flow,SDN, Firewall,Mini-net,Open-Day-Light.

A B S T R A C T

In todays digital world many people have utterly felt the need to restructure the current internet work into one which is much more like a dynamic networking environment. Software Defined Networking finds a solution to these problems. Software Defined Networking is an exciting yet beautiful technology that enables innovation and flexibility in designing and managing networks present currently. But on the other hand it also introduces new security threats and issues beforehand. Hence our aim is to build a firewall over this new technology to protect the integrity of it. So designing and developing Open-Flow based firewall application will form the basis of the project. The making and implementation shows that most of the firewall functionalities can be built using a software, without use of any hardware explicitly. We are using open source OpenDayLight Controller Carbon Version for our experiments. To perform experiment, we have installed Mininet emulator for creating network topologies. In this paper, we present the implementation details of the firewall application.

INTRODUCTION

The current internet network is well set and huge in terms of topologies and its connections all over the world. But it has its drawbacks too. The data and the control plane being together yet makes it difficult in finding optimality in terms of routing, maintaining security and much more. Also adding or removing even a single router makes us change the whole network and is tedious. In a view of finding solution the SDN technology was introduced in 2005 where in the control plane gets totally removed and what we get is a controller i.e. the brain of the network and a bunch of routers that are meant for handling data and routing them. The new brain so formed is called as the OpenDayLight controller in the world of SDN. A controller responsible for taking the routing, protocol decisions whenever a packet arrives at its door. Our project aims at building a firewall over this controller that will in turn help the controller to take the decisions regarding the packets that arrive at the controller. The controller accompanied with the firewall will have the ability to accept, drop, or reject the incoming packets thus ensuring the safety of the system from malicious packets. Also the firewall which is created on POX platform, will be able to save the system from any malicious attack by an intended attacker. The remainder of this paper is organized as follows, Section 2 presents the comparison of this project with the existing system, followed by Section 3 which states the proposed system and the implementation of each block of the system, the Limitations are shown in section 4 and in the last section conclusions and references are presented.

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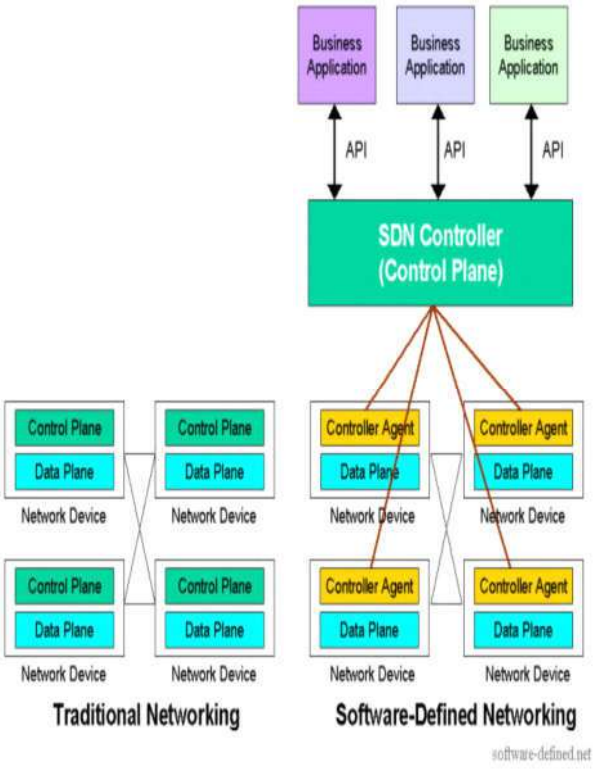
Comparison With Existing System

On viewing the Existing systems and comparing it with the project we find that the basic disadvantages are the more priveleged uses of SDN technology.



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Analysis of Low Level Energy Emissions

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Abstract

In this paper, we have discussed about various techniques of how to capture the low-level energy which is being emitted from the objects, and to study the variations in energy of different things, and also to process the image captured and will produce the final output, from which we can extract the information to analyze the digital light state of object. All objects and living organisms, including humans, emit a low-level intensity glow that cannot be seen by naked eye. This low-level intensity glow is also called as Biophoton emission or Bioluminescence. We aim at capturing these bio-photons emitted from an object.

Keywords— Biophotons, Bioluminescence, CCD, GDV, RFI

I. INTRODUCTION

Light is not only what brightens up our whole day,makes us see the things around us, but it is also produced by our own cells and forms a major component of man's inner environment and non-material part of our body connecting us with the external environment.
All objects and living organisms, including humans, emit a low level intensity glow that cannot be seen by naked eye.
This low level intensity glow is also called as Bio-photon emission or Bio-luminescence.
Bio-photons are photons of light in the ultraviolet and low visible light range that are produced by a biological system. They are non-thermal in origin, and the emission of bio-photons is technically a type of bio-luminescence, though bio-luminescence is generally reserved for higher luminance lucifer in/luciferase systems. The term *bio-photon* used in this narrow sense should not be confused with the broader field of bio-photonics, which studies the general interaction of light with biological systems. Biological tissues typically produce an observed radiant emittance in the visible

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A Personalized Diet Recommendation System using Fuzzy Ontology

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ABSTRACT :*In today's hectic world, the importance of diet management has increased exponentially. Due to unhealthy and haphazard eating habits, the spread of diet related diseases is at an all-time high. In India, more than 2 out of every 100 people suffer from diabetes, while 32 out of every 100 people suffer from coronary heart disease. In Urban Areas, the prevalence of these diseases is even more. There are a host of diet related applications and solutions available today. While the importance of balanced diet keeps on increasing, the variety of applications on display today still lack completeness. In this paper, we have reviewed various existing papers and found out the lacunas in the existing systems. In our proposed system, we are using fuzzy ontology, rule-based reasoning, artificial bee colony algorithm and genetic algorithm for suggesting nutrients diet and recipes based on the suggested diet plan. We also take seasonal availability of food available in India and preexisting conditions of the users of the system.*

KEYWORDS-*Diet recommendation, Fuzzy ontology, Rule Based Reasoning, Artificial Bee Colony, Genetic Algorithm.*

I. INTRODUCTION

Balanced nutrition is an important aspect of a healthy lifestyle. Along with regular physical exercise, a balanced diet is extremely crucial for a person's health. However, with the ever-increasing pace of today's professions, nutrition and health is often overlooked. There has been an epidemic of diet related diseases like Diabetes and Coronary Heart Diseases all over the world especially in Urban Areas. According to a report in NFI Bulletin [9], in IndianUrban Areas, around 32 out of every 1000 individual suffer from coronary heart disease while more than 2 out of every 100 individuals suffer fromDiabetes. These diseases are almost always directly related to unhealthy eating habits. While the advent of technology is often associated with thedeteriorating general health of people, it can help people live a healthier lifestyle. Our objective of this project is to build a system that will aim to recommend appropriate nutritional intake to its users based on their diet history andpersonal preferences. Along with this, our system will consider the user's physical activities throughout the day and suggest appropriate diet plan for the same. Our system will also provide data on the nutrients and seasonal availability of food items to the users. Seasonal availability in India is a major issue and this application aims to provide accurate information about the same. Pre-existing conditions of the user will be taken into consideration and the application will only provide relevant information according to the condition. Our project will also consider the dietary requirements of children and the users can create profiles for their children to keep track of their diet. This application will help users structure their daily diet according to various individual factors which include BMI, physical activity, allergies, etc.

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Intelligent IOT based Car Parking using An Android Application

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Abstract: ***Parking system is a critical arena that requires a revolutionary change with the growth of technology that is needed to support this change. This paper presents the design and implementation of the prototype developed of the car parking automation system based on IOT, that provide robust searching and booking feature of a parking lot for a vehicle owner. The proposed system consists of IR sensors, embedded web-server, and a mobile application. Low cost sensor network is deployed on the prototype which represents a parking area. Initially, the existence of objects being sensed provides significant data for parking slot detection. Secondly, sensor quality has a material correlation with the performance by the sensors deployed. From this, we propose a) the development of a topological sensor detection system b) Traditional server rather than cloud system that allows local data processing c) Application based UI interaction with the users of the system.***
Keyword: Android application, IOT, Data Analytics, Web server, Arduino, IR proximity sensors, Object Detection, Visual studio

I. INTRODUCTION

In today's highly traffic congested cities, parking becomes a tedious task for the vehicle drivers consuming precious time and energy of the drivers. Eventually, it also results in fuel wastage and air pollution. According to recent reports and statistics, it is observed that traffic generated due to vehicles searching for parking spaces, takes up to 40% of the total traffic. Considering the situation, various efficient parking methodologies have been suggested. Few mechanisms used video camera sensors to gather information of the parking spaces [3],[14], although it's an expensive reform to execute along with certain drawbacks resulting from the transmission issues in wireless networks. Today, wireless sensors have emerged successfully due to its simple and low expense solutions [5],[6],[8].

Sensor network is an integration of tiny devices which have wireless connections. For our purpose, INFRARED sensors are used which usually are low cost, user friendly and have fast obstacle detection via infrared reflection. This wireless sensor network is useful to many fields including environmental supervision, security purposes, home and workplace surveillance, agricultural inspections, etc. As it observed that these sensors are used in many application, we used it for the detection of free parking slots.

The proposed system, runs on an android application which is developed to offer an interface to the user for reservation. The user can select the desired parking space and confirm the booking. The functionality of pre-booking a slot makes it quite easy and flexible for the user. Facilities like registration, login and online payment are embedded in the application to make it completely automated. At the backend, the user details are updated on the database. A web server is integrated to pass the user information to the database. Moreover, the entry and exit time of the vehicle driver is recorded for the purpose of payment. The amount to be paid is proportional to the total time the vehicle parked. Another functionality tells that the vehicle reservation will be cancelled automatically if it does not enter in the specified time period. To achieve this, a timer is set which goes on until the pre-defined time (e.g. 20 minutes) is reached. If the user fails to enter within the time, reservation will be withdrawn. The user will be notified with the same. Analytics will be conducted to figure out the patterns which comprise of the peak hours and days for parking and suggesting a nearby place if the current premise is full.

The system promises to overcome the issues faced by the manual system by making it completely automated. The payment facility is made simpler by having an E-Wallet in the application, where the user can add and deduct money depending on the history. If the user does not have sufficient balance, a notification will be sent to add money for further transactions.

II. SYSTEM ARCHITECTURE

This section covers the detailed description including architecture and components used in the system. *"Fig 1"* below, illustrates the functionalities and connections with each other.

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Research Article

ADAPTIVE E-LEARNING SYSTEM

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A R T I C L E I N F O

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A B S T R A C T

Adaptive learning is a kind of learning environment which provides individual learning. It can customize the learning style according to the individual's personality and characteristics. Adaptive E-learning, refers to a training concept in which technology is introduced step by step in all aspects of the business of training. One of the key factors in such systems is the correct and continuous identification of the user learning style, such as to provide the most appropriate content presentation to each individual user. This system is capable of recommending learning content of potential interest to a user and also the likely Web browsing action on the current item using a novel similarity measure approach. The system is able to deliver the learning objects composing a course either by following the organization defined in the course's manifesto, or by dynamically choosing the sequence in which the learning objects that compose a lesson should be delivered. The latter sequencing is done on the basis of the learner responses to tests.

INTRODUCTION

E-learning and distance education via the Internet is a means of current and promising teaching. However, it suffers from defects mainly related to the relative absence of the teacher and, therefore, the difficulty of adapting teaching to the level and behavior of the learner. Paper-based exams and traditional exams are often based on the Classical Test Theory which centers around statistical characteristics like reliability, validity and distinction and so of. But there is still shortcomings for CTT — it neglects the relationship between candidates' scores and difficulty of questions, i.e. the difficulty relative to the candidates. While, the Item Response Theory can stabilize questions' parameters freeing from the influence of tested samples. So, compared with CTT, IRT has the following advantages:

1. More accurate estimation for questions' parameters.
2. Comprehensive revolution to equivalence to tests.
3. Definitions for such integrated quality index as information and function to be a more scientific criterion for selecting questions.
4. More suitable for adaptive testing system.

If a system can correctly extract a user's intention from his/her Web-browsing behavior, when coupled with the user's personal preference, making good personalized recommendation is possible. User's evaluation feedback and browsing behavior are monitored to provide recommendation.

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LITERATURE SURVEY

There are various papers on this particular domain of Adaptive e-learning. Each having a different concept or methodology to help the user to learn better. For providing a better solution, we have referred few well-known papers and extracted concepts that could help us create the proposed solution.

F. Trif, C. Lemnaru and R. Potolea in one their paper titled "Identifying the User Typology for Adaptive E-learning Systems", have come across 4 main types of learning types namely,

Type I – Meaning Directed Style

Type II – Reproduction-Directed Style Type Iii – Application-Directed Style Type Iv – Undirected Style

In this paper we came across intermediate attributes of learning that is:

1. Study activities -these include processing strategies and regulation strategies.
2. Study motives and study moves-these include Learning orientations and mental models of knowledge.

In this paper, K-means clustering is used to understand the relativity between different learning types. The learning activities are grouped into clusters and then the clusters are mapped with the learning types. Though the paper talks about different learning types and activities, but only gives the learning style suggested by one of the expert. There are many experts who have different ways to estimate the learning style. Here, clustering is used to know the user's category. Others

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Bizmart-Connecting Businesses.

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***Abstract**: As businesses are moving ahead with the technology, online business came into picture and it is quite difficult for small scale businesses to make their business online. So, there is need for some platform that can help them to get it done in their own way. And a platform is also required for companies who want their project done by some other person outside their company. Hence introducing BizMart makes everything handy and efficient, for the easy conversation between users, the chatting system is also included in system . BizMart can also be used by employees who had been laid-off, who cannot find full time employment. Thus, BizMart is useful for small scale businesses and also for corporate businesses for developing their projects from other developers.*

***Keywords**: Businesses; freelancer system; Corporate Businesses; Chat Systems*

I. INTRODUCTION

Online revolution is the one which is affecting the various businesses, which are also offline so there is a need, for small businesses to be connected online and to be known in the market. Keeping this point in mind we develop a portal in which small businesses can come online and it is good opportunity for developers to do some projects as part time job in their weekend time. This portal's aim is to connect different business through this portal which will be eventually profitable to all. Bizmart is quite similar with other freelancing websites but the additional feature that Bizmart offers is that it provides a similar portal to sellers and buyers. This portal also provides the facility of chatting to provide a good communication and transparency among the users. Bidding is incorporated in the portal to ensure users of lowest possible prices .Once completed the proposed system; it would be one of the very few premiere platforms for bidding on projects in India. Online Bidding system(OBS) begins when the buyer signs in, buyer will post the project that they need. It is necessary for buyer to list item, place item in a specific category, provide detailed description, set a minimum bid price and select the time period of the auction. Seller also must register to be OBS member. They can bid the products from any type. Once a seller finds a product that they want to buy, they can place a bid request on the system, soon the buyer will be notified bid status, and they are free to bid on it. Once the bidding ends, the OBS system will suggest the winner on the basis of client's decision. Based on client's decision the project is assigned to a particular buyer and OBS will inform both buyer (bidding winner and loser) and seller.

II. BIDDING MECHANISM OVERVIEW

Bidding system begins when the buyer signs in, buyer will register the item that they want to buy. They needs to list item, place item in a specific category, provide detailed description, set a minimum bid price and select the length of the auction. Seller also must register to be OBS members. They can bid the products from any type. [1]

Once a buyer finds a product that they want to buy, they can places a bid request on the system, soon the seller will be notified bid status, and they are free to bid on it. Once the bidding ends, the OBS will suggest the bidding winner of that product to buyer. OBS then informs both buyer (bidding winner and loser) and seller.[1]

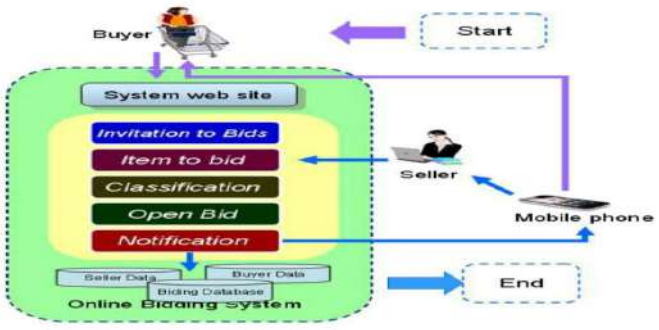

Figure 1: Online Bidding System

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Implementation of Routing Protocols in Wireless Sensor Network-Comparative Study

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Abstract: **A Wireless Sensor Network is composed of a large number of sensor nodes which are densely deployed either inside the network or very close to it. Since the sensor nodes are often inaccessible; the lifetime of a network depend on the battery powered of the nodes. NS2 is an open source event driven simulator designed specifically for research in computer communication networks. This paper presents various routing protocols and evaluates the performance using user friendly software NS2.**

Keywords*: Network lifecycle, Energy consumption, robustness, node mobility*

I. INTRODUCTION

Wireless Sensor Networks (WSNs) [3, 5] has emerged as research areas with a great effect on practical application developments. They permit fine grain observation of the ambient environment at an economical cost much lower than currently possible. In hostile environments where human participation may be too dangerous; sensor network may provide a robust service. Sensor network are designed to transmit data from an array of sensor nodes to a data repository on a server. The advances in the integration of micro-electro-mechanical system (MEMS), microprocessor and wireless communication technology have enabled the deployment on a large-scale. Wireless Sensor Network WSN [15] has potential to design many new applications for handling emergency, military and disaster relief operations that requires real time information for efficient coordination and planning. Sensors are devices that produce a measurable response to a change in a physical condition like temperature, humidity, pressure etc. WSNs may consist of many different types of sensors such as seismic, magnetic, thermal, visual, infrared, acoustic and radar, capable of monitoring a wide variety of ambient conditions. Though each individual sensor may have severe resource constraint in terms of energy, memory, communication and computation capabilities; large number of them may collectively monitor the physical world, disseminate information upon critical environmental events and process the information. Since a wireless sensor network [1-4] is a distributed real-time system, one needs to decide upon number of solutions from distributed and real-time systems that can be used in these new systems. Apart from few prior solutions, new solutions are necessary in all areas of the system because set of assumptions underlying previous work has changed dramatically. Most past distributed systems research has assumed that the systems are wired, have unlimited power, are not real-time, have user interfaces such as screens and mice, have a fixed set of resources, treat each node in the system as very important and are location independent. In contrast, for wireless sensor network, the systems are wireless, have scarce power, are real-time, utilize sensors and actuators as interfaces, have dynamically changing sets of resources, aggregate behaviour is important and location is critical. Many wireless sensor networks also utilize minimal capacity devices which places a further strain on the ability to use past solutions. Since WSN is usually exposed to atrocious and dynamic environments, it is possible for the loss of connectivity of individual nodes. Conventional centralized algorithms need to operate with global knowledge of the whole net work, and an error in transmission or a failure of a critical node will potentially cause a serious protocol failure. On the contrary, distributed algorithms are only executed locally within partial nodes, thus can prevent the failure caused by a single node. It is realized that localized algorithms are more scalable and robust than centralized algorithms.

