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Using AI and Blockchain in the Healthcare Systems

Sujitkumar Singh[1], Tina Chandwani[2], Rahul Tejwani[3], Suraj Shahri[4], Dr. Nupur Giri[5]

[1,2,3,4]Student, Department of Computer Engineering, Vivekanand Education Society's Institute of Technology, Mumbai, India
[5]HOD, Department of Computer Engineering, Vivekanand Education Society's Institute of Technology, Mumbai, India

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Abstract - *Medical records scanning services enable healthcare professionals to access and manage patient information much more easily than with paper charts. As technology improves there is a growing need to digitize and back up patient records electronically. Our system proposes a complete system where the patient can submit the images of their medical records, these images are then scanned by lab OCR Engine, analyzed, summarized, and stored on the cloud with proper security and standards. Our system not only analyzes textual data but also provides analysis of Brain CT Scans and Chest X Rays using a Convolutional Neural Network. It provides best practices, reduces cost, increases security, and most importantly; makes the lives of patients easier. The system also aims to provide Blockchain-based storage and retrieval of the stored data.*

Key Words: **Optical Content Recognition (OCR), Blockchain, Convolutional Neural Network (CNN)**

1. INTRODUCTION

The fact is Digitization of medical records is incredibly low in Indian hospitals[2] and extremely high within the international scenarios as per government reports. Having documents scanned and saved electronically, can lower production time, increase communication and collaboration within the team, and increase accessibility, unencumbered office space, and most significantly economize[6]. There are several benefits to the healthcare industry that are offered through medical records scanning. Physical documents from past trials might be an honest resource for healthcare companies to check their current clinical trial operations so as to enhance their best practices[4]. As an example, a hospital looking to collect data on the overall health of their patient population might want to digitize documents from clinical trials conducted there within the past. Patient reports, likely from outside clinics or physicians, may additionally contain helpful information about likely side effects of a drug and the way individual patients may respond[5]. It's particularly important to include all relevant patient information when new side effects are discovered or if a patient has had allergies thereto within the past.

Healthcare companies can get pleasure from this information [5] by having access to each past reaction to a given drug and using that awareness to boost patient care.

2. LITERATURE REVIEW

To generate textual reports automatically from the medical images [1], medical image captioning, and text generation [2] for more accurate diagnosis and generation of medical records. Why and how to design a proper electronic health record (EHR) storage system which is consistent, available at all times, and well-integrated with old patient records [3]. The solution should be most accurate and should be tested with various algorithms as they must be free from false positive or negative reports [4]. The documents uploaded should be retrieved as fast as possible. FTP should be avoided and data should be stored locally [5]. All the possible forms of information must be extracted from the medical documents as all are important [6]. The files of patients stored must be tamper-proof and immutable also they must be readily available when required. This is made possible using IPFS (InterPlanetary File System) distributed system which helps access documents readily [7] [8].

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Chikitsak: Disease Prediction system using Machine Learning

Mr. Prashant Kanade[1]
Assist. Prof., Dept. of Computer Engineering, VESIT
Mumbai, India

Mr. Amit V. Joshi[2]
Dept. of Computer Engineering, VESIT,
Mumbai, India

Mr. Puneet V. Meghrajani[3]
Dept. of Computer Engineering, VESIT,
Mumbai, India

Mr. Jayesh R. Shadi[4]
Dept. of Computer Engineering, VESIT,
Mumbai, India

***Abstract*—**Chikitsak is an intellectual prediction system which predicts an illness based on the information or symptoms entered into the system and provides the precise results. We propose a progressive alternative to the conventional method which resolves tedious problems of scheduling an appointment with the doctors. If one is not very serious and he/she only wants to know about the kind of disease he/she is facing this system is the cure for all ills. It is a system that provides the user with the tips and tricks to maintain the user's health system and provides a way to identify the disease through this prediction. Health industry plays an important role in the cure of patient's diseases, so it is also a kind of help to the healthcare industry that will inform the user and also help the user in the case he or she does not want to go to the hospital or to some other clinic, so that the user can get to know his/her condition by entering the symptoms and any other useful information.

Keywords-Chikitsak, Machine Learning, Disease Prediction, Symptoms, Healthcare, Django, Classification.

I. INTRODUCTION

Chikitsak is a system that predicts disease based on the information provided by the user. It also predicts the patient's or user's disease based on the information or symptoms entered into the system and provides accurate results based on that information. It is a system that provides the user the ease for maintaining the user's health, as well as a way to predict disease using the symptoms. Now a day's medical industry plays a big role in curing the patient's diseases as well as it also helps the healthcare industry. Therefore, this system provides the user with an alternative choice as if one does not want to go to a hospital or in any clinic, the user can just know the disease that he/she is suffering from, only by entering the symptoms and all other useful information. This DPUML (Disease Prediction using Machine Learning) has been done previously by many other organizations, but we intend to make it different and useful for the users who use this system. Today, doctors use numerous scientific technology and methods to identify and detect not only common illnesses, but many fatal diseases as well. A correct and accurate diagnosis is always the cause of the successful treatment. Doctors may not take accurate decisions when diagnosing a patient's disease, therefore systems that use machine learning algorithms help to obtain exact results in these instances. The disease prediction of patients using machine learning is designed to overcome general illness at an earlier stage. We all know there is a competitive environment in the healthcare industry but it also needs humanity and devotion towards their services to serve their purpose. According to research, 40 percent of the population does not worry about health. The main reason for the ignorance is that people are so concerned about their time and doctor, that they have no time to appoint and consult with their doctor, which is going to lead to fatal conditions later on. Research showed that 70% of the people in India have general illness and 25% are killed in early ignorance. The main reason for developing this project is that a user is able to sit down at their convenient location and have a health check, the UI is designed so simple that it can easily be used by everyone and checked.

II. LITERATURE SURVEY

A. *Disease prediction by machine learning over big data from healthcare communities*

With the rise of big data in the biomedical and healthcare communities, M. Chen, Y. Hao, K. Hwang and L. Wang [1]. suggested a solution in which reliable processing of medical data benefits early disease diagnosis, patient treatment, and the community resources. When the consistency of medical evidence is incomplete, however, the interpretation accuracy suffers. Furthermore, some regional infections have distinct symptoms in different countries, making disease outbreak prediction difficult.

The K-nearest neighbor algorithm is the machine learning algorithm used in this paper (KNN). This clearly demonstrates that a medical chatbot can diagnose patients with some accuracy using basic symptom diagnosis and a conversational approach using natural language processing.

B. *Chatbot for Disease Prediction and Treatment Recommendation using Machine Learning*

A medical chatbot is designed to be a conversational agent that motivates users to address their health conditions and returns the diagnosis based on the symptoms presented by them in this method proposed by Rohit Binu Mathew, Sandra Varghese, Sera Elsa Joy, and Swanthana Susan Alex [2]. From user input, this chatbot device would be able to detect symptoms. The chatbot forecasts the condition and prescribes medication based on

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Bird Species Identification and Prediction Analysis of Endangered Species

Kajol Achhra[1], Priyanka Ahuja[2], Pooja Kamrani[3] Parth Mangtani[4] Pallavi Saindane[5]

[1-4]Student, Dept. of Computer science and Engineering, VESIT
[5]Professor, Dept. of Computer science and Engineering, VESIT

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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ASL Detection: A Deep Learning Approach

Shubham Goswami[1], Laksh Lalwani[2], Dheeraj Yadav[3], Naman Tahilyani[4] and Rupali Hande[*]

[1] *Dept. of Computer Engineering*
Vivekanand Education Society's Institute Of Technology,

[2] *Dept. of Computer Engineering*
Vivekanand Education Society's Institute Of Technology,

[3] *Dept. of Compute Engineering*
Vivekanand Education Society's Institute Of Technology,

[4] *Dept. of Computer Engineering*
Vivekanand Education Society's Institute Of Technology,

[*] *Dept. of Computer Engineering*
Vivekanand Education Society's Institute Of Technology,

Abstract: *Over the period of time, we humans have developed different modes of communication through which we share and express information. Normal hearing people use speech to communicate whereas for deaf people, Sign language is the primary mode of communication by using hand signs & gestures. We aim to bridge the communication gap between normal & hearing-impaired person by designing a system for sign language recognition. We have designed a Vision Based Model which takes the sign's input from the camera, processes it, matches it with the dataset & gives the output in text format. We are using CNN algorithm to execute the model. At this age, where technology is prominent, it should play an essential role to help these people communicate smoothly.*

***Keywords*: Convolution Neural Network (CNN), Fingerspelling, Region of Interest (ROI), Sign Language Recognition, Artificial Intelligence (AI), Vision-Based Model.**

1.INTRODUCTION

Sign language is the method for communicating with hearing impaired people, but it is intriguing to think how people thought of it, who invented it and what stimulated this idea. So, let's dive deep into the history for better understanding. Deaf people in 18th century Europe were considered senseless and incapable of learning. French priest Charles-Michel de l'Epee (1712-1789) took a challenge to change the viewpoint of people towards the hearing impaired and established the first public school for the hearing impaired. Which set a course for American sign language, it was a mixture of the old French sign language,

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AI for sustainability:- Spice Yield Prediction using Indian Climatic Parameters.

Dr Nupur Giri
HOD,Dept.Of Computer Engineering
VESIT
Mumbai, India
nupur.giri@ves.ac.in

Mr Siddarth Bugtani
Dept. Of Computer Engineering
VESIT
Mumbai, India
2018.siddarth.bugtani@ves.ac.in

Ms Yashvi Hiranandani
Dept. Of Computer Engineering
VESIT
Mumbai, India
2018.yashvi.hiranandani@ves.ac.in

Mr Vishwesh Jagtap
Dept. Of Computer Engineering
VESIT
Mumbai, India
2018.vishwesh.jagtap@ves.ac.in

Mr Kabir Rajpal
Dept. Of Computer Engineering
VESIT
Mumbai, India
2018.kabir.rajpal@ves.ac.in