II. BACKGROUND

In this section, the three algorithms namely, Geographic Random Forwarding (GeRaF),Low-Energy Adaptive Clustering Hierarchical (LEACH), Sequential Assignment Routing (SAR) are discussed and analyzed as follows.

III. GEOGRAPHIC RANDOM FORWARDING PROTOCOL (GERAF)

GeRaF was proposed by Zorzi and Rao [6], which uses geographic routing where a sensor acting as relay is not known a priori by a sender. There is no guarantee that a sender will always be able to forward the message toward its ultimate destination, that is, the sink. This is the reason that GeRaF is said to be best-effort forwarding. GeRaF assumes that all sensors are aware of their physical locations, as well as that of the sink. Although GeRaF integrates a geographical routing algorithm and an awake-sleep scheduling algorithm, the sensors are not required to keep track of the locations of their neighbors and their awake-sleep schedules. When a source sensor has sensed data to send to the sink, it first checks whether the channel is free in order to avoid collisions. If the channel remains idle for some period of time, the source sensor broadcasts a request-to-send (RTS) message to all of its active (or listening) neighbors. This message includes the location of the source and that of the sink. Note that the coverage area facing the sink, called forwarding area, is split into a set of Np regions of different priorities such that all points in a region with a higher priority are closer to the sink than any point in a region with a lower priority. When active neighboring sensors receive the RTS message, they assess their priorities based on their locations and that of the sink. The source sensor waits for a CTS message from one of the sensors located in the highest priority region. For GeRaF, the best relay sensor the one closest to the sink, thus making the largest advancement of

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Women Safety Jacket

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Abstract: Women suffering violation are even denied of the basic human rights. Gender based violence has become a national as well as international agenda because of decades long struggles by civil society accompanied by women's movements. Though there are unprecedented numbers of laws against domestic violence, sexual assault and other forms of violence in each and every country to protect their female citizens to become a victim of any such violence but they are facing major challenges in implementing such laws. Thus making the society unjust and insecure for the women as in majority of cases the violator remains unpunished.

The atrocities against the women can be now brought to an end with the help of a device called Women safety jacket. It is to flash a warning giving an instant location of the distressed victim to the police so that the incident could be prevented and the culprit apprehended. This would help reduce crime against women.

Keywords: GPS, Buzzer, shock circuit, AT89C2051, Bluetooth module

I. INTRODUCTION

In global scenario, the prime question in every girls mind is about her safety and the harassment issues. The only thought haunting every girl is when they will be able to move freely on the streets even in odd hours without worrying about their security. This paper suggests a method to protect women. It focuses on a security device for women so that they will never feel helpless. The system consists of various modules such as shock circuit, buzzer, Microcontroller AT89C2051, Bluetooth module HC-05. An electronic jacket for women safety means that allow users to protect while traveling odd hours or when they feel helpless. It is based on women's security as it is reported that everyday there is many cases about women harassment.

It is a simple and easy to carry device with magnanimous functionality. The basic approach is to intimidate instant location and a distress message to the cops and registered number, so that unfortunate incidents would be averted and to provide real time evidence for swift action against the perpetrators of crime against women.

The security system for women which allows immediate response in case of any harassment and mainly focuses on two different parts, one is developed mobile applications for women safety and protection and secondly, the proposed work . The users can press a button that is located on device. The Bluetooth device is embedded with it and sends data to the mobile phone. Mobile phone app sends the messages to predefined contacts in which one is for information about location of the victim through GPS and message alert "HELP

II. PROPOSED WORK

A. Objective of the work is as follows:-

1) To design a device which is a security system specially designed for women in distress. To create a real time, reliable, secure and handy device which will intimidate instant location and a distress message to the cops and registered numbers if a woman feels she is in danger.

2) To provide an emergency switch attached to the jacket in an emergency situation women can press the switch. This will activate the shocker circuit through the relay which will ensure the security of women and prevent mishaps.

3) The hardware circuit can be divided into three parts: Power Supply, Microcontroller and Shocker circuit through Relay.

REINFORCEMENT LEARNING ON A ROBOT

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Abstract

The purpose of this project is to use the concepts of reinforcement learning and digital image processing on robots to teach them to walk. A crawler robot and a quadruped robot are used to apply machine learning algorithms. These robots use their acquired knowledge in training process to make model of themselves and perform specified task.

Index Terms: Reinforcement Learning, Digital Image Processing, Robotics, Quadruped robot, Locomotion.

I. INTRODUCTION

Robots are used practically in every domain, these have unique capabilities, from imitating living organisms to performing assigned task. Industrial automated robots majorly perform repetitive task assigned in a static environment and are unable to achieve robust performance in unpredicted conditions without human intervention [1].These robots are constructed as per their equivalent mathematical model and then used to perform task assigned under manual guidance [2]. It is difficult to mathematically model the robot under every condition, such as change in environment, new task and faulty part. Considerable advancements in method and researches have been done in order to make the robot model its environment autonomously [1]. Without internal models, robotic systems can autonomously synthesize increasingly complex behaviors [3-6] or recover from damage [7] through physical trial and error, but this requires hundreds or thousands of tests on the physical machine and is generally too slow. In order to generate an inference of its own morphology," the robot need to perform autonomous modelling. A machine is able to indirectly infer to its own morphology through self-directed exploration and then use the resulting self-modelling synthesize new behaviors" [8].

Here we describe a method to make a spider like quadruped robot learn to walk without human intervention. The process involves use of reinforcement learning (RL) with recurrent neural network and computer vision in order to achieve the desired goal. In the initial stage of learning process the robot assumes itself as a black box and performs random actions in order to explore its morphology through self-modelling [8]. In the later stages it starts to use the knowledge it has acquired of its morphology to walk in practical unpredicted environment.

II. PROBLEM STATEMENT

Over the years we have seen robots and machines evolving and also replacing humans in many fields, but whenever it comes to dealing with a new set of problem or to build a machine for new task we need to start from the grass root level, also machine is designed to perform a particular task under a lot of environmental restrictions i.e. the machine will not be able to work or will not provide with satisfactory result in alien conditions, which make all the machines restricted to their domain. These restrictions are majorly due to explicit programming. In order to make our machines and robots robust in nature we need to come up with a solution which satisfies most of our needs. Explicit programming reduces adaptability of the robot, in order to provide maximum adaptability and robustness to the robot, it should be able to learn and adapt from its surrounding. First step

Fully Automatic Ration Distribution System

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Abstract
Ration Distribution System means distribution of essential commodities to a large number of people. It is done by the government. Public distribution system is one of the widely controversial offices that involve corruption and illegal smuggling of goods. All this happens because every job in the ration shop involves manual work and hence there are no specific high-tech technologies to automate and monitor the job. Our main objective here is to automate the process of the distribution. The classical method involves customer to tell the person handling the ration shop outlet, the quantity of the commodity he/she needs along with its category/type. The person working in the shop then measures the commodity and gives it to the customer. In our version of the system, we will develop an embedded system project where we will have the customer to input the quantity of a commodity that he requires and the system made will automatically collect that much quantity of the required commodity in a container. It is a relatively new concept which takes into account the various social, economic and general aspects relating to technical as well as day to day disciplines. The proposed automatic ration shop for public distribution system is based on Radio Frequency Identification (RFID) technology that replaces conventional ration cards. The RFID tags are provided instead of conventional ration cards. Customer's database is created and is stored in a microcontroller chip which is provided by Government Authority. Customer needs to scan this RFID tag to RFID reader, and then microcontroller checks customer's details to supply commodities in ration shop. After successful verification, customer needs to enter type as well as quantity of commodity using a keypad. After the goods are purchased the amount of the commodity used will be deducted from the customer's account and the balance will be shown.

Introduction (TNR -12)
Public distribution system (PDS) was launched in India on June 1997. The fair price shops are mainly used to distribute the goods with a reduced cost or at times free of cost. It is a concern of India's public distribution system implanted by Government of India, which distributes rations at a subsidized cost to the poor. In India approximately 500000 fair price shops are available. Here the Major commodities distributed include essential food grains, such as wheat, rice, sugar, along with oil and kerosene. The central and state governments jointly take the responsibility of regulating the PDS. While the central government is obligated for procurement, storage, conveyance, and majority allocation of the food grains, the state governments holds the province for distributing the aforesaid to the consumers through the ingrained network of Fair Price Shops (FPSs). State governments are also responsible for functional obligation, including allotment and identity of families below the poverty line, issue of ration cards, superintendence and monitoring the functioning of FPSs. The Indian ration card is the authority of the Indian peoples. This is mainly used for buying supported food and fuel (LPG and kerosene). It is an important livelihood tool for the misfortunate, providing proof of personal identity and link with government databases. India's public distribution system (PDS) runs based on the ration card, including its purpose of

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Hand Gesture Segmentation Using Skin Color Detection in YCBCR Color Space

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Abstract: **- This paper discusses the segmentation of hand gestures using skin detection method based on the YCbCr color space. Here a face detection algorithm based on viola jones has been used to detect and delete the face. Thus the only area to detect based on skin color is that of the hand. After skin color detection and thresholding using rectangular selection over the input image the binary image received is further processed using image processing techniques like median filtering and morphological operation. Then robust tracking of the segmented hand contour using image moment concept further helps in localizing position of hand contour in the two dimensional space. These segmentation of hand gestures can be used in creating datasets of binary hand gestures and in recognition of hand gestures based on the machine learning, neural network, geometrical analysis of hand and so on in future.**

Index Terms **- Contour, Image Moment, Segmentation, Tracking.**

I. INTRODUCTION

This paper aims to provide automatic segmentation of hand gestures in real time without providing a specific rectangular box for hand to be placed within the live video frame, facilitating in ease of hand gesture segmentation based on skin color detection. According to recent trends in image processing and computer vision domain the technological trends is on improving camera technology and identifying features and recognizing these features using the machine learning technologies. Hand gestures is a body language that has specific meaning which is mainly conveyed through center of the palm and finger position and shape. For these feature extraction and ease of recognition in real time, it is necessary to form a robust segmentation of hand gestures in real time. Based on the various studies on skin detection based on different color space it is found that YCbCr has been effective enough in segmentation of hand gestures.

II. LITERATURE REVIEW

A robust segmentation of hand gestures in complex environment is the first step in any hand gesture recognition system. According to various segmentation schemes [1] researched, all methods depends upon the image acquisition, image processing and image understanding techniques of computer vision in digital image processing. Chung-Ju Liao et al. [2] improved the concept of image segmentation using with skin detection by dividing the image into two parts called frame division. Stergios Poularakis and Ioannis Katsavounidis [3] proposed a complete gesture recognition framework based on maximum cosine similarity and fast nearest neighbor (NN) techniques. Various color space used in color based segmentation includes YCbCr, HSV, CIE LUV, CIE LAB, HLS color space models. These color space can be used in skin color detection by setting the minimum and maximum thresholds in their respective color space. By setting these thresholds it is possible to get a binary segmentation based on the set thresholds. Comparative studies of skin color detection and segmentation in HSV and YCbCr color space by Khamar Basha Shaik et al. [4] show that YCbCr is more effective and efficient in segmentation in terms of color in color images even under uneven lighting conditions. On-line skin classifier with multiple cues is proposed by Ying Zhao and Jiayong Yan [5]. A novel method called MACS for 2D hand tracking using motion and color information for headworn monocular color cameras is presented by JH Hammer et al. [6]. Yuan Yao et al. [7] introduces a framework that allows tracking hand gestures in 3-D space and matching gestures with simple contour model, supporting complex real–time interactions. Zhang Qiu-yu et al. [11] presents a method based on YCbCr color space and K-means clustering algorithm for segmentation hand gesture. There are various methods to detect edges in binary and grayscale images. These methods mainly aims at identifying discontinuities in digital images with brightness varying at different points. Edge detection is a fundamental tool in image processing, machine vision and computer

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Smart Waste Management System - An Innovative Way to Manage Waste

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Abstract: In this paper, we present the smart waste management system using IOT. The system is designed to cover all the aspects of waste management lifecycle and play an important role from the Smart City point of view. With rapid increase in population, the issues related to sanitation with respect to garbage management are degrading immensely. It creates unhygienic conditions for the citizens in the nearby surrounding, leading to the spread of infectious diseases and illness. To avoid this problem, IoT based "Smart Waste Management" is the best and trending solution. This proposed system calculates the shortest route for collection of waste using google maps and also gives prior information of the status of the bin, so that the bin can be cleaned on time and safeguard the environment. "This paper proposes an advanced waste management system with smart bins that alerts the authorised collector by sending alert messages for efficient garbage collection in Cities."
Keywords: Arduino uno 3, raspberry pi, Ultrasonic sensor, Smart Bins(SB), Esp8266 wifi module, server for database.

I. INTRODUCTION

In India, the present smart waste management system is not as optimised as required. As of now we regularly see that the dustbins are placed on the roadside and dustbin is overflowing. This overflow of dustbin is due to the increase in the population and the wastage from hotels, industries etc. This overflow of dustbin will make our environment ugly and cause many disease to the public.To avoid this situation we planned to design "Waste Management System Using IOT. A big challenge in the urban cities is that of waste management as there is a rapid growth in the rate of urbanization and thus there is a need of sustainable urban development plans. To avoid all such situations we intend to propose a solution for this problem "Smart waste management system", which will alarm and inform the authorized person when the garbage bin is about to fill. Then message will be send to the authorized person to collect the garbage from the particular area. The authorized person will sends the message from his android application to the garbage collectors by notifying him the route where bin is about to fill. This will help to reduce the overflow of the garbage bin and thus keeping the environment clean.

II. COMPONENTS

A. Ultrasonic Sensor

An Ultrasonic sensor is a device that can measure the distance to an object by using sound waves. It measures distance by sending out a sound wave at a specific frequency and listening for that sound wave to bounce back.

B. Arduino Microcontroller

Arduino is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board (often referred to as a microcontroller) and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board. Secondly, Arduino does not need a separate piece of hardware (called a programmer) in order to load new code onto the board – you can simply use a USB cable. Furthermore, the Arduino IDE uses a simplified version of C++, making it easier to learn to program.

C. Breadboard and Jumper Wires

A breadboard is a construction base for prototyping of electronics. "Breadboard" is also a synonym for "prototype". Because the solderless breadboard does not require soldering, it is reusable. This makes it easy to use for creating temporary prototypes and experimenting with circuit design. A variety of electronic systems may be prototyped by using breadboards, from small analog and digital circuits to complete central processing units (CPUs). In our scenario we have used breadboard for connecting wires. We have used jump wires also called as jumper wires. In our system, Jumper wires are used for making connections between items on your breadboard and Arduino header pins.

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Medical Diagnosis using Fuzzy Logic

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***Abstract:** This paper presents a generalized and effective methodology for prediction of any disease which has measurable symptoms using fuzzy logic. Medical data has ample of imprecision and ambiguity due to which its difficult to predict the consequences of symptoms at the personal level. We have made an attempt to apply this methodology for diagnosis of heart disease. The dataset was taken from UCI repository. In this approach, all the symptoms that cause a particular disease are fuzzified. For each fuzzy value of a particular symptom, we assign an effect value that denotes the possibility of the occurrence of the disease when the symptom has that fuzzy value. This data is filled in a tabular format which forms the knowledge base for the disease. A knowledge base is built by domain experts who have in-depth knowledge of the subject. When user symptoms are fed to the inference engine, the output is in fuzzy values. A defuzzification module transforms fuzzy output to crisp output. This output denotes the certainty of the presence of disease. A web app prototype is developed for this system with an aim for reaching to general masses.*

***Keywords:** fuzzy logic, heart disease prediction, tabular knowledge base, defuzzification module.*

I. INTRODUCTION

Cardiovascular disease is the number 1 cause of death globally. More people die annually from cardiovascular diseases than from any other cause. An estimated 17.7 million people died from cardiovascular diseases in 2015, representing 31% of all global deaths. Of these deaths, an estimated 7.4 million were due to coronary heart disease and 6.7 million were due to stroke.