***Abstract*--India is a land of spices and their successful husbandry depends upon the area provided for cultivation and the climatic conditions. India is one of the chief exporters of spices. Therefore yield forecasting plays a vital role in export planning and policy decisions.Over the years research and development in machine learning has provided a significant contribution to industries. This project aims to create a model to predict the yield of spices based on the region of cultivation and various other input parameters which would help the farmers to foresee the yield and take appropriate measures for storage and plantation of these crops. We have also provided the prices forecast of the spices to determine whether it is worth investing in its plantation for the current year or not. Algorithms such as Random Forest Regressor, Stochastic Gradient Descent and KNN were applied to the dataset after performing preprocessing steps. Advanced regression techniques like Kernel Ridge, Lasso and ENet algorithms have been used to predict the yield along with Stacking Regression which gives us better results in yield prediction. The results have been expressed using the mean absolute error and the r2_score.**

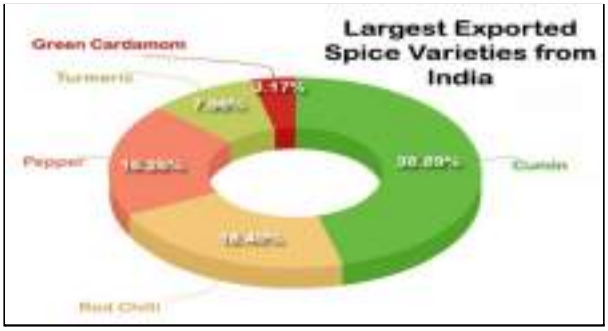

Fig 1. Export % of each spice in India

Keywords:-Kernel Ridge Regressor, Wholesale Price Index(WPI) ,Climate,Soil moisture.

I. Introduction:-

Farming is the spine for each nation's economy primarily like India, which has consistently rising interest for nourishment because of rising populace,

Real Time Face Mask Detection and Social Distance Monitoring

Yashkumar Jain
Department of CMPN
Vivekanand education society
Institute of technology
Mumbai, India
2018.yashkumar.jain@ves.ac.in

Shreyas Kotkar
Department of CMPN
Vivekanand education society
Institute of technology
Mumbai, India
2018.shreyas.kotkar@ves.ac.in

Vikram Virwani
Department of CMPN
Vivekanand education society
Institute of technology
Mumbai, India
2018.vikram.virwani@ves.ac.in

Chirag Kinger
Department of CMPN
Vivekanand education society
Institute of technology
Mumbai, India
2018.chirag.kinger@ves.ac.in

Dr. Sujata Khedkar
Department of CMPN
Vivekanand education society
Institute of technology
Mumbai, India
sujata.khedkar@ves.ac.in

ABSTRACT :- The Objective of our assignment is to hold Social Distance amongst humans and to test Face Mask on face of peoples withinside the time of COVID-19 . This version may be detecting actual time Face masks and Social Distancing which may be very vital on this pandemic situation. Since all of the schools, schools and places of work which are closed now will reopen quickly and they may be wanting a few generations to be secure and healthy.

Index Term :- machine Learning Algorithm,Tensorflow , OpenCV, numpy, sklearn, Argparser, Imutils and YOLOv3.

I. INTRODUCTION

The unfold of COVID-19 Pandemic Disease has created a maximum essential worldwide fitness disaster of the sector that has had a deep effect on humanity and the manner we understand our global and our ordinary lives. In December 2019 the spread of excessive acute breathing syndrome coronavirus 2 (SARS-CoV-2), a today's excessive infectious breathing sickness emerged in Wuhan, China and has infected 7,711 human beings and 100 seventy cited deaths in China in advance than coronavirus have become declared as a global pandemic, have become named with the resource of the use of the World Health Organization as COVID-19 (coronavirus sickness 2019). According to the World Health Organization (WHO as of April 16,2021) record the modern outbreak of COVID-19, has infected over 140,121,962 human beings and further than 3,004,963 deaths in more than 200 countries spherical the sector, wearing a mortality of approximately 34%, in comparison with a mortality price of lots much less than 1% from influenza.

A novel coronavirus has led to person-to-person transmission but as a long way as we know, the transmission of the radical coronavirus causing coronavirus sickness 2019 (COVID-19) additionally may be from an asymptomatic carrier with out a covid symptoms. Till now theres no file of any clinically authorised antiviral medicinal drug or vaccines which is probably effective in the direction of COVID-19. It has spread hastily for the duration of the world, bringing massive health, economic, environmental and social disturbing conditions to the entire human population. At the moment, WHO recommends that humans ought to placed on face mask to avoid the risk of virus transmission and moreover recommends that a social distance of at the least 2m be maintained amongst humans to prevent person-to person from sickness. Furthermore, many public provider businesses require customers to use the provider most effective withinside the occasion that they placed on a masks and

International Journal of Applied Science and Research

Telemedicine Data Management System

Anuraag Punjabi[1], Sakshi Haswani[2], Kaushal Singh[3], Prashant Kanade[4]

1 Department Of Computer Engineering, VESIT, Mumbai, India
2 Department Of Computer Engineering, VESIT, Mumbai, India
3 Department Of Computer Engineering, VESIT, Mumbai, India
4 Department Of Computer Engineering, VESIT, Mumbai, India

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Abstract: Telemedicine is the use of modern communication and information technologies to deliver therapeutic treatment and data transmission to people who live far away. Telemedicine can be utilized for judgment, remote sensing, and collaborative arrangements in the simultaneous treatment of remote patients. Telemedicine is a term that encompasses telecommunications, medicine, and informatics. The equipment and techniques for obtaining, presenting, storing, and retrieving clinical data are all detailed in the medical systems architecture. The difficulties that different countries face as they develop telemedicine are discussed. Telemedicine applications define technological, political, and professional boundaries. This data management system demonstrates the aforementioned idea.

Keywords: Telemedicine, Tele-consultation, Medical, Medical database, Tele-conferencing, Tele-diagnosis, web-based medical applications

1. Introduction

Telemedicine is the diagnosis and treatment of patients over a long distance using telecommunications technology, providing high-quality healthcare to low-income communities. For more than 40 years, researchers have looked into how contemporary telecommunications and information technology may be used to improve health care.

Telemedicine, also called telehealth in some areas, has gotten a lot of press recently. The practice of medicine at a distance is referred to as telemedicine. Any use of technology to offer medical resources and knowledge is a bigger concept. Diagnose, treat, manage, and teach patients using telemedicine technology, which enables real-time access to specialist advice and patient data irrespective of the patient's or relevant file's location. Fundamentals of telecommunications and internet-working computer systems, communications software, and telecommunications types.

2. Objective

Many physicians may be afraid to serve in rural and physically isolated places due to the scarcity of medical resources. As a result, rural populations will receive less healthcare than city residents. In order to increase the quality of healthcare care and provide extra training opportunities for experts, these locations urgently require the establishment of a telemedicine infrastructure. The objective is to remove all these inconveniences.

This project aims to assist those who lack the financial means to pay for services such as health or dental insurance that the provider accepts. Because 80 percent of the country's main healthcare centers are in metropolitan areas, which account for 30 percent of the population, a large portion of the rural population is suffering.

3. Challenges in the Telemedicine System

A number of important issues face the current generation of telemedicine programs as they mature. It is suggested that the successful resolution of these challenges is critical to the future development of telemedicine as an integral component of the healthcare system. Physicians, institutions, patients, and the general public are all on the table for

International Journal of Applied Science and Research

Management Information System For Rural Microfinance Groups

Dr. Prashant Kanade[1], Vedant Darak[2], Harsh Singh[3], Shubham Singh[4], Anurag Singh[5]

[1, 2,3,4,5] Dept. of Computer Engineering VESIT, Mumbai, India

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Abstract: The primary purpose is to present a mechanism for analyzing information systems, both those bought off-the-shelf and those developed internally. This MIS Evaluation Framework provides a mechanism for the industry to determine the quality of an information system. MFIs, donors, and other external stakeholders, as well as system developers, can use the project because it is very versatile. It can be used by MFIs to assess off-the-shelf systems in their hunt for a suitable solution. External entities can use it to evaluate off-the shelf or internally developed systems to assist an MFI, identify alternatives, or include as part of an institutional appraisal. Software development and information systems can use it to build a better system for rural social finance groups.

Keywords: Microfinance Institutions, Mahila bachat Gats, NABARD, Incentive System, Poverty, Self Help Groups, etc.

I. INTRODUCTION

The term "microfinance" has acquired popularity not only in poverty reduction and development circles, but also in the media and, more recently, across a variety of industries such as agricultural, transportation, and housing. It has emerged as an important component of both the national and international financial sectors, particularly for the informal sector employed in rising economies such as India. According to what we hear and read about microfinance, it has emerged as a leading mechanism for financial inclusion, poverty reduction, livelihood enhancement, and economic regeneration initiatives in situations such as disaster relief, economic structural adjustment, and even as a proposal for national debt cancellation around the world. It's been called "one of the most important economic phenomenons since Adam Smith's invention of capitalism." According to the World Bank, microfinance will be the economic engine of the future.

Problem Statement:

The current economic conditions of rural self help groups are very poor, there is no awareness of finance nor are they taught how to manage their money and the aspects of managing their business.

Our management information system based application will help solve these problems of rural self help groups, there are problems in maintaining the financial records of each individual and also of the group, generating detailed reports about the financial status of the group and its members.

There are many problems in the business side of the rural self help groups; there is no proper application or system built specifically for them to manage their business. Our application focuses on providing them with an inventory management system and an incentive based system that will help the group in growing as an organization and the users as an individual.

Aim of this Paper:

The aim of this paper is to provide rural microfinance institutions and its members with a management information system based application that can help them in making the microfinance institution more efficient in managing their business and provide a user friendly experience for both the users and the administrators.