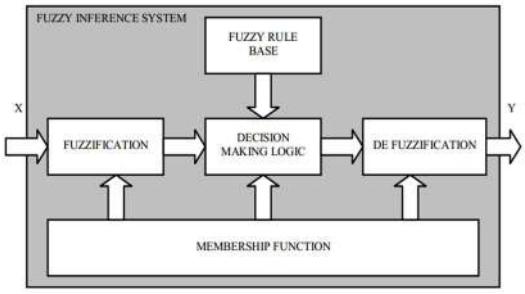
Due to this, prediction of cardiovascular diseases at early stages is vital. Fuzzy logic systems are proficient in dealing with uncertain data.The main advantage of Fuzzy Logic is that it does not need lots of data to train (can work with no data at all, as long as we know the domain we are modelling and its reaction/behaviour rules). The second main advantage is the interpretability and simplicity, as it is used to "compute with words" as Zadeh puts it, or allows modelling near natural language rules.

A. Fuzzy Inference Systems

In this paper we develop a fuzzy expert system that uses a collection of fuzzy membership functions and rules, instead of Boolean logic, to reason about data.

The structure can be summarized in the following four steps, carried out in order:

1) *Fuzzification:* the membership functions defined on the input variables are applied to their actual values, to determine the degree of truth for each rule premise
2) *Inference:* the truth value for the premise of each rule is computed, and applied to the conclusion part of each rule. This result in one fuzzy subset to be assigned to each output variable for each rule.
3) *Composition:* all of the fuzzy subsets assigned to each output variable are combined together to form a single fuzzy subset for.



4) *Defuzzification:* is an optional step which is used when it is useful to convert the fuzzy output set to a crisp number.

In this approach, we have used Centroid defuzzification method. In the CENTROID method, the crisp value of the output variable is computed by finding the variable value of the center of gravity of the membership function for the fuzzy value.

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Virtual Dietitian using Machine Learning

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Abstract: ***The Virtual Dietitian is a Web Application to suggest a diet plan to its users. It will act as a diet consultant like a real dietitian. A person, in order to know his/her diet plan needs to give some information to the dietitian such as its body type, weight, height, daily exercise, lifestyle and body goal details. In a similar way, this application will interact with the user as per the information entered by the user. The Application will query all this data to the user and process it to provide the appropriate diet plan to the user. Thus, the user can get the required diet plan by querying the application and the user does not need to visit any dietitian. The user will need to register and make an account wherein the user will be required to enter details, only then he/she will get a generated personalized diet plan, as there would be different diet plans for different needs of the user. In case the user is not satisfied the application will also give an alternative diet plan depending on the user feedback. Hence, the application will give immediate & personalized diet plans, and the application will have user autonomy.***
Keywords: ***Data Mining, Machine Learning, Random Forest, System design, Fitness***

I. INTRODUCTION

According to a special article that was written by Princeton University, the per capita calorie intake in India is declining, as is the intake of many other nutrients; indeed, fats are the only major nutrient group whose per capita consumption is unambiguously increasing. Today, more than three-quarters of the population live in households with per capita calorie consumption below 2,100 per day in urban areas and 2,400 per day in rural areas – numbers that are often cited as "minimum requirements" in India.

Nutrition is vital for your body and all of its systems to function properly, by having good nutrition it will help you maintain a healthy weight, reduce body fat, provide your body with energy, promote good sleep and generally make you feel better. By having good nutrition, it has been proven that you are less likely to develop many of the present-day diseases.

When we think about dieting, most of the people think about setting a weight-loss goal that will determine how long we watch what we're eating. However, people these days are focused on gaining and maintaining their body weight and staying fit. A better way to think about it might be to ask yourself the question:

How long do I want to try to avoid developing a chronic disease? Put in those terms, it's easy to see that getting control of BMI and eating foods that contribute to continuing good health (or that don't directly contribute to the development of dangerous disease conditions) is not a short-term goal.

For many of us, doing what it takes to get our BMI into a healthy range and to keep it there means learning to live our lives in a new way.

II. OBJECTIVES

A. Intake of Healthy foods

Improve nutrition and health outcomes of vulnerable segments (children and women) of the populations, through the availability of foods that would increase intake of vegetables and fruits, decrease caloric intake and increase micronutrient intake.

B. Personalised Diets

Clients receive personalized diets made exclusively for them to increase its effects.

C. Nutritional Awareness

To increase the health and Nutrition awareness among the population.

III. SYSTEM DESIGN

A. Architecture

The architecture of the Virtual Dietitian System consists of 5 layers, they are Presentation layer, Business Layer, Service Layer, Data Access Layer and the Data layer. Following are the various layers of the System Architecture:

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Cryptography on Android Messaging Application using End to End Encryption

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[1, 2, 3, 4]*Vivekanand Education Society's Institute of Technology*

Abstract: Communication through messaging service is very popular now-a-days and it is cheap, fast and simple. However, when confidential information is exchanged using messaging service, it is very difficult to protect the information from messaging service security threats like man-in-middle attack and eavesdropping. Most of the times, these threats are difficult to detect and therefore increasing the security of messaging service communication is the only way to avoid such threats. Earlier messaging security was generally provided through single encryption mechanism but this mechanism is not sufficient to encrypt a file (i.e. audio, video, text and image). Also, there were no systems that would encrypt a file in a single system in messaging service communication. This system implements self-destructing messages using layered encryption, an enhanced messaging architecture equipped with self-destructing feature and encryption of a file in a mobile environment. Senders will be able to set sensitivity levels for their messages. This system presents a design for Android platform application and is equipped with three modes for sending the messages, namely- Insecure, Secure and Ultra Secure. In this system we propose an efficient algorithm for cryptography which is based on end to end encryption. Asymmetric encryption and decryption is used in this system. This application makes use of end to end AES Encryption algorithm and a self- destructing timer to send and receive messages. Our system is different from others because in our system, sender sends the private information to the receiver with a specific sensitivity level. With that sensitivity information, the message will be destroyed from the database and the user's device. All the data stored in the database will be encrypted to increase the security of the system.

Index Terms*: *Encryption, Decryption, Cryptography, AES algorithm.

I. INTRODUCTION

Communication through messaging service is very popular nowadays and it is cheap, fast and simple. However, when confidential information is exchanged using messaging service, it is very difficult to protect the information from messaging service security threats like man-in-middle attack and eavesdropping. Most of the times, these threats are difficult to detect and therefore increasing the security of messaging service communication is the only way to avoid such threats. Earlier messaging security was generally provided through single encryption mechanism but this mechanism is not sufficient to encrypt a file (i.e. audio, video, text and image). Also, there were no systems that would en- crypt a file in a single system in messaging service communication. We propose self-destructing messages using layered encryption, an enhanced messaging architecture equipped with self-destructing feature and double encryption of a file in a mobile environment. Senders will be able to set sensitivity constraints for their messages. The constraints will determine where and when the sent messages are decrypted. The paper presents a design for Android platform application and is equipped with three modes for sending the messages, namely- Insecure, Secure and Ultra Secure.

II. OBJECTIVE

This design is implemented in an android application to develop a secure chat application. The android mobile application must be capable of handling numerous different users wherein a user should be able to use it smoothly. Today's messaging services, the users are subjected to constant unwanted leakage of confidential information compromising on the integrity of their privacy. Present day systems have features like self-destruction for message transmission. These systems do not provide layered encryption for the data along with the time constraints. Hence this system will incorporate features like End-to-End encryption along with self-destructing timer. Since the main objective of this system is to provide a platform for secure and efficient messaging services, this system can be used by any organization where confidentiality of information is the top priority. As the messages have a time constraint along with levels of sensitivity, they cannot be decrypted by any third party. Due to this feature, the application can find it's use in government and private organizations including army. It can be also used at personal level for a secure transmission of data.

III. PROPOSED WORK

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VAHAN AND ICT-ENABLER OF IMPOSING E-PENALTY FOR TRAFFIC RULE VIOLATOR: AN E-GOVERNANCE ENFORCEMENT

Shiv Kumar Goel[1] & Dr. Kavita[2]

Abstract-ICT and E-Governance can provide an efficient solution to curb the Traffic rules violations and penalize such violators on the spot with the help of Intelligent Automated System in INDIA. VAHAN is one of the enabler to impose infringement penalty on citizens under the influence of e-Governance enforcement on citizens.VAHAN keeps the record of every vehicle and its owner at district and village level under the purview of RTO and ARTO. This data will be helpful to impose the penalty on vehicle owner globally. VAHAN data is centrally available at Nation Level and whenever and wherever a vehicle violate the traffic rule can easily identified with the help of this Nation level centralised repository and owner will be imposed with an automatic penalty through Intelligent Automated System.
Keywords-VAHAN, ICT, e-Governance, EPS, VSC

1. INTRODUCTION

According to W.H.O. (World Health Organization) after the health issue in the society; the next challenge is to control the Road accidents, due to which many innocent people have lost their lives. Many Prominent People like Late Shree Gopi Nath Munde, children and many innocent people have lost their lives on road accident due to errant driving and jumping of the signals on the road. Government has installed CCTV cameras in city to capture such offenders and taking lot of initiative to penalize them. Government has also increased the penalty amount for such offences but the enforcement is not at the place to penalize them forcibly. With the help of ICT and VAHAN, enforcement of the penalty is possible under e-Governance influence. The National e-Governance Plan (NeGP), a government initiative , providing a massive countrywide infrastructure reaching down to the remotest of villages and hence large-scale digitization of records is taking place to enable easy, reliable data access over the internet[1-2]. The main objective of NeGP is to transform government citizen services from their present manual delivery to digital delivery. VAHAN data is available at district level, state level and village level also [3-4]. This whole process involves different types of communication (i.e. horizontal, vertical,upward and backward) across the different departments which can be a very complex but ICT has made it very efficient and comparatively easier than before. ICT is an enabler to deliver services to the citizens conveniently in urban and rural areas in a cost-effective manner. ICT has made easier and faster the flow of information between Government and citizens and it has also changed the medium of interaction between them [2]. E-governance supported by ICT helps in combining people, processes, technology and information in order to increase the efficiency of the Government operations and has reached to millions of the people across the country.

VAHAN: An application is developed by NIC Headquarter Delhi for registration of vehicles and road tax clearance by the RLA (Registration and Licensing Authority) / RTA (registration and Transportation Authority). It helps the department to Register Vehicle, Collect tax, Issue various certificates and permits and Record the fitness of vehicles.

Work Flow for Generating RC

Step 1: Fees Collection through computer.
Step 2: Entering Registration Details.
Step 3: Printing Registration Certificates.

VAHAN keep all the records of Vehicle like registration number, engine number, and model of vehicle, make of vehicle and the owner name, address and other credential of vehicle's owner as well. This data is digitized and available at various levels of RTOs. VAHAN, the vehicle registration software, and SARATHI, driving license services software, has been implemented in 29 States/UTs and now being implemented in other states also.

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INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH TECHNOLOGY

MOVIEMENDER- A MOVIE RECOMMENDER SYSTEM

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ABSTRACT

In today's digital world where there is an endless variety of content to be consumed like books, videos, articles, movies, etc., finding the content of one's liking has become an irksome task. On the other hand digital content providers want to engage as many users on their service as possible for the maximum time. This is where recommender system comes into picture where the content providers recommend users the content according to the users' liking. In this paper we have proposed a movie recommender system MovieMender. The objective of MovieMender is to provide accurate movie recommendations to users. Usually the basic recommender systems consider one of the following factors for generating recommendations; the preference of user (i.e content based filtering) or the preference of similar users (i.e collaborative filtering). To build a stable and accurate recommender system a hybrid of content based filtering as well as collaborative filtering will be used.

KEYWORDS: Movies, Recommendation system, CBF- Content-based filtering, CF- Collaborative filtering, Hybrid systems

INTRODUCTION

Recommendation systems help users find and select items (e.g., books, movies, restaurants) from the huge number available on the web or in other electronic information sources. Given a large set of items and a description of the user's needs, they present to the user a small set of the items that are well suited to the description. Similarly, a movie recommendation system provides a level of comfort and personalization that helps the user interact better with the system and watch movies that cater to his needs. Providing this level of comfort to the user was our primary motivation in opting for movie recommendation system as our BE Project. The chief purpose of our system is to recommend movies to its users based on their viewing history and ratings that they provide. The system will also recommend various E-commerce companies to publicize their products to specific customers based on the genre of movies they like. Personalized recommendation engines help millions of people narrow the universe of potential films to fit their unique tastes. Collaborative filtering and content based filtering are the are prime approaches to provide recommendation to users. Both of them are best applicable in specific scenarios because of their respective ups and downs. In this paper we have proposed a mixed approach such that both the algorithms complement each other thereby improving performance and accuracy of the of our system.

LITERATURE SURVEY

MOVREC [10] is a movie recommendation system presented by D.K. Yadav et al. based on collaborative filtering approach. Collaborative filtering makes use of information provided by user. That information is analyzed and a movie is recommended to the users which are arranged with the movie with highest rating first. The system also has a provision for user to select attributes on which he wants the movie to be recommended.

Luis M Capos et al. [5] has analyzed two traditional recommender systems i.e. content based filtering and collaborative filtering. As both of them have their own drawbacks he proposed a new system which is a combination of Bayesian network and collaborative filtering. The proposed system is optimized for the given problem and provides probability distributions to make useful inferences.

A hybrid system has been presented by Harpreet Kaur et al. [9]. The system uses a mix of content as well as

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SENTIMENT ANALYSIS OF PRODUCT REVIEWS

Devendra Kamalapurkar [*1], Ninad Bagwe [2], R. Harikrishnan [3], Salil Shahane [4], Mrs. Manisha Gahirwal [5]

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ABSTRACT

Due to the increase in demand for e-commerce with people preferring online purchasing of goods and products, there is a vast amount information being shared. The e-commerce websites are loaded with large volume of data. Also, social media helps a great deal in sharing of this information. This has greatly influenced consumer habits all over the world. Due to the vivid reviews provided by the customers, there is a feedback environment being developed for helping customers buy the right product and guiding companies to enhance the features of product suiting consumer's demand. The only disadvantage of availability of this huge volume of data is its diversity and its structural non-uniformness. The customer finds it difficult to precisely find the review for a particular feature of a product that s/he intends to buy. Also, there is a mixture of positive and negative reviews thereby making it difficult for customer to find a cogent response. Also these reviews suffer from spammed reviews from unauthenticated users. So to avoid this confusion and make this review system more transparent and user friendly we propose a technique to extract feature based opinion from a diverse pool of reviews and processing it further to segregate it with respect to the aspects of the product and further classifying it into positive and negative reviews using machine learning based approach.

KEYWORDS: aspect; sentiment analysis; feature extraction; machine learning

INTRODUCTION

In the recent years E-Commerce has exploded everywhere in the world, and majority of the population is preferring to buy products through these websites. Consequently large amount of data in the form of reviews is produced which helps prospective buyers to choose the right product. Furthermore these reviews contain opinionated contents which can be useful for the company to identify the areas which need to be enhanced.
However it is impractical for the user to read each and every review about the product. Moreover, reading only few reviews may present a biased idea about the product. It is quite possible that some of the reviews lack credible sources, which the users have no means to differentiate. Besides the reviews and ratings provided do little to assess the specific features of the product. Due to all the above constraints, the user is unable to make a fully informed decision about the product.

Opinion mining also known as sentiment analysis can be used to extract customer reviews from different sources on the internet. This technique implements various algorithms to analyze the corpus of data and make sense out of it. This technique helps to identify the orientation of a sentence thereby recognising the element of positivity or negativity in it. Automated opinion mining can be implemented through a machine learning based approach. Opinion mining uses natural language processing to extract the subjective information from the data (in this case it's customer reviews).

Opinion mining techniques can be applied to wide range of data. It can track the popular viewpoint or attitude of

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PHONE RECOMMENDER: SENTIMENT ANALYSIS OF PHONE REVIEWS

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DOI: Not yet assigned

ABSTRACT

Due to the increase in demand for e-commerce with people preferring online purchasing of goods and products, there is vast amount information being shared. The e-commerce websites are loaded with large volume of data. Also, social media helps a great deal in sharing of this information. This has greatly influenced consumer habits all over the world. Due to the vivid reviews provided by the customers, there is a feedback environment being developed for helping customers buy the right product and guiding companies to enhance the features of product suiting consumer's demand. The only disadvantage of availability of this huge volume of data is its diversity and its structural non-uniformity. The customer finds it difficult to precisely find the review for a particular feature of a product that s/he intends to buy. Also, there is a mixture of positive and negative reviews thereby making it difficult for customer to find a cogent response. Also these reviews suffer from spammed reviews from unauthenticated users. So to avoid this confusion and make this review system more transparent and user friendly we propose a technique to extract feature based opinion from a diverse pool of reviews and processing it further to segregate it with respect to the aspects of the product and further classifying it into positive and negative reviews using machine learning based approach.

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INTRODUCTION

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However it is impractical for the user to read each and every review about the product. Moreover, reading only few reviews may present a biased idea about the product. It is quite possible that some of the reviews lack credible sources, which the users have no means to differentiate. Besides the reviews and ratings provided do little to assess the specific features of the product. Due to all the above constraints, the user is unable to make a fully informed decision about the product.

Opinion mining also known as sentiment analysis can be used to extract customer reviews from different sources on the internet. This technique implements various algorithms to analyze the corpus of data and make sense out of it. This technique helps to identify the orientation of a sentence thereby recognising the element of positivity or negativity in it. Automated opinion mining can be implemented through a machine learning based approach. Opinion mining uses natural language processing to extract the subjective information from the data (in this case its customer reviews).