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A Deep Learning Approach for Generating Mark-up Code from Sketch Images

Bhavesh Lohana[1], Muskan Tanna[2], Gautam Pamnani[3], Tanish Sahijwani[4], Rohini Temkar[5]
[1, 2, 3, 4, 5]*Department of Computer Engineering, Vivekanand Education Society's Institute of Technology, Chembur, Mumbai-400074, India*

Abstract: ***User Interface (UI) design is an important part of software development. Creating an intuitive and engaging user experience is a key goal for businesses of all sizes and is a process driven by rapid prototyping, design, and user testing cycles. It requires a significant amount of money and effort just to build a production-grade website. It's difficult to generate code from photos. The insight goal is to use modern Deep Learning algorithms to significantly simplify the design workflow and enable any business to quickly create and test web pages. The proposed Deep Learning model consists of a Convolutional Neural Network (CNN) encoder segment and a Gated Recurrent Network (GRU) decoder segment which is trained on a custom database of wireframe sketches and their corresponding code. The network will produce the HTML code, corresponding to the sketch image that is fed into the proposed model.***

Keywords: Computational Neural Network, Deep Learning, Machine Learning, Gated Recurrent Unit, Mark-Up Code Generation

I. INTRODUCTION

UI Prototyping is an integral part of application development. It helps give an insight into how the users will interact with the application. With some experience in web development, it is known that it takes a lot of time to design and code a website from scratch. To build a webpage, a group of individuals from various backgrounds must collaborate. The process begins with the creation of mock-up images, which can be done on paper or graphically. Designers face challenges to convert designs into code. A person needs to have a sound knowledge of Web Development aspects such as HTML, CSS, UI, UX, Color Theory, etc. They spend a lot of time designing Graphical User Interface (GUI) instead of actual logic. The use of Machine Learning algorithms to build code from sketches is a comparatively recent area of research. This might help tackle multiple obstacles faced by the application development team. To tackle this problem, a Deep Learning algorithm could help to effectively code a website just from the sketch drawn for the desired website design. Automatic production of web pages reduces programming time, operation cost, and resource consumption. With rapid progressive design stages, the final website is produced in a shorter time. An algorithm has to be developed to automatically generate the HTML code for hand-drawn mock-ups of a website. It is aimed to determine the components created in the mock-up drawing and to encode them according to the web page hierarchy.

II. LITERATURE SURVEY

Tony Beltramelli in [1] used Convolutional Neural Network(CNN) as an encoder to perform unsupervised feature learning. The decoder used is a stack of two LSTM layers of 512 cells each. The model was trained on batches of 64 image-sequence pairs. This approach had an accuracy of 77%. The shortcomings of this approach were training on a small dataset.

Alexander Robinson in [2] used another approach by turning images into black and white counterparts of the sketch and then having two different approaches i.e. classical Computer Vision(CV) technique and Deep Learning Segmentation such as CNN, ANN or R-CNN. It was trained on 250 wireframe sketches and their corresponding website code. The first and second approaches had an average precision of 0.6024 and 0.7138.

In another related topic, [3] by Siva Natarajan, Christoph Csallner used REMAUI(Reverse Engineering Mobile Application User Interfaces) and OCR.

Carlos Bernal-Cardenas, Michael Curcio Richard Bonett, Kevin Moran and Denys Poshyvanyk in [4] uses CNN can be effectively trained to classify images of GUI-Components from a mock-up. Then that was used by an iterative K-nearest-neighbors (KNN) algorithm and Computer Vision technique on mined GUI metadata and screenshots to translate into code.

Tiago Bouc¸as and Antonio Esteves in [5] use two approaches. The first approach is the hybrid architecture of CNN and two RNNs as the encoder-decoder architecture.

International Journal of Applied Science and Research

e-Krishi - A one stop portal for Farmers

Jatin Chhabria[1], Krish Khemani[2], Sahil Kochar[3], Yash Wadhwani[4] and Dr. Dashrath Mane[5]

Department of Computer Engineering, VESIT, Mumbai, India

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Abstract: Agriculture being the most important occupation of our country, making it easy for functioning in terms of marketing agricultural goods and letting farmers understand what crops are best suited based on soil nutrients, geographical and weather conditions has become very important. To sell the crops, an online mandi(market) would be very beneficial to the farmer. The use of various techniques like ML algorithms and deep learning are recognised as they are capable of dealing with complex data handling problems and accuracy. These techniques are mostly used for various pattern recognition and several classification problems. The main objective of this project is to help farmers understand what plants are best suited depending on various factors and also what additives can be put into soil for growth of a particular crop of their interest.

Keywords: agriculture, crop recommendation, e-commerce, farming, krishi, machine learning, random forest classification

1. INTRODUCTION

e-Krishi is a website made especially for farmer's profit in every possible way. The website serves multiple purposes such as crop recommendation and an e-commerce platform. Crop prediction for farmers gives them a helping hand in deciding the crop best suitable for them at a given time based on N, P, K (Nitrogen, Phosphorous, Potassium) values, temperature, humidity, and rainfall in a certain geographic location. The values such as temperature, humidity and rainfall are fetched by an API to which we have to input the name of the city.

2. LITERATURE SURVEY

The following papers were studied which were relevant to agriculture and inference drawn from each is mentioned below.

The suggestion of the best crop has been provided to the farmers which depends on various factors like district and weather. The model helps in predicting the rate of success for the crops according to input that has been provided .The model then analyzes and provides farmers with the suggestion of best crop with respect to the highest success rate. A non-linear technique is also being used to understand the relation to learn about connections between different parameters which are in any way affecting the crop yield..By adding more layers the accuracy of the prediction could be improved[1].

Simple, one step process for a farmer to sell the crops, price prediction option helps the farmer in prediction for a commodity based on market history. For those who are disabled with respect to sight, voice translations cannot be provided for each product entry which takes the input and gives output for the user. This process is complicated and not user-friendly[2].