Opinion mining techniques can be applied to wide range of data. It can track the popular viewpoint or attitude of the general public towards a particular thing, person or an event. There are three general levels for opinion mining tasks: document level, sentence level and phrase level in Liu[1]. Document level tasks mainly help in

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SURVEY ON PRIVACY PRESERVING CLOUD AUDITING FOR SHARED DATA

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DOI: 10.5281/zenodo.266689

ABSTRACT

Cloud is a type of platform which helps to store the data as well as helps in sharing the data. While sharing the huge amount of data, the primary concern comes in mind is data integrity, security of the data. For the cloud server and the user it is not possible to check the integrity, consistency of stored data on cloud. Public Auditing method can help to overcome this problem. Hence the user takes help of the third party auditor (TPA) for auditing their data. Many of the techniques have been proposed by various researchers which improve upon one another. Here we have presented three landmark methodologies on Privacy preserving cloud auditing for shared data on cloud.

KEYWORDS: Cloud computing; public auditing; PDP; WWRL; ORUTA; TPA.

INTRODUCTION

Cloud Computing is an upcoming new technology which provides the on-demand facility of a shared pool of resources (computing resources) (e.g., computer storage, applications and other resources), which can include rapid allocation and freedom with minimum number of efforts. Cloud computing and storage solutions provide individual users and companies with variety of capabilities to store and work on their data in data centers which are not owned by them and the location may be remote, may be across a city or across continents. Cloud computing provides sharing of resources to achieve economy of scales. The users use this cloud for sharing and the collaboration of their data with many other users in the group. Data sharing has become need in today's world and it is provided in most of the cloud storage offerings, via Dropbox, Google.

The data integrity in cloud storage, is a subject to skepticism and inspection, as there is always this fear of data being stored in an environment where there is a chance of getting lost or corrupted[1]. The need of the Third Party Auditor (TPA) is very necessary for ensuring the integrity of the data.

Allowing public auditability for cloud storage is important so that users assign a third- party auditor (TPA) for the checking of the integrity of outsourced data and TPA offers its auditing service with more commanding computation and abilities of the communication than regular users. If we mention information, Wang et al. designed to construct a mechanism of public auditing system for cloud data, so that during public auditing process, the contents of the private data that belong to a personal user is not revealed to the third party auditor.

Sharing data among the multiple users is one of the features in the motivation of cloud storage. A unique problem that is introduced during the whole process of public auditing for the shared data in the cloud is how we should reserve the identity secrecy from the TPA, because the identities of each signer on shared data may show that a particular user among the group of users or special blocks in shared data is amore valuable object than others. Such information is very confidential to the group and should not be shown to any third party as there is data shared. In this paper, we have also studied Oruta , a new privacy-preserving public auditing mechanism for shared data in an untrusted cloud.

PROBLEM DEFINITION

The current/existing system demands public auditability of the data that is shared on cloud. While many techniques fails to preserve the identity privacy or data privacy on shared data during the process of public

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Mixing Fingerprint Features for Template Security

Shancymol Sojan, R. Kulkarni • Published 2016 • Computer Science •
international journal of engineering trends and technology

Most of the authentication systems today don't just use traditional systems like password or PIN but also rely on biometrics for a better security. Securing the biometric template is thus becoming a major concern in biometrics based systems. Although it is possible to use different biometric traits in combination (multimodal biometrics) to enhance security, it is computationally expensive and time consuming. This paper explores the possibility of combining features from the same biometric trait (fingerprints) i.e keeping it unimodal but still offering the same security as that of the combined biometrics. The algorithm consists of extracting minutiae and orientation features from two different fingerprints and producing a mixed template using these extracted features. The template produced is tested using correlation based matching technique and the correlation co-efficient is calculated. The advantage of creating the mixed template is that it is cancellable and serves as a new virtual identity. Keywords—minutiae,orientation, normalizaiton,spurious minutiae, cross numbering, mixing template,tempalte security,correlation-based matching. Collapse

Figures, Tables, and Topics from this paper

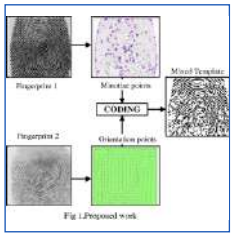

Figure 1

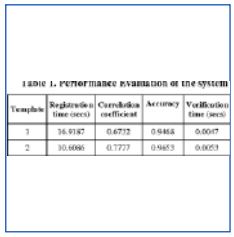

Table 1

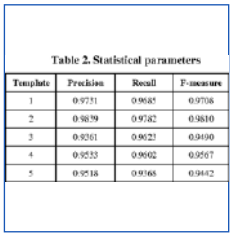

Table 2

Figure 2

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On Biometrics Feature Extraction and Template Security Schemes
Mahapara Khurshid, A. Selwal • Computer Science • 2018

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Technical Paper

A Preliminary Examination of the Application of Unscented Transformation Technique to Error Propagation in Nonlinear Cases of Nuclear Data Science

Harshavardhan Kadvekar, Sana Khan, Sangeetha Prasanna Ram, Jayalekshmi Nair & S. Ganesan

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INTRODUCTION TO DEEP WEB

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Abstract - *The deep web also known as invisible web or hidden web are parts of the World Wide Web and its contents are not indexed by standard search engines for any sort of reason. The content of the deep web is hidden behind HTML forms. The surface web is the opposite term to the deep web. Common uses of the deep web are web mail and online banking but they are also paid for services with a paywall such as on demand video and many others. Everyone who uses the Web virtually visits what could be reflected as Deep Web sites on a daily basis without been aware. A place where whole sections of internet within which all of the websites are hidden from the view of regular web surfers, and also in which the people using them are hidden from view is referred as deep web . Deep web is the anonymous internet where it is much difficult for hackers, spies or government agencies to track internet users and have a look on which websites they are using and what are they doing there.*

***Key Words*: Deep web, Dark web, Tor network.**

1. INTRODUCTION

The large part of the Internet that is inaccessible to conventional search engines is known as deep Web (invisible Web). Messages, chat messages, social media sites private content, electronic bank statements, electronic health records and other content of the deep web are accessible over the Internet but are not crawled and indexed by search engines like Google, Yahoo, Bing or DuckDuckGo.

There are various reasons for not indexing deep Web. Some reasons may be of the content been proprietary, in which only the approved visitors entering through a virtual private network (VPN) can access the contents. Sometimes the contents may be commercial .In this case the content residing behind the member wall can only be accessed by customers who have paid a fee. In a case where the content contains personal identifiable information (PII), it can only be accessed through a portal site by individuals who have been granted access privileges and is protected by compliance regulations . When components lack a permanent uniform resource location (URL) and mashups have been generated on the fly , they become part of the deep web

It is not known exactly how large the deep web is, but it is estimated by many experts that the search engines crawl and index less than 1% of all the content been accessed over the internet. Surface web is that part of the Internet which is crawled and indexed by search engines

2. LEVELS OF THE DEEP WEB

Level 1

It is the most common web or internet. We use it pretty much daily as well as know and understand it. It generally comprises of the 'Open to the Public' part of the Web.

Level 2

It is commonly known as the Surface Web. Services such as Reddit, Digg, and temporary email are included in it. Chat boards and other social enabling content can be found in this level as it is essentially a communications platform. To reach it in any fashion is not difficult.

Level 3

level 3 is called Bergie Web. Services besides WWW or Web services are been included here. It consists of Internet newsgroups, Google locked results, FTP sites, honeypots and other sites such as 4Chan. If you know where you are going, this level is relatively simple to reach.

Level 4

Level 4 is known as Charter Web or Deep Web. Hacker groups, activist communications, banned media and other darker layers of the online society are included in this websites. This is what we basically refer to as Deep Web. Typical Web search engines cannot find the sites on this layer . You have to be invited by an existing member. In order to be able to access these sites

Level 5

In this level, things get a little creepy. The level is known as Dark Web through the normal Internet

These websites are not accessible to this level. You will need to get on the TOR network, or some other private networks .Dark Web sites are also referred to as TOR Hidden Services or onion sites. On the TOR network there is a variety of legal and illegal content. Illegal materials such as bounty hunters, drugs, human trafficking, hacker exploits, rare animal trade and other black market items are been included in these sites. Whenever we refer to Dark Web, we are normally referring to the TOR network.

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DEEPCODER TO SELF-CODE WITH MACHINE LEARNING

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Abstract- *Machine Learning has been focusing on the various aspects of the technology to automate the day to day needs of the human interaction like Siri, Cortana, Google Assistant. The Machine Learning is a branch of Artificial Intelligence that focuses on learning from the existing data to give expected outputs to the users. This paper's focuses on the upcoming possibility of the machines to learn to code by itself to build blocks of code that a regular programmer can do but in a quiet lesser time and better optimized. Deep-coder is a technology upcoming which is being developed by Microsoft to generate such algorithms where machines can generate code provided there are specifications provided from the user.*

Key Words: *IPS, SMT, DSL, DeepCoder.*

1. INTRODUCTION

Learning is an important parameter for a machine to develop intelligence. Deep understanding is what is required for any decision that is to be taken. Different algorithms could be used for different decisions that involves learning depending on the environment. Most of the algorithms use the concept of pattern recognition to get an optimized decision. This paper focuses on the deep learning concept to code by the machines.

Learning is also considered as a parameter for intelligent machines. Deep understanding would help in taking decisions in a more optimized form and also help then to work in most efficient method. As seeing is intelligence, so learning is also becoming a key to the study of biological and artificial vision. Instead of building heavy machines with explicit programming now different algorithms are being introduced which will help the machine to understand the virtual environment and based on their understanding the machine will take particular decision. This could eventually decrease the number of programming concepts and also machine could become independent and take decisions on their own.

Different algorithms are introduced for different types of machines and the decisions taken by them. Designing the algorithm and using it in most appropriate way is the real challenge for the developers and scientists. Pattern recognizing a concept in machine learning to make optimized decisions. As a consequence of this new interest in learning we are experiencing a new era in statistical and functional approximation techniques and their applications to domain such as computer visions.

2. Related Work

Matej Balog from the Cambridge University and Alexander L. Gaunt along with his associates[2] at the Microsoft Research developed a first line of attack for solving programming competition-style problems from input-output examples using deep learning. Their approach is to train a neural network to predict properties of the program that generated the outputs from the inputs. They used the neural network's predictions to augment search techniques from the programming languages community, including enumeration search and an SMT based solver. Factually, their approach leads to an order of magnitude speedup over the strong non-augmented baselines and a Recurrent Neural Network approach, and that we are able to solve problems of difficulty comparable to the simplest problems on programming competition websites.

In this work, they proposed two main ideas:

1. learn to induce programs; that is, use a corpus of program induction problems to learn strategies that generalize across problems,[3] and
2. integrate neural network architectures with search-based techniques rather than replace them.[3]

In more detail, their approach contrasts to existing work on differentiated interpreters. In differential interpreters, the idea is to define a differentiated mapping from source code and inputs to outputs. After observing inputs and outputs, gradient descent can be used to search for a program that matches the input-output examples.

It can be argued that machine learning can provide significant value towards solving Inductive Program Synthesis (IPS) by re-casting the problem as a big data problem. It shows that training a neural network on a large number of IPS generated problems could predict cues from the problem description can help a search-based technique. In this work, they focused on predicting an order on the program space and show how to use it to guide search-based techniques that are common in the programming languages community.[3]

This approach has three desirable properties:

first, we transform a difficult search problem into a supervised learning problem;

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REVIEW ARTICLE

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Taxi Fleet Management System

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Abstract: A taxi fleet management system is presented .The system consists of Clustering , Neuro fuzzy systems and Particle Swarm Optimization methodologies. The proposed system aims at maximizing revenue of cabs as individual entities and the cab aggregator simultaneously. Clustering of pick up requests is carried out using a variant of DBSCAN which uses Delaunay triangulation to recognise fare hotspots. Neuro Fuzzy system is used to evaluate the eligibility of taxis to contest for these hotspots .The Neuro Fuzzy System is trained using Particle Swarm Optimization method. Intelligent swarming of taxis according to their eligibilities for the hotspots is performed to maximize revenue of both cab aggregators and cabs.

Keywords: PSO, TSK Model, Taxi Fleet Management, Neuro Fuzzy Systems, Clustering, Fleet Management , Particle Swarm Optimization , Swarm Intelligence.

INTRODUCTION

Right from searching for a cab to booking one online the taxi world has undergone a drastic transformation. The focus of this change is the customer and follows the basic business rule 'customer is the king of the market'. Considering customers in the spotlight many cab aggregator firms have blossomed. These firms focus on spreading their footprint by increasing the number of cabs. in doing so their expenditure increases drastically.

These firms fail to route the taxis, under their command, to customer hotspots and fail to ensure cab drivers have completed the pre-determined number of rides or have accumulated the pre-decided amount of money through rides. so to conclude, in order to ensure the customers are benefited the firms and taxi drivers are incurring losses.

To solve this problem, a game-changing strategy was thought of which lead to the inception of this idea. Powered by the exhaustive dataset of NYC Taxis, it's beneficial to use data mining and swarming techniques to earn more profit while using available resources. Collection and implementation of real data for constant improvisation of fleet management are recommended. Factors like availability, reliability and punctuality of cabs and user demands are considered while working on the proposed solution.

Shortcomings of Existing Systems

In the current system the cab driver has to rely on his past experience to go to locations where the probability of acquiring a fare is high. Even when information about requests and their fares is available these aren't used in helping the driver making an informed decision. The customer request is shared with all drivers in the vicinity of the request. The one who accepts the request swiftly gets the fare. The firm fails to take into account the expense at which the driver completes a request as the customer needs are the final ends for the aggregator.

Even though sufficient information regarding the pickup and drop-off locations is available, it isn't put to use. The firm fails to consider which driver receives the request as long the request is being satisfied. So if a driver has completed more than requisite number of requests, his probability of acquiring a new fare is equal to that of a driver who hasn't completed his share of requests. There is no equitable distribution of fares. The firms fail to see effective revenue generation via taxi assignment to requests.

1. LITERATURE SURVEY

The proposed systems uses mainly two methodologies to serve its purposes viz. Clustering and Neuro Fuzzy System optimised by Particle Swarm Optimization.Literature reviews are thus categorised accordingly.

1.1 Clustering

Clustering is the task of grouping a set of objects in such a way that objects in the same group (called a cluster) are more similar to each other than to those in other groups (clusters). Clustering algorithms can be divided into partitioning, hierarchical, locality-based and grid-based. Partitioning based clustering creates partitions and divides the dataset into k clusters. This technique follows a simple and easy approach to arrange a given information set through a specific number of groups (assume 'k' bunches). The fundamental thought is to define 'k' centers, one for every cluster. These focuses ought to be set smartly due to various area causes distinctive result. The use of exclusive assignment - If there are two highly overlapping data then k-means will not be able to resolve that there are two clusters and it doesn't work with non-globular clusters. Grid based clustering are affected by noisy data, and doesn't not take into account the arbitrary sized clusters which will be found in our dataset. DBSCAN clustering does not require one to specify the number of clusters that may be formed, and only depends on the number of points in the locality (minimum Minpts points must be formed to form a cluster.) The points inside a cluster maybe distributed randomly, and the clusters can be odd shaped or arbitrarily shaped, as per requirement. It is resistant to noise, and can be further clustered in to distinguish sparse data.

[1] used an improved Density Peaks Clustering (DPC) approach to form clusters of demand hotspots. DPC algorithm states that demand hotspot clusters are usually points with higher densities compared to other points in the neighborhood.However, to properly calculate the density of points, they need to calculate distances between all points, which increases complexity anddefeats the purpose of using

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A Proposal for Epidemic Prediction using Deep Learning

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***Abstract* - HealthCare has been a surging need in India. The inception of Smart India, Smart Villages has further emphasized the need of a Smart & Healthy India. However little reflection of such digitally empowered country has been seen in the field of healthcare. This has further increased the importance of the definition of ubiquity of information and computing technology in healthcare that demand constant surveillance and vigilance of healthcare to predict epidemic outbreak and biological attack. The paper's primary focus is to analyze and determine the spread of diseases and epidemic in cities/villages. And using this analysis to predict where the next outbreak of epidemic will be. This prediction helps the health authorities to take necessary action in terms of assuring that sufficient resources are available to suffice the need and if possible stop the occurrence of such epidemic by taking necessary actions. To achieve this, we use deep neural network as the heart of our prediction. It receives its training from the past experiences of data which we have collected from hospitals and our spread network. Using this training with our dynamic data it makes predictions as well as adaptively learns from the real time data.**

***Index Terms:*— epidemic prediction, deep learning, recurrent neural network, machine learning, disease spread network**

I. INTRODUCTION

HealthCare has been a surging need in India. The inception of Smart India, Smart Villages has further emphasized the need of a Smart & Healthy India. However little reflection of such digitally empowered country has been seen in the field of healthcare. This has importuned the definition of ubiquity of information and computing technology in healthcare that demand constant surveillance and vigilance of healthcare to predict epidemic outbreak and biological attack.

Our primary motivation is to analyze and determine the spread of diseases and epidemic in cities/villages. And using this analysis to predict where the next outbreak of epidemic will be. This prediction helps the health authorities to take necessary action in terms of assuring that sufficient resources are available to suffice the need and if possible stop the occurrence of such epidemic by taking necessary actions.

Our secondary motivation is to determine biological threats in cities/villages, primarily by computational intelligence.