Developing Agriculture Market Information System(AMIS) using ICT and low cost IOT devices which is suitable for low scale and rural farmers where there are electricity problems. Availability and Affordability of Sensors and several IOT devices is a major drawback in this system[3].

Combining investigation data and remote sensing image data, we verify the feasibility of the algorithm and realize the rapid classification of typical plant communities of high resolution remote sensing images, extending the application range of the projection pursuit algorithm. Complex Mathematical equations and not easy to understand algorithms were encountered, which is a drawback of this system[4].

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RESEARCH ARTICLE OPEN ACCESS

Online Doctor Appointment System

Venkatesh Rallapalli, Dipti Menghani, Hema Gallani, Gaytri Aasija
Dr. Dashrath Mane
Department of Computer Engineering, Vivekanand Education Society's Institute of Technology, Chembur, Mumbai, Maharashtra.

ABSTRACT -
Nowadays many people are facing different types of medical problems. The pandemic has not only brought the COVID-19 virus, but also many major and minor diseases as well. Due to the lockdowns, booking doctor appointments physically has become almost impossible. Also, most people don't know who the best doctor they can go to and they cannot communicate directly with the doctor for consultation.
Efficiency and patient satisfaction are the main criteria for optimal performance but the medical institutions in many developing countries are faced with issues like:
1. Overtime for doctors and nurses.
2. Patients having to wait longer.
3.Increased workload for administrative personnel.
Keeping in mind these issues, a web- based doctor appointment system has been developed.

Both doctors and patients can register themselves which is monitored by the receptionist(admin).
Doctors can sign up by giving necessary details like Name, Qualifications, Specializations, Work History etc. The doctors can login using their username and password and check for any appointment requests by patients. If the appointment is available, a notification is sent to the patient about the same. They can also prescribe medicines after consultation and view feedback given by the patient. The patient must also be a registered user and they can select the particular doctor they want to book an appointment with.
This system focuses on improving the efficiency and quality of delivering a web-based appointment system.

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I. INTRODUCTION

Globally, the health care sector plays a pivotal role and is an integral part of human life. Even the slightest errors could prove to be really dangerous and cause fatal injuries. Extensive use of technology has been made to improve quality , efficiency , and delivery of health care services. Doctor appointment for patients is one of the major clinical services that has been automated. Due to this healthcare providers are constantly looking to reduce operation costs while improving the quality of service. This has led to the rise of preventive medicine in order to avoid diseases, minor complications etc. while the hospital stays open for sick people. A web-based system can save the precious time of the patients and decrease the physical gap between doctors and patients thereby providing fast and adequate medical services. Through the connection between web terminals and specific services, both doctors and patients are able to obtain required data to achieve a better interaction. Also, the pandemic has brought a lot of inconveniences along with it. It is difficult to get appointments by direct contact to the hospital or by standing in a queue. Keeping in mind these issues, an Online Doctor Appointment System has been created. The main concept of this project is to get easy appointments through an online application which resolves the patient's problems. It allows the patient to book appointments through online registration. With this application, the effort to the patients will be reduced as they can view doctor details, their timings, specializations etc. and make an appointment accordingly. This way both doctors and patients can save their valuable time.

This research presents our work on an online doctor appointment website for enabling users to book appointments quickly and effortlessly, making the process less tedious and less time consuming.

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Text Summarization of News Headline using Natural Language Processing

Ms. Bhavika Mulwani, Mr. Praveen Mirchandani, Mr. Sameer Israni, Prof. Dr.Dashrath Mane

Student, Department of Computer Science, Vivekanand Education Society Institute of Technology, Mumbai, India

Student, Department of Computer Science, Vivekanand Education Society Institute of Technology, Mumbai, India

Student, Department of Computer Science, Vivekanand Education Society Institute of Technology, Mumbai, India

Professor, Department of Computer Science, Vivekanand Education Society Institute of Technology, Mumbai, India

ABSTRACT: Text Summarization implies extracting texts and paragraphs into a smaller report, decreasing the content of the original text and at the same time keeping prime information and giving a vague description on what the article is. Text reading is a long and strenuous task, text summarization is becoming popular and thus the inclination for research. In this project, we will perform the project of Natural Language Processing to summarize text with Machine Learning algorithms .In our day to day life, there are various purposes for text summarization in different domains such as news synthesis, reviews of products on e-commerce websites, legal text synthesis, medical reports which can be accomplished with text summarization. The objective to summarize a text is to construct a factual and fluid summary containing only the important points expressed in the document..

KEYWORDS: Natural language processing, summarization, abstractive summarizer, extractive summarizer, information retrieval, PageRank, T5, BART, Pegasus.

I. INTRODUCTION

"I don't want to read the entire description of this product, I wish there was a summarized version of it". We often found ourselves in these situations. We make a thorough report and the professor only has time to read the summary or we want to get our daily news but don't have time to read the whole newspaper or articles but get a short description on what has happened or we want to buy a product but don't want to read the whole description of that product. In this project we do exactly that and summarize the long documents for ease for someone who only wants the main features of the document rather than the whole document. There is a huge amount of data appearing digitally, so it is necessary to develop a unique procedure to immediately summarize long texts while keeping the main idea. Text summarization also makes it possible to shorten the reading time, speed up information searches and obtain as much information as possible on a subject. It is essential to learn what are the types of text summarization to understand how the process works.