The objective outcome is to determine with what probability a disease will outbreak in a particular region and what is the possible number of individuals who will be prone to be affected by it. This prediction will be backed with accuracy level which will act as an alarm for the health authorities who are monitoring the health status of the city or village.

II. METHODOLOGY

The heart of the project is the model which predicts the possibility of epidemic and disease in a region. The implementation of the model is done using two technologies which has a pervasive impact in computation. The technology and their role in our project is as given,

A. Deep Learning RNN

Deep learning (also known as deep structured learning, hierarchical learning or deep machine learning) is a branch of machine learning based on a set of algorithms that attempt to model high level abstractions in data by using a deep graph with multiple processing layers, composed of multiple linear and non-linear transformations. We are using Recurrent Deep Neural Networks for our implementation. RNNs have become the method of choice for processing information which has a sequential context.

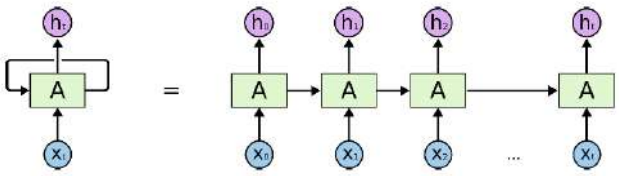

Fig. 1. Deep RNN

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CASE STUDY AND REPORT

Available Online at www.ijarcs.info

Proposed Design for Future Ailment Prediction using Posture Mapping

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Abstract: E-Health is a blooming flower in the fields of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies. Posture has a dramatic effect on health. When a bad posture is intentionally or unintentionally repeated, body's structure slowly changes and adapts to it, resulting in misalignment and pain, but it is often unclear which specific posture causes most problems and which mechanisms underlie the pain. In order to increase the knowledge in this field, it is crucial to analyze, different postures. The aim of this study is therefore to test the reliability of using such a system to assess various postures and make an efficient mapping of the postures of a person and the possible effects on health they may lead to in the future. The era of machine learning and data analytics have now made it possible to make an efficient mapping of the postures of a person and the possible effects on health they may lead to in the future. This can be of invaluable help to various classes of users ranging from General Practitioners to Orthopedic surgeons. The prediction of possible future ailments can also help to warn people well in advance about the problems they might be inviting due to their prolonged incorrect postures. The result and analysis can be shown to different users through graphical and multimedia features. This can include visualization tool such are bar graph, pie chart, histogram, curves etc.

Keywords: ailment prediction, back-propagation neural network, e-health, posture analysis, predictive diagnosis, musculoskeletal

I. INTRODUCTION

Most of the people worldwide are accustomed to carry out their day to day activities with body postures most suitable to them. However the posture suitable may not always be the right one. When a bad posture is intentionally or unintentionally repeated, the body will slowly start adapting to the structural changes that may lead to misalignment and pain. This drove us to take up our project, which proposes a system that collects minute posture configurations of an individual and based on that, predicts the ailment that the individual is most likely to suffer due to bad posture. Our system proposes an algorithm that takes in the pre-defined inputs from the user which are then mapped onto the training data set of the neural network [1]. A person can suffer from a body ailment due to various factors. It may be due to an improper diet coupled with long working hours in uncomfortable positions. The occurrence of such body ailments can be categorized based on the type of work/labor done by a person. It may involve maintaining an incorrect posture for long hours, thus causing pain in the body after a long period of time. Taking into consideration all such varied factors we propose a system that will predict any future occurrence of a body ailment.

II. RELATED WORK

Various Neural Networks have been widely used on a large scale by many organizations. Neural Network can deliver a study of which course of action proves effective by analyzing the input data and associating the symptoms into item sets and courses of treatments. These are some applications that are in the proof-of-concept stage that accepts a neural network that will make a decision whether a loan can be granted or not, something that has been used more successfully than many humans. Image compression is another application of neural networks due to its ability to process huge amounts of data at once. With the Internet expanding on an unbelievable rate and an increasing number of sites using large amount of images, use neural networks for image compression on a huge scale. The daily business of the stock market is a complex venture. The price of the stock is governed by various factors and a change in anyone of the factors can cause the stock prices to fluctuate. The ability of neural nets to exam and sort huge amounts of information in a split second they can be used to predict stock prices. They have become increasingly popular, especially in healthcare owing to a wide variety of applications. The healthcare industry generates huge amounts data on patient records, statistics, and medical test reports and so on. A major chunk of this data could be used as training and testing data for neural network algorithms. Artificial Neural Networks could thus be very helpful in avoiding the unsought problems due to bad postures, before they turn into something severe. Tony Hao WU, et al proposed a method to predict the systolic blood pressure of a patient using neural networks [2]. The prediction of systolic blood pressure was done by using correlated factors (serum cholesterol, fasting blood sugar, gender and electrocardiographic signal) as input to the NN. Neural network algorithms such as the back-propagation neural network and RBF neural network were used to construct and validate the biomedical prediction system. The database of raw data was divided into two parts: 80% for training the neural network and for testing the performance the rest 20% was used [2].

A study performed by Sam Murphy, Peter Buckle, David Stubbs records postural behavior in normal lessons using a previously validated observation method. They identified the extent of upper back pain, neck pain and lower back pain experienced by school-going children. This study mapped a relation between the pain in the spinal area and the sitting position [3].

A study was conducted to assess self-reported health data and posture in a directly observed sample. The sample was taken from a larger group of children (n=679) who completed

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NGO CONNECT

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***Abstract*: This paper proposes an online web application system which will be looked up as a hub for non-Government organizations. The advantage of developing such a system is to minimize the burden of searching for NGOs on internet. Thus this system will provide a hub for all types of NGOs at one place. It will in turn be beneficial for not only for the volunteers or donors, but also for the NGOs and other social organizations thereby maintaining all the records in the database. Overall it will prove as an essential tool for the smooth functioning of the NGOs and a great assistance for its users.**

Keywords:Common platform for NGO, donors, managing volunteers, Online NGO organizing.

I. INTRODUCTION

Information technology has progressed to such an extent where people do the daily work with just few clicks. The advancement in technology has led the world where it is today. Just a few clicks and all the information from around the world is present in the hands of people within fraction of seconds. Similarly, people don't find time to do some duties out of the daily working schedules and this is where our paper focuses on.

Today there are many such people who want to help others in some good cause or for self -satisfaction. Donation or volunteering is one of the most preferred things which people wish to do. But searching for a satisfactory NGO becomes a tedious task. Thus our online application will be able to provide a solution to the previous mentioned burden.

Our research brought us to a conclusion that there should be such a system where people may go through a good number of NGOs and make a particular selection according to their need instead of being overwhelmed by the search results which internet provides.

This system will not only be able to assist the donors or the volunteers but also allow the NGOs or social organizations to advertise themselves through our application. Thus our system will also be a good and effective medium for advertisement. All the NGOs will have their own web pages displaying their information and contacts. The NGOs will also be able to upload their wish lists according to their current needs so that the donor will be able to view them and contact the particular NGO. Hence the overall paper proposes such a system that will soothe the on goings between a donor/ volunteer and an NGO/social organization.

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Proposed System for Resume Analytics

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***Abstract*— This paper aims at proposing an automated system to shortlist the best résumés and make it easier for the human resources department to select candidates. The human resources department only has to upload the résumés, which would be normalised and clustered according to various parameters. The clustered résumés are then scored based on the criteria specified by the HR department and sorted in decreasing order of their scores.**

Keywords—K-means clustering, normalization, web crawler, entity extraction, resume

INTRODUCTION

Technology today has made it possible to send a résumé within the tap of a button. Hundreds of résumés are being received for a particular job posting. This makes the job of an HR department especially difficult as it is impossible to peruse through each of the résumés and shortlist the candidates.

Moreover, each résumé has a different format. There is a need to extract the relevant information from the resume and store it in the database, so that sifting through the data becomes easier. In order to make the job of a recruiter easier, we propose an automated system that does most of the preliminary filtering and presents the data in a standard format.

I. RELATED WORK

Information extraction plays an important role in resume analytics as the unstructured resumes need to be normalised into a standardised format for further processing. Previously, systems have been designed that extract several important informative fields from resume using natural language processing techniques. These systems are web based client-server which is capable of extracting information from resumes in English language[1]. Other systems use methods like pattern matching and computing the term frequency by following a set of patterns. A recursive algorithm is applied to determine frequent compound patterns[2].

In the case of résumés, each résumé is a human-made text and has the freedom of choosing the words, format, structure, and content. To make a comparison between varying documents, a platform has to be provided to bring all documents on the same scale. The resumes need to be normalized in order to map them to an existing database or to compare their values[9]. To facilitate a better normalization of data, techniques like Named Entity Normalization (NEN) need to be applied to the content to detect and resolve similarity between two entities[7]. A proposed system generates a database constructed by parsing and altering these mappings, and indexing the mappings for quick access and matching operations[7]. Another study proposes a system called Carotene which incorporates SVM as a coarse level classifier. SVMs are robust on sparse and high-dimensional data such as job title data sets. Carotene further uses kNN proximity based vertical classifier as a fine level classifier[8]

Various different clustering approaches have also been studied earlier, some which use strict clustering technique to group the resumes into exactly one cluster. The cleaned, filtered, converted and extracted data from the resumes are clustered according to various parameters enabling the recruiter to discover the exact matches of candidates he/she needs. The relevancy ratios are also computed which serve as a parameter for checking how relevant a resume is as compared to all the resumes present in the dataset [4]. Class overlapping is a problem associated with clustering, which is a result of ambiguity in placing a resume in a given cluster as it matches more than one. To overcome this, many schemes are used for finding and dealing with the class overlapping problem, which include schemes like discarding schemes, merging schemes and separating schemes [3].

The process of filtering resumes is mainly based on comparing the candidate data with the job requirements. This process gives all the candidates who match the description. To make the process more efficient, a score is given to each resume to rank the candidates. However, owing to the large number of resumes the candidate scores have less dispersion. The technique of collaborative

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AIML Based Human Interaction Bot on Android Operating System

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Abstract: It is artificial intelligence based chatbot using AIML built on Android. It presents the conversational system between human and computer using natural language processing. As an enhancement to well-known conversational agents like chatbots, in the proposed setting, the dialog between human and machine is intended as a query/answer monotonic process whose goal is reducing semantic ambiguity within communication and delivering the required output. The popularity of chatbots has made it useful in great variety of applications. This application will interact with the users and provide solutions to the problems. Artificial Intelligence Markup Language (AIML) comes from Extensible Markup Language (XML) which is used to build up artificial intelligence bots. In this project, AIML language is used for intelligent conversation between human and machine.

Keywords: Chatbot ,AIML, ALICE,Android

I. INTRODUCTION

The chatbot is an agent where the computer program is designed to have an intelligent conversation with the user. But to do this, AIML language is used as it is efficient and lightweight.. ALICE is the most popular open source AIML based chatbot which won Leobner Price three times (2000,2001, and 2004). So, now a day, various kinds of organizations are interested to implements AIML based chatbot to get conversation with customers with minimum configuration and cost. In tills paper, we focus on several applications whose implements AIML based chatbot with additional software packages to develop efficient applications. It exists a grammar based parsing which helps to understand the sentence intended by the user.. The efficiency of the parsing strictly depends on the complexity of the grammar involved. Polynomial-time parsers are largely available for context-free languages, which represent the formal base for most programming languages. In this paper, a dialogue-oriented technique for chat-based interface is presented. User can request for services in natural language by chatting with the system. If the content of the message is correctly interpreted, the corresponding service is delivered, otherwise a dialogue is instantiated to disambiguate the meaning of the request. The challenge of the proposed system is twofold:

1. make the HCI resemble an ordinary human-human conversation as much as possible;
2. let the user converge towards an unambiguous query formulation.

First point is obtained with the system providing disambiguated alternatives to user and asking him/her for missing pieces of information; the second point is fulfilled by reckoning a semantic score that allows for measuring the actual distance between the user query and the query interpretations performed by the system.

II. STUDYING CHATBOTS - ALICE, SARANG, FUTURE

FUTURE and SARANG are the names of the chat bots that were developed. They have written FUTURE bot in C++ which contains hundreds of responses. FUTURE Bot contains hundreds of if-else structure, loops and data file handling along with some other programming concepts. It has database consisting of hundreds of responses which are open source. Hence FUTURE is a rather rudimentary chat bot script when compared to others. The SARANG bot is more advanced since it is written in AIML language and has a large database of more than 50,000 responses. Choosing AIML provided the advantage of adding the open-source ALICE AIML set to SARANG Database directly and made it more efficient for research [3]. They have hosted this bot online for more research. To enhance productivity, we incorporated a calculator application in FUTURE

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Resource Allocation Strategies for Cellular Networks

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***Abstract*—In this paper we simulate the different call admission control schemes such as non-prioritized call admission control, different reservation based call admission control ,distributed Call admission control, queue based call admission control and combination of these various call admission control schemes and analyze the effect of these schemes on call blocking and call dropping probability**

Keywords—Call Admission Control (CAC), channel reservation, Congestion Control, Quality of Service (QoS).

I. INTRODUCTION

In cellular system, as the size of cell decreases the mobility of the user increases which results into higher number of hand off calls. The QoS of the call admission control inversely proportional to the call dropping probability. If the handoff dropping probability increases the QoS of the CAC algorithm decreases. So it's better to block the new call rather than dropping the ongoing call [1] [13] With the increasing trend of different services, in 3G depending on the type of service the traffic is classified into different types of traffic such as real time and non-real time traffic. Voice is real time traffic since delay in voice cannot be tolerated. The non-real time traffic can be data. Therefore the voice call should be given higher priority than the data calls. [3] [10].

In this paper we have seen the effect of different parameter on the call blocking and call dropping probability. In reservation CAC scheme we see the effect on call blocking and call dropping probability by changing the number of guard channel. The call blocking and dropping probability also changed by changing the queue size in queuing CAC scheme. We can also see the effect of static and dynamic cut off priority on the call blocking and call dropping probability.

II. SIMULATION MODEL

A. *System Model assumption:*

Table 1 System Model

Mobility	Mahattan
Traffic Model	Poisson Distribution
Number of cell	25
Number of channels	30
Cell Radius	2000
Traffic intensity	10,20,30…100
Arrival Rate	20
Classes of Traffic	1: Voice traffic 2: Data Traffic 3 video traffic

B. *Channel Assumptions:*

Each channel contains following parameters as shown in table 2.

Table 2 Channel Paramters

Direction	1=north, 2=east, 3=south, 4=west
Velocity	It decide the mobility of user (randomly generated)
Status of User	Channel busy/available
Path loss	Based on the position of user in cell
Class of User	Class 1: Voice traffic Class 2: Data Traffic Class 3: Video Streaming traffic
Previous RSS	In case of handoff, previous RSS is reserved.
Handoff Flag	Call Not handoff-0 Call handoff-1

C. *Waiting Queue module Assumptions:*

- Size of waiting Queue is varied such as 2,5,10
- There are two queue for class 1 and class 2 handoff.
- If for call duration time call is not served it will be dropped.

.As the hand off calls have the higher priority therefore queue has been used for handoff calls. As the class 1 has the higher priority therefore class 1's queue will be served first then class 2nd's handoff queue will be served. Class 3 has lower priority therefore there is no queue for this class.

D. *Working of the simulation:*

MAIN PROGRAM

1) Generate the traffic
2) Calculate the call arrival time and μ (service rate) based on traffic and the λ (arrival rate).
3) Calculate the path loss.
4) Check the arrival of call by comparing the current time and arrival time of the call.
5) If the call has been arrived then apply call admission control.
6) Update the position of the handset and path loss.
7) Check the position of handset, if it is not within cell's radius then terminate the call.
8) Check the received signal strength (RSS) of the handset and decide to whether terminate the call or take the handoff based on the RSS.
9) If the handoff takes place, find the target of the cell to which it should be handed of based on the direction and apply call admission control.
10) Check if current time equals departure time then terminate the call.

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The Impact of 3D Infotainment: A VR E-Learning Tool for Kids

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Abstract—Education has a huge importance in today's world. Learning forms the backbone of Education. As a first step towards learning children of age group 3-5 years are eager to know about the things in their surroundings which include naming them and to explore them. This paper describes our proposed system which aims to create a new form of learning, based on the concept of Virtual Reality and Android to improve the vocabulary of kids. The proposed system will offer a fun based learning to the tiny tots unlike the traditional pen paper based system which is monotonous. The underlying difference between the conventional system and the proposed system is the mode of providing information. Audio visuals give a great aid in memorizing things. The proposed system will exploit this property of audio visuals by providing 3D videos of the stories instead of plain text as in the existing product.

Keywords—Android, Bluetooth, Joystick and Virtual Reality.

I. Introduction

One of the important aspects in education is vocabulary. It becomes an unavoidable measure when it comes to communication. In the last few decades, thousands of products are developed to improve vocabulary. All these products showcase information in textual form which is less likely to retain for a longer time. 3D Infotainment overcomes these drawbacks by using the concept of Virtual Reality. Virtual Reality is an interactive technology which means the user inputs are accepted to modify the virtual world. This Interactive property gives the feeling of having contribution in the environment. Virtual Reality has made complex situations due to this interactive property. Children are usually attracted towards textures, shapes, pictures etc. Virtual Reality uses audio-visuals to ensure a fun based learning. The end product will consist of an Android Application, VR Glasses and Joystick to ensure smooth maneuvering.

II. Proposal: 3D Infotainment

The underlying idea of 3D infotainment is to help children develop their vocabulary using a modern form of learning which is based on Virtual Reality technology. 3D Infotainment contains 3D videos of traditional stories such as Jataka Tales, Akbar & Birbal. These videos are deployed in such a way that the meanings of various objects present in the video will appear on the screen can be referred which will serve as learning to the kids of age group 3-5 years. The product has minimum requirements of VR glass, Bluetooth enabled joystick, a smartphone (5.0 inches to 5.5 inches).

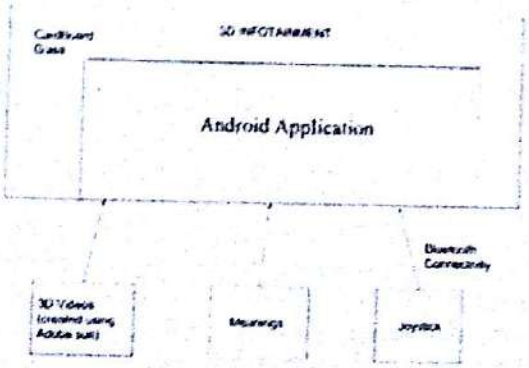
III. Methodology Used

3D Videos:

Adobe Flash available in Adobe suite is used for the creation of video frames. After the creation of video frames Adobe After Effects is used to convert them into 3D.

Meanings:

Video can be paused and the meanings of the objects on the screen will appear. Once all the meanings are displayed, the video will resume automatically. *Android Application:*



Paper-1

International Journal of Recent Trends in Engineering & Research

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Prediction of Power Consumption using Hybrid System

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Abstract— In spite of the fact that India is a leading producer of electricity, there are some areas where people are still deprived of electricity. For example, the district of Gadchiroli in Maharashtra is undeveloped and it is one of the twelve districts in Maharashtra currently receiving funds from the Backward Regions Grant Fund Programme (BRGF). The prediction models implemented for such electricity consumption have limited their scope to urban areas that is residential and industrial sector and have their limitations in accuracy. The project aims to highlight the power supply condition of undeveloped regions and provide better facilities through electricity prediction model. The system will help in providing adequate supply of electricity in such rural regions of the country.

The paper proposes a novel solution through hybrid system for the prediction of consumption of electricity specifically in such backward region by considering their meteorological conditions. The hybrid system uses various parameters such as temperature humidity, rainfall, wind speed, evaporation and precipitation rate in order to obtain rough estimation of electricity consumption. Also it provide an estimation of energy requirements of rural areas and thus the government will make plans accordingly to provide adequate amount of electricity in this region.

I. INTRODUCTION

There has been energy deficits since 2004-05 in state of Maharashtra.The peak demand deficit in the state has increased from 17% in 2005-06 to 22% in 2011-12 according to report sourced by CEA[8].Due to industrial growth and agricultural developments the average electricity utility is increased. As per report obtained from [9] the un-electrified Rural Households contribute to 18.73 lakhs out of 130 lakhs.

Also, the number of unelectrified remote villages in Maharashtra were 257 [10].

Hence there is a need of a proper and precise model for analysing and predicting electricity consumption to monitor the usage as well as obtain the predicted demand for the electricity in a given region. This prediction will also ensure optimization of energy distribution particularly in rural areas where electricity supply is low. The project will also be useful for electricity generating industries. The various mathematical techniques that are used widely for such predictions include evolutionary algorithms, wavelet analysis, fuzzy logic system modeling, artificial neural networks and regressive analysis.

The following figure depicts the power supply demand needed and supply made available for Maharashtra

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Virtual Campus Walkthrough

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Abstract: Virtual Campus refers to accumulation center that provides information which allows students to access the college campus online. Building a virtual campus acts a s great tool towards providing improvised teaching. . This involves building a virtual tour for the students by combining all kinds of digital campus resources as well as integrating teaching, laboratory services management and other related activities. Virtual campus tour is an effective tool to provide management planning, effective consumption of college resources. We present a three dimensional model to the users of our system. Our project makes use of software tools like Blender, Cinema 4D and Unity 3d to blend fundamental object models and create a three dimensional view for the object constructed during modeling

General Terms :Virtual Reality, 3d modeling, walkthrough

Keywords: Virtual campus, modeling, cinema 4d, blender, unity 3d

I. INTRODUCTION

Virtual Reality (VR) technology is an advanced human computer interface .VR (Virtual Reality) technology is a very active research field of IT industry in recent years. It is a collection of a series of high and new technology, including computer graphics, image processing, pattern recognition, intelligent interface technology, artificial intelligence, multi-sensor technology and highly parallel real-time computer technology. Conception mainly emphasizes the imaginable space of the virtual reality technology. It can widen the human knowledge range, not only reproducing the virtual environment, but freely conceiving the environment which did not exist or is impossible.

Virtual Campus is a relatively large-scale three-dimensional scene. It shows view of the college through the desktop system. Taking into account the difficulty of large-scale scene modeling is relatively high, each object of the campus is modeled respectively, and then each model is inlined to the interface of the main background with sky and ground, which form the whole campus scene. In the process of developing a virtual campus, the most important task is modeling, including various types of buildings and landscape.

1.1 Objective

To provide the advantage of virtual roaming .Gives the users a professional feel and look. Display correct information about that direction in which the user goes. Provide a collaborative virtual reality environment for virtual tours .Alternative to traditional real Life tours for college campuses.

1.2 Motivation

Allows to take virtual risks and gain real world experience .Potential entertainment value .Example :Immersive films ,video games. Engagement and great potential in e-Learning. Extension of Web into 3 dimension .Example: embedded object models , camera animation.."Learning -as-constructing knowledge"

II. ADVANTAGES AND REQUIREMENTS

2.1 Advantages

Important application of virtual campus walkthrough technology is that Virtual campus supports the resource management, environmental planning, school development informatization. Unity 3d can better adapt to current network environment .Improves college popularity for example if anyone wants to take a admission in a college and if he/she wants to know about the college campus and all

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Garbage Collection System – Robust

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Abstract: We are building a Web-App consisting of two distinct units namely Server side and client side. The dashboard connected to the cloud should be a source for interaction between clients and Municipal Corporation acting as a Server to use the information for their specific requirement. This is an application which can collect data and send from user to Municipal Corporation (centralized hub) on a Web based platform with requirement of internet connectivity and GPS. Every garbage bin is assigned a Unique ID such that every time a citizen takes a picture on the phone and uploads it on the dashboard. Using the Google place APIs, the Web App is able to track the exact location and accordingly the information is processed and enacted upon by the Municipal Corporation on the server side. The GCM service handles all aspects of queuing of messages and delivery to client/server applications running on target devices. Accordingly the Municipal Corporation sends the garbage can collecting vehicle to collect the garbage.

Index terms: Cloud, Google place API, GCM, GPS.

I. INTRODUCTION

As long as human live, waste will be generated. Waste is defined as any material which could harm our environment. It represents no economic value to its owner or to an environment. Garbage management is the precise name for the collection, transportation and recycling of waste. Garbage management is the process of treating solid wastes and offers variety of solutions for recycling items that don't belong to trash. Garbage management is an area which needs education and awareness for global preservation. The education for waste management is very critical to perseverance of global health and security of human mankind. Improper waste management and disposal causes serious impact on health, children being more vulnerable to these pollutants. Uncollected garbage obstructs storm waters runoff, resulting in the formation of stagnant water bodies that ultimately affects the citizens in the surrounding area. This is why in this project, citizens and the corporation has collaborated with each other to take responsibilities of waste management. In this paper, a model has been proposed in which the collection of garbage has been made real time becomes breeding grounds of diseases. There is a lack of coordination and irregularity in cleaning of garbage bins and roads by Municipal Corporation which can be resolved by designing an effective web app. It ultimately affects the citizens in the surrounding area. This is why in this project, citizens and the corporation has collaborated with each other to take responsibilities of waste management. In this paper, a model has been proposed in which the collection of garbage has been made real time.

II. ARCHITECTURE DIAGRAM`

The architectural block diagram shows the two end users including Database storage for government bodies. It shows the overall process of how client and government communicate through the dashboard.
The central database has the timer in order to keep a watch on timely bases on the server and if the work is being delayed it sends the appropriate notification to the system.

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AUTOMATED WATER DISTRIBUTION SYSTEM AND THEFT DETECTION

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Abstract: *Growing Population has led to a substantial increase in the demand for water, even leading to theft. Due to unequal distribution of water across the city has caused discontent among the locals. People living among the primmest locations are unable to avail 24 hours water supply. Unorganized and unaccounted use of water can lead to more severe problems. The paper proposes an implementation of adequate and resourceful use of water using a PROGRAMMABLE LOGIC CONTROLLER (PLC). PLC is an essential part of this system which is helps to reduce manual interference and wastage of water. The key components used are the level sensor, solenoid valve and the relay circuit. The level sensor senses the level of the water and signals the PLC to stop the flow of water through the solenoid valve, thus restricting the flow from the main tank. The time base feature enables to detect any theft done by way of pressure manipulation and thus ensuring equal water to all consumers. In theft as well as equal distribution mode when water reaches a stipulated level the water flow is cut-off by closing the solenoid valve.*

Keywords—*PLC; Level Sensor;Flow Sensor; Solenoid Valve.*

I. INTRODUCTION

As the world is progressing towards the future with an ever growing population and crave to the consumption of water, there would be a need to introduce uniform water distribution in order to avoid imbalance of water in various areas. Over the year the world has been facing with water shortage problems at various locations. As per the statistics the people suffering from shortage of water have been seen underperforming at work and reduction in delivering efficiency. In populated areas theft of water is witnessed through external pumps and manipulation of pressure thus leading to exploitation and keeping some people deprived of continuous supply of water. So our idea is to make fully automated system using PLC to improve the performance of water distribution system minimum human efforts and also ensures proper monitoring in case of water theft and illegal use of water.

II. LITERATURE REVIEW

Recent studies has shown that due to carelessness water is being wasted and is galling commodity for many household at various geographical areas. Considering theft of water through pumps and other means has caused a lot of resentment among those who are exploited. As consumption of water is a basic essential and a birth right of every living being it has encouraged us to proposed solution to the current incommensurate system.

2.1Existing methodology

The water wastage is due to many reasons such as leakages, carelessness, operation error etc. There is also problem of irregularity of water supply i.e. the schedule of water supply is not fixed. We are unable to identify the theft of water in urban areas. The water supply systems are part of the urban infrastructure which must assure the continuity of the supply of water. In existing system, urban water is supplied to homes with the help of human supervision. In the present situation a person has to repeatedly control the valve when the tanks get full or when they are emptied. This type of operation needs human intervention. This would prove a tedious task to go and open / close the valve repeatedly. Also there is a probability that people may try to attract excess water for their personal use with the help of motor or some other equipment. Hence many people won't receive sufficient water for their use. Currently theft can be detected only through proper scrutinization which is quite ineffective when considering a large geographical area.

2.2 Need for PLC

The PLC offers a trade-off between advanced control technique and the existing technologies .PLC is wildly used in automation industries. Due to its high endurance and high power handling capacity its preferred in most of the industrial modules . Implementing ladder diagram is useful as it can be simulated several times and can make a convention relay circuit redundant. [1]

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A RESEARCH ON EAR BASED BIOMETRIC SYSTEMS

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Abstract —, *A person's identity can be recognized automatically using Biometric based personal authentication with high confidence. This paper investigates different approaches of using ear as biometric in authentication systems. After studying many approaches we present another technique for the template generation of region of interest using hamming distance. We also investigate new feature extraction approach for ear identification using local gray- level phase information using complex log-Gabor filters. The experiments were performed on the publicly available database of 125 and 221 subjects of IIT (Delhi). We have also graphically represented our experimental results i.e. false positive identification verses false negative identification which suggests the superiority of the proposed approach.*

Keywords- *Ear Based Recognition); Segmentation; Fourier descriptors; Hamming distance; Localization.*

I. INTRODUCTION

In modern society, it has become very crucial to recognize or identify an individual depending upon conventional card based or password based systems. Because of their unreliability and inconvenience caused biometrics methods are used instead. With the rapid development of computing techniques, in the past several decades or so, researchers have exhaustively investigated a number of different biometric identifiers.

Ear is a relatively new member in the biometrics family and has recently received some significant attention due to its non-intrusiveness and ease of data collection. Also it is a rich and stable structure that is preserved since birth (which remains unchanged from 8 to 70 years of age as determined by Iannarelli in a study of 10,000 ears) [1] and is quite unique in individuals. As a biometric identifier, the ear is appealing and has some desirable properties such as relatively immune from anxiety, privacy, hygiene problems, uniqueness and permanence.

II. MAJOR TYPES OF EAR BASED SYSTEMS

To study every advances of biometric systems is beyond the scope of this paper; therefore, in this section only the major categories i.e. 2D and 3D approaches are comprehensively studied.

A. 2D EAR BASED SYSTEMS

In this approach the basic steps are - accurate segmentation of exact region of interest, from the acquired gray level ear images, success of the feature extractor, matching.

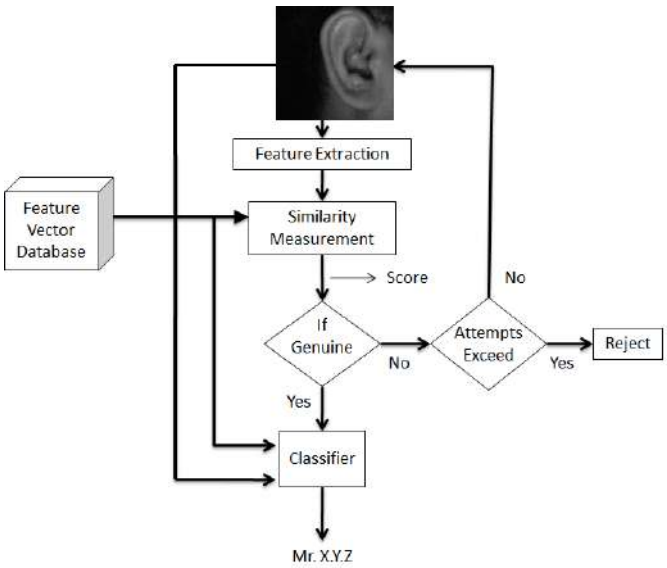

Figure 1. Typical 2D biometric system workflow

Different Methods available are:

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A RESEARCH ON INTELLINGENT TRANSPORTATION SYSTEMS WORLDWIDE

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Abstract —*In over two decades, intelligent transportation systems (ITS) have redefined our transportation systems- buttressed their performance, augmented their security, and increased the choices for the travellers. These days, the traditional methods used for controlling the traffic i.e. deploying traffic lights, traffic signs, traffic policemen are getting obsolete day by day. In the era of technology and smart systems, transportation systems should be made intelligent. ITS involves a large number of breakthroughs and therefore this paper focuses on those we believe to be most relevant. The main purpose of the paper is to study the major achievements attained across the globe in this area and also suggest some possible directions towards future research.*

Keywords- *Intelligent Transportation Systems (ITS); ITS Techniques; Traffic control; Safe Transportation; Transportation Systems; Smart systems*

I. INTRODUCTION

Over last few decades, the transportation sector worldwide is becoming saturated with vehicles, and not new ideas and revolutionary transport systems. The impact of this highly dense situation is traffic congestion, unpredicted delays, and fatalities. In fact, according to WHO, road injury still ranks ninth in the leading causes of death globally. [15]

Though several solutions such as dispatching authorities (police, fire brigade, civil protection, health services, etc.) to assist people and subside the traffic, safety belts, helmets and air bags, to curb the problems were introduced, we still haven't made any significant progress in delivering safe and fast transport to the people everywhere. Moreover, building more roads to reduce traffic congestion is not the "right" solution because it's very expensive, causes considerable environmental impact, and requires a large space, which is an important limitation within urban areas. So, with the help of vigorous developments in microcontrollers, sensors, and wireless connectivity, the vehicle should be transformed into a computer on wheels.

Since ITS is dependent on results from a variety of other research activities in electronics, control, communications, sensing, robotics, signal processing and information systems, it increases the problem's complexity and calls for an exhaustive research approach. The multidisciplinary, multifaceted field that is ITS requires knowledge transfer and cooperation among different research areas.

In this work we give an overview of the state-of-the-art ITS found globally and study the order of ITS in India. To fulfil that objective the paper is organised as follows. Section 2 reviews the major types of ITS and presents several examples of real systems. Finally, section 3 discusses the need for ITS in a developing country that is India.

II. MAJOR TYPES OF ITS

To study every advance of ITS is beyond the scope of this paper; therefore, in this section the six major ITS categories are comprehensively studied and exemplified by some existing systems.

A. Advanced Traffic Management Systems (ATMS)

Advanced Traffic Management Systems are an important progress in intelligent transportation systems that have significantly improved traffic service quality and reduced traffic delays. In ATMS, we have a better means to manage traffic, implementing roadway incident control strategies from one central location, and to respond to traffic conditions in real time.