A. TYPES OF SUMMARIZATION

Text Summarization is divided into: Extractive and Abstractive. Both these approaches are as follows

1. EXTRACTIVE APPROACH

The Extractive approach takes sentences directly from the document according to a function to form a connected summary. This approach operates by identifying the important sections of the text, sniping and collecting parts of the content to produce a concise version. Here, no new text is generated, only existing text is used. Although the methodologies for extractive summarization differ, they all have the same core goals:

1. Construct a representation of the input text (text to be summarized)
2. Based on the created representation, assign a score 'm' to the sentences.
3. Choose a summary that includes the top m most important sentences.

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Design of Curriculum Based System: A Website for Students

Chirag Parchani, Kunal Godhwani, Gulam Mohammad Ali, Piyush Nihalani, Dr. Dashrath Mane

Department of Computer Engineering, Vivekanand Education Society's Institute of Technology, Chembur, Mumbai Maharashtra, India

ABSTRACT: The struggle of a regular BE student has been increasing due to more and more study materials and different kinds of courses. A student visits more than enough websites to collect study materials and other related content such as Syllabus, Online Courses, etc. What if the student finds everything he needs in one place? **"A place for everything, everything in its place"** quoted by Benjamin Franklin (also known as The First American), inspired by this quote we decided to make a website where students get everything such as a Syllabus of a particular subject, Study material, Skill-based course links, recommendations of Courses, Event Updates conducted by councils, Informative Blogs by other students and many more.

I. INTRODUCTION

Nowadays, the educational sector plays a very important role and has a very big impact on the development of each individual. We aim to provide resources to students who are pursuing their Bachelor's as well as Master's Degree. These resources will help them learn as well as improve their skills. Also, our website provides data containing the syllabus, semester contents and as well as other needful things. Our system provides course links as per students' needs. Also, our system provides a Blog section where students of the college can post their queries and other important things regarding placements and courses. And also provides a special section for events where students will get updates on Upcoming as well as Ongoing events. We also know that students often face problems downloading the latest version of engineering books. On our website, we will provide updated books as per the syllabus. They can get knowledge about the events of the college they missed for any reason by viewing the recorded session of these events which will be available on our website. The Blog Section on our website will act as a guide to students in their professional life. Links to recommended courses (Paid and unpaid) will be available due to which students will find courses that are suitable for them.

II. LITERATURE SURVEY

"A Comprehensive Framework to Evaluate Websites: Literature Review and Development of GoodWeb(24/10/2019)**"**
This scoping study aimed to review and define existing worldwide methodologies and techniques to evaluate websites and provide a framework of appropriate website attributes that could be applied to any future website evaluations.

"**A Review Development of Digital Library Resources at University Level**
(16 Feb 2021) Gwo-Jen Hwang"
The purpose of this paper is to present an innovative approach that is proposed for developing e-libraries with metadata to meet the need of training observation and classification skills in a mobile learning environment.

"Development of a Mobile Application for Lending Free Books and Class Notes,(2020) IEEEat 7th ICETAS R. Borromeo, S.P. Espiritu, M. Luma-as and M. N. Young**"**
The Book Stack was made to focus on helping students, faculty members and administration in enhancing learning experience by lending textbooks and class notes that can be used as educational materials.

MeSHx-Notes: Web-System for Clinical Notes Information Extraction
(2018) Henrique D. P. dos Santos, Rafael O. Nunes
In this context, we present an easy-to-use system that provides users with extra knowledge of the information given in clinical notes, which can be used by anyone with access to the internet.

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RESEARCH ARTICLE OPEN ACCESS

Ubiquitous Platform for classifying Chest diseases using Chest X-Ray

Karan Idnani, Mohit Khiani, Sourav Mantri, Sahil Rajpal, Mrs. Lifna CS
Karan Idnani, Student, VES Institute of Technology Chembur Mumbai 400074
Mohit Khiani, Student, VES Institute of Technology Chembur Mumbai 400074
Sourav Mantri, Student, VES Institute of Technology Chembur Mumbai 400074
Sahil Rajpal, Student, VES Institute of Technology Chembur Mumbai 400074
Lifna C S, Assistant Professor, VES Institute of Technology Chembur Mumbai 400074

ABSTRACT: *Around 10 million people are affected by Pneumonia and 2.7 million are affected by Tuberculosis in India every year. Also, COVID-19 affects people on a large scale and has made it difficult for doctors to distinguish between these diseases as they mainly affect the lungs. The model proposed in this paper helps to classify a given chest X-Ray as to whether it is a case of Pneumonia or Tuberculosis. Pneumonia and Tuberculosis are infectious diseases and affect a large number of individuals throughout the year. The treatment is available for both diseases, however, the treatment period may vary. The model uses frontal chest X-Ray images to characterize the sickness with the help of Transfer Learning and Convolution Neural Networks (CNN). The model has twelve layers of Convolution Networks with a 'ReLU' activation function to extend non-linearity in the system. The paper compares three different models and uses the one with the most effective accuracy in developing the web application which can be used by Pulmonologists.*

KEYWORDS: Pneumonia, Tuberculosis, Deep Learning, Chest X-Ray, Transfer Learning, CNN

I. INTRODUCTION

In the current scenario of COVID, there's a lot of stress on health workers (especially, doctors and nurses) as it isn't feasible to admit and prioritize patients suffering from diseases other than coronavirus. The need to develop a platform for doctors to ease their work and reduce the time required to assess piles of reports is of utmost importance. Moreover, the platform can be used remotely and necessary decisions can be taken to evaluate the condition of the patient (whether serious or trivial).