The three main elements of ATMS are:

- Collection data team -- monitor traffic conditions;
- Support systems -- cameras, sensors, semaphores, and electronic displays help to manage and control traffic in real time;
- Real-time traffic control systems -- with the help of previous two elements, they can change semaphore, send messages to electronic displays and control highway access. [1]

For example, an ATMS technology that has been installed in metro Atlanta is Georgia NaviGAtor. Georgia NaviGAtor operates with a series of traffic cameras, changeable message signs, ramp meters, and a traffic speed sensor system. Additionally, a portion of the system receives traffic flow information from floating car data gathered by anonymously tracking cell phones. Moreover, with the new traffic information, Georgia Department of Transportation

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Evaluation of Performance Parameters for Hierarchical Energy-Efficient LEACH Routing Protocol

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Abstract: WSN consists a large number of dispersed and dedicated sensors in order to sense the physical conditions of the environment like sound, temperature, humidity, pollution levels and pressure and so on. Routing protocols in WSNs are broadly classified as, Hierarchical routing protocols (HRP), Quality of service based routing protocols, Location Based routing protocols and Flat based routing protocols. Hierarchical routing is an efficient method to less energy consumption within a cluster and by performing data collection and fusion in order to limit the number of transmitting messages to the BS. LEACH and PEGASIS are the hierarchical based routing protocols. PEGASIS is a chain based routing protocol, which is an enhancement of LEACH protocol. It saves a huge amount of energy compared with the LEACH by upgrading the delivery method of information.
Keywords: WSN, HRP, LEACH, PEGASIS

I. INTRODUCTION

Wireless Sensor Networks (WSN) sometimes called wireless sensor and actuator networks (WSAN) are spatially distributed autonomous sensors to monitor physical or environmental conditions, such as temperature, sound, pressure, etc. and to cooperatively pass their data through the network to a main location. The more modern networks are bi-directional, also enabling control of sensor activity. The development of wireless sensor networks was motivated by military applications such as battlefield Surveillance; today such networks are used in many industrial and consumer applications, such as industrial process monitoring and control, machine health monitoring, and so on. The WSN is built of "nodes" – from a few to several hundreds or even thousands, where each node is connected to one (or sometimes several) sensors. Each such sensor network node has typically several parts: a radio transceiver with an internal antenna or connection to an external antenna, a microcontroller, an electronic circuit for interfacing with the sensors and an energy source, usually a battery or an embedded form of energy harvesting. A sensor node might vary in size from that of a shoebox down to the size of a grain of dust, although functioning "motes" of genuine microscopic dimensions have yet to be created. The cost of sensor nodes is similarly variable, ranging from a few to hundreds of dollars, depending on the complexity of the individual sensor nodes. Size and cost constraints on sensor nodes result in corresponding constraints on resources such as energy, memory, computational speed and communications bandwidth. The topology of the WSNs can vary from a simple star network to an advanced multi-hop wireless mesh network. The propagation technique between the hops of the network can be routing or flooding

Figure1shows the structural views of a sensor network in which sensor nodes are shown as small circles. The sensor nodes consist of the four components such as:

- **Sensor unit**
- **Central processing unit (CPU)**
- **Power unit**
- **Communication unit**

Each component performs different tasks. The sensor unit is responsible for collecting information as the ADC requests and returning the analog data it sensed. The sensor unit consists of sensor and ADC (Analog to Digital Converter). ADC is used to inform CPU that what the sensor unit has sensed, and also to instruct the sensor unit to perform next step.

The sensors are classified into three categories:

Passive, Omni Directional Sensors: Passive sensors sense the data without actually manipulating the environment by active probing. They are self powered i.e. energy is needed only to amplify their analog signal. There is no motion of "direction" involved in these measurements.

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Performance Parameter Evaluation Of Energy-Efficient LEACH Routing Protocol

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Abstract: ***WSN consists a large number of dispersed and dedicated sensors in order to sense the physical conditions of the environment like sound, temperature, humidity, pollution levels and pressure and so on. Routing protocols in WSNs are broadly classified as, Hierarchical routing protocols (HRP), Quality of service based routing protocols, Location Based routing protocols and Flat based routing protocols. Hierarchical routing is an efficient method to less energy consumption within a cluster and by performing data collection and fusion in order to limit the number of transmitting messages to the BS. LEACH and PEGASIS are the hierarchical based routing protocols. PEGASIS is a chain based routing protocol, which is an enhancement of LEACH protocol. It saves a huge amount of energy compared with the LEACH by upgrading the delivery method of information.***

Keywords: WSN; HRP; LEACH

I. INTRODUCTION

Wireless sensor networks (WSN) sometimes called wireless sensor and actuator networks (WSAN) are spatially distributed autonomous sensors to monitor physical or environmental conditions, such as temperature, sound, pressure, etc. and to cooperatively pass their data through the network to a main location. The more modern networks are bi-directional, also enabling control of sensor activity. The development of wireless sensor networks was motivated by military applications such as battlefield Surveillance; today such networks are used in many industrial and consumer applications, such as industrial process monitoring and control, machine health monitoring, and so on. The WSN is built of "nodes" – from a few to several hundreds or even thousands, where each node is connected to one (or sometimes several) sensors. Each such sensor network node has typically several parts: a radio transceiver with an internal antenna or connection to an external antenna, a microcontroller, an electronic circuit for interfacing with the sensors and an energy source, usually a battery or an embedded form of energy harvesting. A sensor node might vary in size from that of a shoebox down to the size of a grain of dust, although functioning "motes" of genuine microscopic dimensions have yet to be created. The cost of sensor nodes is similarly variable, ranging from a few to hundreds of dollars, depending on the complexity of the individual sensor nodes. Size and cost constraints on sensor nodes result in corresponding constraints on resources such as energy, memory, computational speed and communications bandwidth. The topology of the WSNs can vary from a simple star network to an advanced multi-hop wireless mesh network. The propagation technique between the hops of the network can be routing or flooding

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- ✓ Sensor unit
- ✓ Central processing unit (CPU)
- ✓ Power unit
- ✓ Communication unit

Each component performs different tasks. The sensor unit is responsible for collecting information as the ADC requests and returning the analog data it sensed. The sensor unit

VESMART- Creating a recommendation engine for a C2C virtual marketplace

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Abstract -
A college student can come into possession of a lot of things(drafter, reference books, et cetera) over the course of their college years, that are, in the future, no longer required. There are no places to sell said items, and the new students always require them.
Our project will help solve these problems. The project will be an online community-based platform that will let people buy or sell their things ranging from their books, to their electronic items.
Everyone will be able to create an account using their google accounts. Prospective sellers can create ads and sell their products, while everyone else can search for their desired products. People will also be able to leave their comments on the seller's profiles, informing everyone of their experience in buying that person's product. The project will allow online chats, uploading product images, various privacy settings, and a complaint system. It will be a virtual marketplace for the college.

I. INTRODUCTION

A college student can come into possession of a lot of things(drafter, reference books, et cetera) over the course of their college years, that are, in the future, no longer required. There are no places to sell said items, and the new students always require them. Also, people staying away from their homes often find it difficult to get roommates and end up staying alone, or staying with strangers. VesMart will help solve these problems. The project will be an online community-based platform that will let people buy or sell their things ranging from their books, to finding their roommates.

Recommender systems play vital role in helping online users to find relevant information by suggesting information of potential interest to them. It helps user to find things that are interesting , narrow down the set of choices and to explore the space of options by giving suggestions. We aim to create on-campus peer-to-peer marketplace,where students can buy and sell anything at their college marketplace, right from books, novels, stationery products,electronics, musical instruments. The platform also gives opportunity to students to find flatmates, all within a peer-to-peer marketplace.

II. REQUIREMENTS

For defining the requirements of the project

College Chat-bot

Rachit Kulkarni,Ankit Methwani,Nakul Pawar ,Charmi Valecha
Project head- Pooja Shetty

Abstract
The College chat-bot project is built using artificial intelligence algorithms that analyses user's queries and understand user's message. This System is a web application which provides answer to the query of the student. Students just have to query through the bot which is used for chatting. Students can chat using any format there is no specific format the user has to follow. The System uses built in artificial intelligence to answer the query. The system provides appropriate answers as per user queries. The User can query any college related activities through the system. The user does not have to personally go to the college for enquiry. The System analyses the question and then answers to the user. The system answers to the query as if it is answered in person. With the help of artificial intelligence, the system answers the query asked by the students. The system replies using an effective Graphical User Interface, as if a real person is talking to the user. The user just has to register himself to the system and has to login to the system. After logging in the user has access to the various helping pages. The user can query college related activities such as date and timing of annual day, sports day, and other cultural activities. The system replies to the user with the help of effective graphical user interface. The user can query about the college related activities online with the help of this web application. This system helps the student to be updated about the college activities.

1 Introduction

The project-Botman is implemented on following three platforms. The purpose of implementing on these platform was to extend the reachability of the bot

- Android
- Java
- Web

1.1 Technologies

- **API.AI**

Api.ai is a voice-enabling engine that allows the addition of voice interfaces to apps based on Android, iOS, HTML5, and Cordova to third party developers. The SDK's contain features like voice recognition, natural language understanding, and text-to-speech. It also offers a web interface to build and test conversation scenarios.The platform is based on a natural language processing engine which allows Internet of Things(IoT) developers to include natural language voice interfaces in their products.

- **Android**

LOST PHONE TRACKING SYSTEM

Mentored by:- Mrs. Vinita Mishra
Group Members:- Ankita Tanawde, Vidya Deshmukh, Prem Chawla, Dipesh Chachlani.

***Abstract*— Everyday many people lose their phone while travelling , due to theft or by any means and hardly get it back. Many such cases are registered in Police station(s) everyday and there is hardly any solution. The purpose of this project is to develop a system for android mobiles to track a lost phone and get them back to their users. The app will send the data to the server once the mobile connects to the internet even after someone resets it, and there will be a respective website , where the user can login and get the information about the lost phone with the help of GPS .The app will work in background and no icon of that app will be shown.**

***Index Terms*— Location tracking, Firebase, Real-time database.**

I. INTRODUCTION

There is a great hike in crime rate of stealing phones and it goes on increasing day by day. We have noticed that people lose their phones either because of thief or because of their carelessness. People lodge complaint at police station but according to reports the chances of getting the lost mobile is still less. We have found that hardly 10-20% of people get back their lost mobiles. As there are various chances of misplacing the phone or losing it is not affordable in today's scenario. We are developing an android app and a respective website for "Lost android phone tracking system" . The purpose behind developing this project is to provide the android phone users to track their lost or misplaced android mobile phone.

II. PROPOSED SYSTEM

This paper presents the technique used for giving the facility to hide the app so that the unauthorized user is not aware of the existence of the app. The authorized user will be given a code which can be dialed on dialing pad to open the app for updating his profile. There is no facility of uninstalling of the app if the users activates the device administrator function which will be prompted on installing the app. This has been incorporated to avoid unauthorized user from uninstalling the application.

ADVANTAGES ARE:

1. Hide app facility.
2. Could not be uninstalled if device administrator activated.
3. Enables real-time tracking due to use of firebase database.

III. MODULES

A. Mobile Application

Application is to be installed on user's phone. If the phone is lost then the application will send its current location on receiving command from the website. Different modules of mobile application are:

- Hide App: The user will have to click hide app button provided on the screen presented when user opens his/her profile. This will not show the app in the menu.
- Open app using dialer: Each user will be given a secret code which can be used by user to open the app if he/she need to update the profile, etc .
- Know Your Location: User can view its current location on the app by clicking this button.
- Update Profile: In this section user can update its email id and phone number.

B. Website

Website contains the login form and track button. User is supposed to login with the username he/she created during registration on app and click track button to track the phone in real-time.

- Homepage: It displays the information about our app and its uses.
- Login Page: Login Modal is used as Login page. User can use its username and password for login which he/she had used during registration through application.
- Track: This is the page where you track your phone. When user clicks track the map showing current location will be displayed on the web page.

C. Database

The database used is Firebase real-time database(NoSQL). This enables real-time update of the location of user's phone.

IV. ARCHITECTURE

Architecture shows the overall working of developed system. User first installs the app and registers with the email id, name, password, username etc. This same username and password is then used for logging into the website when the phone is lost. Tracking is started as soon as the user clicks track button on the website until then tracking does not take place.

Chilar application.

Hitesh Ahuja, Vikas idnani, Dheeraj Tekwani, Vipul Punjabi, Vinita Mishra

***Abstract*— Many a times while paying money to someone like auto rickshaws, street food vendors, college canteen etc. we face the problem of paying the exact change that is fractional money, resulting we ask the person to keep the change. Considering the population of our country even if half the people fail to pay the exact change we waste more than 5 million rupees on average per day. To encounter this problem we introduce the CHILLAR app. This app will help you to pay the remaining change u need to pay to the vendor offline. Chillar app will help you to pay the remaining change to the vendor offline. Basically what you have to do is create an account in chillar application and then you have to transfer your money to that chillar wallet via your debit card or from any other wallet. Once this process is completed now the money is in your chillar wallet you can save some amount of that money offline which can help you when you don't have internet. Whenever you need to pay the fractional amount you can transfer up to rupees 9 in the CHILLAR offline account of that vendor. Any user can take this offline money back to the bank account.**

Keywords*— *Equations, Optical Character Recognition, image processing

I.1NTRODUCTION

Have you ever thought of transferring money offline from your digital wallet to others? Well the first thing arising in your mind will be security as nobody would like to know that money is stolen. No need to worry about this as we introduce you the chillar application where in you can transfer money offline without any threat to your digital wallet.

Many applications are available that allow you to transfer money online, but what if you don't have internet access at the moment.Here is where chillar application comes into picture that will allow you to transfer money offline safely.

to understand the offline wallet we have to first understand "what exactly wallet is"

- **Online wallet:-** An online wallet is a program or web service that allows users to store and control their online shopping information, like login,passwords, shipping address and credit card details, in one central place. It also provides a convenient and technologically quick method for consumers to purchase products from any person or store across the globe.

Generally, the payment process is:

First payment:

- ❏ User registers, inputs their phone number, and the provider sends them an SMS with a PIN
- ❏ User enters the received PIN, authenticating the number
- ❏ User inputs their credit card info or another payment method if necessary (not necessary if the account has already been added) and validates payment

Subsequent payments:

- The user reenters their PIN to authenticate and validates payment

Requesting a PIN is known to lower the success rate (conversion) for payments. These systems can be integrated with directly or can be combined with operator and credit card payments through a unified mobile web payment platform.

- **Payment Process**

1. Typically every website that allows you to make purchases, have an online shopping cart to place your desired items. Locate the "Shopping Cart" and click the "Check Out" (usually located at the top right of the webpage) to complete the buying and check out process.

2. At this point - if not already completed - most websites require a "Customer Login". If you are not already a member/subscriber of the website it is recommended to click the "Login/ Register" button to register as a user of the site.Your security and privacy is very important. It is advisable to check whether you are on a secured server before entering any information. Most websites will use a Secured Server in order to protect your information.Check Security for more general information about security and privacy.

3. After entering selected items into the cart, now comes address information. Once prompted, type in your shipping address and billing

Internet of Things: Security Threats

Diksha Sopori, Tanaya Pawar, Manjiri Patil, Roopkala Ravindran

Abstract—This paper aims to address the need for tightening the Security and Privacy issues of IoT applications. During the past decade, IoT has been developed rapidly but it did not consider the profound security goals and challenges involved appropriately. Security and privacy are the key issues for IoT applications, and still face some enormous challenges. In order to this emerging domain, this study explores the security aims and goals of IoT, the current security status and the attacks that makes the IoT applications vulnerable.

Keywords- ***Encryption, Industry 4.0, Internet of Things, Security***

I. Introduction

The term, internet of things (IoT) that refers to uniquely identifiable objects, things, and their virtual representations in an internet-like structure, was first proposed in 1998. Internet of Things allows electronic devices to exchange information in the surrounding environment with other members of the network making it possible to recognize events and changes in their surroundings and to act and react autonomously without requiring human-to-human or human-to-computer interaction. The Internet of Things enabled by Wireless Sensor Networks (WSN) and RFID sensors finds a plethora of applications in almost all the fields such as health, education, transportation and agriculture. The advantages of IoT are innumerable and its applications are changing the way we live and work by saving time ,cost and resources, and opening new opportunities for growth, innovation, and the exchange of knowledge between entities.

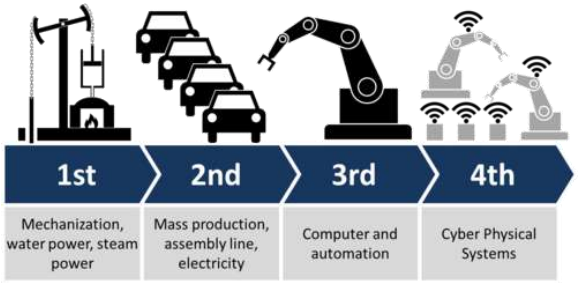
As internet revolutionized the connectivity of people, similarly IoT will transform the world into a smarter world where objects would communicate with each other. But to realize the full fledged vision of IoT, an efficient and secure medium is required which would ensure provisioning of reliable services. Security and privacy are the major issues of IoT applications and they need to be acknowledged. Therefore, we should pay more attention to the research issues for confidentiality, authenticity, and integrity of data in the IOT.

The structure of rest of this paper is as follows: Section II discusses the motivation behind the research, followed by Section III which describes the Security Aim and Goals of IoT. Further, Section IV provides the brief description of the possible Security threats to an IoT application..Finally, Section VI ends up with some conclusions and future research scope in IoT security construction.

II. Motivation

Motivation behind this study is the Fourth Industrial Revolution(Industry 4.0).In the First Industrial Revolution, water and steam power were used to mechanize production. In the Second Industrial Revolution, electric power was used to create mass production. In the Third Industrial

Revolution, electronics and information technology were used to automate production. Now a Fourth Industrial Revolution is building on the Third, i.e, the digital revolution which has been occurring since the middle of the last century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres. The possibilities of billions of people connected by mobile devices, with unmatched processing power, storage capacity, and access to knowledge, are unlimited. And these possibilities will be multiplied by unfolding technology breakthroughs in fields such as the Internet of Things, etc.



Source::https://www.linkedin.com/pulse/journey-40-industrial-revolution-majid-ali

There are many reasons to navigate to the next revolution i.e. Industry 4.0. Like, it is easier to make money today with fewer workers than it was 25 years ago. Setting up and running a company was an expensive business and required many workers. A company which makes its money out of a smart application requires less capital since it doesn't have to pay for the storage or transport in the way that usual companies do and incurs no extra costs virtually as the number of users increases. In the jargon of economics, the marginal costs per unit of output tend towards zero and the returns to scale are high. This gives an explanation for why tech entrepreneurs can get very rich very young. This builds the motive behind the study on Internet of Things and the concerns regarding the security and the privacy of the application.

III. Current Security Status

The expected growth of the global Internet of Things (IoT) market will lead to increased security risks as hackers are presented with a greater surface area to compromise. With the prominent rise of IoT comes huge amount of data, which can form appealing targets for malicious hackers. This, combined with IoT communicating frequently across a greater escalation of devices, opens up an increased risk of

Real Time Tracking System

Keshav Agrawal, Shradha Devarkar, Sakshi Salokhe, Sujay Ramesh, Vidya Pujari

Abstract- There can be several reasons for which we may feel the need to keep track of our employees or subordinates based on their daily location. Hence GPS can be used to track the employees. Every GPS tracking system is a common approach to get employee location information in real-time. We have proposed a GPS tracking system called The Real Time Tracking System that is composed of commodity hardware i.e. GPS enabled Android Mobile as GPS Device and an easy-to-manage user interface via a web server with Google Map software. The system includes a GPS/GPRS module for location acquisition and message transmission, and third party Web Server to temporary store location. Our proposed system is not tested yet but it will show the correct position of the employee to the admin on the basis of the location information sent by the GPS Device through GPRS.

Index Terms-*Android, GPRS, GPS, Tracking*

I. INTRODUCTION

Changing work fields and different occupations need employees to work away from the office premises. For example, delivery boys for delivering orders taken online, employees in architectural firms need to visit sites, etc. Working away from the actual office premises brings in the need for the head person to keep a track of the subordinate workers whether the work is done right and that the employees are not indulged in anything that goes illegal.

Delivery of products ordered online demands more employees for the delivery purposes. Also there are many areas wherein people are more involved in field work away from their office premises. They may try to find shortcuts in completing the work or leaving the field of work before the expected time. Complaints can be registered against such acts. However, we cannot just believe in the complaints registered. We need some proof showing the complaint registered is a genuine one. So if we have the data of the employee's previous location stored with us, we can check if the complaint is true and accordingly take action which will contribute to customer usability. Also the head person may at any time feel the need to check where the employee at that particular time is or payment on hourly basis, are some of the uses of the proposed application - Real Time Tracking System.

This is where our proposed application comes into play. Real Time tracking of employees using Global Positioning System as the name suggests, it uses GPS to track the employees. Our area of concentration in this project is on tracking employees who are involved in field work outside the office premises.. It will help both agency to track the subordinate workers, to get their real time position, changed routes (If any), any personal work being done using agencies property i.e. vehicles, etc, it can also act as an anti-theft application by detecting the position of the employees.

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RESEARCH PAPER

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Teacher's Assistant- Automatic Question Paper Generator

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Abstract: Examination process is an important activity for educational institutions to assess student performance. However, preparing the exam questions is very challenging, tedious and time consuming for the instructors. Generating an effective question paper is a task of great importance for any educational institute. The traditional method, where lecturers manually prepare the question paper, is very tedious and challenging. The aim is to automate the entire process of question paper generation and correction using the PC.

Hence, with the help of this project we present the solution in form of "Teacher's Assistant" (TAS). This system includes several modules like user administration, subject selection, difficulty level specification, question entry, paper generation, answer checker and paper management. Thus the system optimizes the human effort involved and also reduces the overall time consumed in the process of generating question papers

Keywords: Randomization algorithm, fuzzy logic, least recently used, difficulty level

I. INTRODUCTION

Since the invention of computer, life at the corporate level has been automated through a great extent, but this automation isn't seen much at the institutional level. There is a huge need to automate most of the procedures taking place at university levels to minimize human efforts. The main intention for building up this project is ease the overall work for generating a question paper and make it a hassle free and an error free process. Examination process is an important activity for educational institutions to assess student performance. However, preparing the exam questions is a task for the professors. Generating an effective question paper is a task of great importance for any educational institute

II. FEATURES

- Automating the entire examination process.
- Assigned difficulty level based on number of times question has appeared in previous papers
- Only the administrator has rights to generate question papers. The professor can view the paper 1 hour before the test begins, which is a security feature
- New questions can be added/removed anytime by the professor and the administrator.
- While generating the paper, the administrator not only has to specify the required difficulty level, but he also has to specify the most occurred: least occurred questions' ratio.
- There will be no duplication of questions in a single paper.
- Questions will not appear outside the syllabus as questions will be retrieved strictly from the database.
- Hassle free paper generation, thus saving the professor's time and efforts.

III. LITERATURE SURVEY

- The paper presents the solution in form of Automatic Test Paper Generator System which makes use of a randomization technique. This system includes several modules like Login Module, Professor Module and Administrator Module. The Professor needs to specify the Department, Semester, Subject, Question, Weight age and Unit number and from the entered input, the examination paper will be generated automatically. The system shows characteristics like simple operation, a good interface, excellent usability, and high stability along with reliability. [1]
- The research paper Framework for Automatic Examination Paper Generation Systëm has provided a thorough insight into the process of automated paper generation . As the manual generation of a balanced question paper by an individual is quite complex, the blending of technology into teaching and learning process is inevitable. A simple and efficient way for an examination paper generation is provided.
  A three tier model is provided in this framework. Generation of Examination Papers is governed by the Syllabus Engine, Pattern Composer and Question Aggregator. The generated question paper is based on the pattern or skeleton of the course Questions are entered through the Question Aggregator. The attributes related to questions are type, marks and complexity. All these attributes are efficiently

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RESEARCH PAPER

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Checkpoint – An Online Descriptive Answers Grading Tool

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Abstract: We live in an age of technology. Everything is automated. Even in the field of education, the use of technology is increasing largely. However, even today exams where theoretical questions need to be answered are taking place manually. This is because little work progress has been made in the field of grading theoretical answers written by students during examinations. Hence, we plan on creating an application that will help in evaluating answers. We call this application "Checkpoint". It is a natural language processing based descriptive answer checking and grading application. This application would simulate human thinking for assessing descriptive answers using natural language processing. NLP involves natural language understanding that is, enabling computers to derive meaning from human or natural language input, and produce the desired output. This application would first parse the answer that is given as an input to it. Taking into consideration for the presence of synonyms it will check how similar the given answer is to the ideal answer whose keywords will be provided by the teachers. Depending on the similarity, it will grade the answers.

Keywords: Exams, paper checking, assessment, online examination, grading, theoretical answers analysis

I. INTRODUCTION

Grading of descriptive answers is now done manually which is exactly what this project aims to change. Checkpoint aims at providing a way to grade descriptive answers so that even theoretical exams can be conducted online.

II. OBJECTIVE

To decrease workload of teachers, To provide a secure and easy way for students to write exams, To store marks of all students in an easy way, To emulate human way of assessment as much as possible.

III. NON-FUNCTIONAL REQUIREMENTS

- Server Interfacing
- User-friendly Graphic User Interface

IV. FUNCTIONAL REQUIREMENTS

- Accepting large inputs
- File processing
- Authentication
- Summarization
- Comparison

V. HARDWARE REQUIREMENTS

- Processor: Pentium II / III / IV
- Primary Memory: 64/128MB
- Hard Disk:1GB
- Monitor: Plug and play monitor
- Keyboard: 104 key
- Mouse: Logitech 3 button

VI. SOFTWARE REQUIREMENTS

- Operating System: Windows 7 /8 /10
- Web Browser: Mozilla Firefox, Google Chrome
- Database Server: SQL server 2008/ 2012
- Compiler: Python:3.5.2/ Python:2.7.12 , JDK 1.4/1.5/1.6/1.7

VII. WORKING OF THE PROJECT

The project will have four modules viz. Grammar Check, Stop Word Removal, Stemming, Comparison with keywords and Grading. This will be the core project which will be supported by other required modules like login authentication, admin panel which will be available only to teachers where they can enter questions and keywords. The core modules will be explained in the subsequent sections.

VIII. GRAMMAR CHECK

Students will write the answers through the GUI provided and it will be stored in the system. Each answer will have to go through a grammar check. Here spelling and grammar mistakes present in each answer will be checked. Following the general rule, we expect that the length of answer i.e. the sentences in the answer will be double the marks assigned to the question. For example, if the question is of five marks then the student will have to write an answer that has at least ten sentences. Our project allows one mistake per sentence. So if we encounter mistakes twice this threshold we mark this answer for review suspecting that the student has written something meaningless in the answer. Else we proceed towards the next module which is stop word removal.

IX. STOP WORD REMOVAL

Stop words are those words that are not relevant to the answer[1]. We searched online and found many lists that had stop words. We combined them and finally created our own stop words list. We excluded negative short forms like aren't, won't etc. so that we can perform contextual matching at later stage for which presence of negative words needs to be recorded. This module just went through the answer and deleted every occurrence of the stop words provided to it

HAND GESTURE RECOGNITION FOR THE AUDITORY IMPAIRED

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Abstract -
More than 500 million people of the world suffer from some physical, sensory or mental disability. Often their lives are handicapped by physical and social barriers which hamper their full participation from society and the enjoyment of equal rights and opportunities. Many mute people use sign language. Sign language uses gestures instead of sound to convey meaning, simultaneously combining hand shapes, orientations and movement of the hands, arms or body and facial expressions to express fluidly a speaker's thoughts. Signs are used to communicate words and sentences to audience. This project focuses on developing an application for recognition of hand gestures with reasonable accuracy, where the input to the pattern recognition system will be given from the hand. It recognizes the pattern and the display the pattern in the form of the text. The information given by the camera are collected and stored in the database. The exact meaning of the information is matched with the samples stored previously in the database. The image is processed considering the parameters like the number of fingers used, the angles between them.

I. INTRODUCTION

A gesture is defined as an energetic movement of hands and creating signs with them such as alphabets, numbers, words and sentences. Gestures are classified into two type static gestures and dynamic gestures. Static gestures refer to certain pattern of hand and finger orientation whereas dynamic gestures involve different movement and orientation of hands and face expressions largely used to recognize continuous stream of sentences.

The aim of the gesture recognition is to enable humans to interact with the human made machines in natural way without any mechanical devices and the mathematical equations will be the translator that translates the poses between the gestures and the telerobotic . The gesture recognition is very difficult and complex task since the full recognition system should be able to identify the hand in different scales, positions, orientations, contrasts, luminosity, and others. Automatic sign languages recognition can be of great significance for communication with deaf people and has also its application in virtual reality, machine control in the industrial field

A. Gesture.

It is a motion of the body that is intended to communicate with other agents. For a successful communication, a sender and a receiver must have

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RESEARCH PAPER

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Smart Choice – Content Based Clothing Recommendation System

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***Abstract*:** Shopping has always been a basic necessity but also a time consuming nuisance. With the trending e-platforms, people are shopping on the go! In this ever growing technology, finding something with pattern of your choice is difficult. The plethora of options often gets the customers confused and eventually drops the idea. Our project will help the consumers to search for the clothes referring the pattern in the picture they upload on our platform. It aims at using image processing techniques to provide with much better results for our customers and aid them in shopping. Exploring choices become easy as the clothes having similar patterns will be shown as the result. Rather than searching for hours, our project will bring the searched results to them. The texture and print on the image of cloth will be analyzed for patterns like lines at different angles and circular designs. These identified patterns will help to find similar clothes which the customer may desire.

Keywordss: Image Retrieval, Shopping, Content based image retrieval, Gabor function, Circle Hough Transform**.**

I. INTRODUCTION

IN the present scenario, image plays vital role in every aspect of business such as satellite images, medical images and so on. Many Content Based Image Retrieval (CBIR) system prototypes have been proposed and few are used as commercial systems. CBIR aims at searching image databases for specific images that are similar to a given query image. It analyzes content of the image rather than the metadata like tags, keywords or description of the image. It also focuses at developing new techniques that support effective searching and browsing of large digital image libraries based on automatically derived imagery features.

In recent years, the demand for intelligent recommendation systems has been on the rise. These systems can aid in shopping as well. It can help the user find the right product. Shopping becomes a nuisance when the user has to choose from a never-ending range of clothes. An intelligent recommendation system which gives the result to the user based on an input image will make shopping a lot easier for users.

Different online sales portals use different recommendation systems. E-Bay, a online buying and selling store, shows search based on preferences of the user, history of the users. Mainly text based search techniques are used. Metadata query is used. Shopachu is another shopping website and has searches based on brands mainly. After login the user gets recommendation based on history and preferences. On the other hand, we plan to have a more intelligent system which searches purely based on the image to get accurate results.

In this project, we aim to develop a recommendation system that will take as input an image of clothing and output images of similar clothing items of the same texture type that the user may also like. We will use texture to determine similarity scores between pairs of images. The pattern on the cloth will be analyzed and results similar to these patterns will be provided. These patterns can be circular or can have various angular lines. The objective is to out the images with similar circular or angular line pattern.

II. LITERATURE SURVEY

a. Function for Line detection

i. Gabor Filter

A Gabor filter is a linear filter which is used in image processing mainly for feature detection or texture analysis as it detects edges. A Gabor filter encodes edges. Orientation of the edges can be given to the filter . Convolving an image with a filter bank of gabors, where each is sensitive to a different orientation and scale, generates multiple responses for all elements in the image that indicate the local orientations of the edges [1]. Gabor filters are a common model of simple cells found in the early stages of the visual cortex. Simple cells respond to the presence of oriented edges in the visual stimulus[2]. A Gabor filter is basically a Gaussian multiplied by a cosine that detects edges at a certain frequency and angle given by

$$G(x,y,\theta,f) = \exp\left(\frac{-1}{2}\left[\left(\frac{x'}{sx'}\right)^2\right]\right) cos2\pi fx'$$

$$x' = xcos\theta + ysin\theta$$
$$y' = ycos\theta - xsin\theta \quad (1)$$

ii. Hough Line Transform

In 1962 Paul Hough transformed patterns in an image and produced a method for detecting lines in images. The Hough transform is a feature extraction technique used in image analysis, computer vision, and digital image processing. The purpose of the technique is to find imperfect instances of objects within a certain class of shapes by a voting procedure [3]. This voting procedure is carried out in a parameter space, from which object candidates are obtained as local maxima in a so-called accumulator space that is explicitly constructed by the algorithm for computing the Hough transform. Rectangular and Gaussian windows are two pre-processing methods presented in for the high precision estimation of the HT line parameters [3].

In general, the straight line $y = mx + b$ can be represented as a point (b, m) in the parameter space. However, vertical lines pose a problem. They would give rise to unbounded values of

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Text Based Emotion Detection Techniques

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Abstract: **— Emotion can be expressed by different forms such as written text, speech or video. With the growth of social networking, textual data has proven to be the main tool of the interaction. Emotion Detection in text documents is essentially a content-based classification problem which has evolved from the domains like Natural Language Processing as well as Machine Learning.**

Computational analysis of emotions has been considered a challenging and interesting task. However, there are few prior works who work with textual input to analyse these emotions. This paper explains different techniques of emotion detection, challenges faced and various applications of emotion detection. Also, it presents the implementation of the system.

Index Terms: **— Emotion Detection, Sentiment Analysis, Machine Learning, Naïve Bayes, SVM.**

I. INTRODUCTION

Emotions are the colors of the soul. Emotion, in everyday speech, may refer to the affective aspect of consciousness, a state or feeling, or a conscious mental reaction towards an object accompanied by behavioral and or physical changes. Micro-blogging websites have evolved to become a source of opinionated information. Twitter is popular micro-blogging site which generates 500 million tweets per day as of November 2016. Because almost all the tweets are public, these rich data offer new opportunities for doing research on data and text mining.
She is lost after her father's death.

Going beyond a simple negative sentiment, the above statement is an indicator of sadness. Classification into deeper emotion helps us to understand how such conversations develop, how people influence one another through emotional expressions, and how news is shared to elicit certain emotional reactions.

II. MOTIVATION

With the rise in social networking, people tend to express and share opinions with each other on the social media platforms like twitter, facebook, gmail etc. The communication is constantly evolving towards the goal of making it more human and real. The main motivation behind this work is to investigating possibilities of detecting emotions by multiple classes in short texts like twitter and to analyze the difficulties and drawbacks in the same rather than just classifying them as positive or negative sentiment.

III. SENTIMENT ANALYSIS

A. Sentiment analysis

The sentiment is the ripened fruit of fantasy. The process of identifying and categorizing opinions expressed in a piece of text, to determine whether the writer's opinion towards a particular topic, product, etc. Is positive, negative, or neutral.

It is the process of determining the emotional tone behind a series of words. Sentiment analysis is very much useful in social media monitoring as it permits us to gain an overview of the wider public opinion behind certain topics. [1]

B. Sentiment analysis vs emotional analysis

Sentiment analysis is the process of classifying a piece of text into polar classes. From machine learning perspective, sentiment analysis is a two or three class classification problem known as polarity classification or sentiment classification.

On the other hand, emotion recognition is a more recent and emerging field in opinion mining which tries to expand boundaries of sentiment analysis wider in hope to