Pneumonia and Tuberculosis are curable with the appropriate treatments and diagnosis requires a study of the chest X-Ray of the person. Detection of Pneumonia and other lung diseases can be done by CT Scan and Chest X-Ray which can be costly. To reduce the cost, the paper proposes a prototype that can detect Pneumonia and Tuberculosis, using a scanned image of Chest X-Ray. The other cause behind developing such a model is to reduce the time required by the pathological labs to conclude the results, especially in the times of pandemics such as COVID.

There exist different models that categorize specific diseases by using chest X-Rays. Some of the examples include detecting pneumonia using deep learning[4] and detecting tuberculosis using deep learning, segmentation, and visualization[7]. These models are built specifically for these individual diseases such as tuberculosis, pneumonia. However, there is no such system that is integrated for two or more than these types of diseases and even if there is an attempt for such a system, it lacks certain requirements. The drawbacks in the existing systems are that there is no such system that classifies two or more chest diseases and the systems that classify these diseases have low accuracy. The additional time that the existing system takes can be harmful in the time of COVID whose symptoms are similar to the mentioned chest diseases.

Convolutional Neural Network (ConvNet/CNN) is a Deep Learning algorithm that can take in an info picture, assign significance (learnable loads) to different viewpoints/objects in the picture, and have the option to separate one from the other. The pre-processing needed in a ConvNet is a lot lower when contrasted with other order calculations. While in crude strategies channels are hand-designed, with enough preparation and training, ConvNets can gain proficiency with these filters.[9] Transfer learning is a popular approach where previously trained models are used as a starting point for computer vision and natural language processing activities given large-scale computational resources and the time required to develop neural network models in these problems.[8] After comparing the three models, which are based on the above-mentioned techniques, the model with the best accuracy was used to develop a web application for detecting

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Ocean Waste Detection Model

Aditya Sawant

Sujata Khandaskar, Siddharth Tayde, Nikhil Masand, Barun Singh

Keywords: Artificial intelligence, Deep-learning, Ocean-waste, Plastic detection, Water-pollution

Abstract

The number of marine debris is excellent in understanding the diagnosis of debris from all oceans of the world and the identification of the highest levels of waste disposal that is most necessary for the removal of waste. Currently, the standard for floating waste management requires the use of a manta trawl. Techniques that require manta trawls (or similar ground-collection devices) that use the physical removal of marine debris as a first step and then analyze the collected samples as a second step. The need for pre-analysis removal is very costly and requires significant oversight - preventing the safe transfer of marine waste monitoring services to all Earth's marine bodies. Without better monitoring methods and samples, the overall impact of water pollution on the entire environment. This study revealed an unusual flow of activity that used images taken from aquatic debris as roots. Produces quantification of marine plastic or waste incorporated into photographs to perform accurate quantification and body removal. This model is trained in the ImageNet Large Visual Recognition Challenge using the 2012 data and can distinguish between many different classes such as cardboard, glass, metal, paper, and plastic. This program uses the transfer of learning from the existing model and then returns it to separate a new set of images. Workflow involves creating and processing domain-specific information, building an object acquisition model using a deep neural network.

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Insta Hearing - Speech to Sign Language using Animations

Varsha Sablani
Dept. Of Computer Engineering
VESIT
Mumbai, India
2018.varsha.sablani@ves.ac.in

Mirudhula Nadar
Dept. Of Computer Engineering
VESIT
Mumbai, India
2018.mirudhula.nadar@ves.ac.in

Surabhi Soni
Dept. Of Computer Engineering
VESIT
Mumbai, India
2018.surabhi.soni@ves.ac.in

Diksha Ramnani
Dept. Of Computer Engineering
VESIT
Mumbai, India
2018.diksha.ramnani@ves.ac.in

Sujata Khandaskar
Asst. Prof., Dept. Of Computer Engineering
VESIT
Mumbai, India
sujata.khandaskar@ves.ac.in

***Abstract*—**Deaf people or people who take birth in deaf families learn sign language as their first language. The system converts audio to sign language. It will first convert the audio to text and then sign language. In this, it takes audio as input, which then with the help of Web Speech API which outputs the text that is matched with the words stored in the database, the displayed text on a screen finally gives the sign code of the given input using the ISL (Indian Sign Language) generator. The results of intervention studies suggest that hearing devices can improve psychosocial and communication outcomes, but behavioural interventions have not shown long-lasting benefits. To help the older ones and their family to manage the impact of hearing impairment for nurses, more research has to be done in many areas where it has been done poorly. This system highlights the important elements of interaction between the disability and community.

***Keywords*—*Hearing impairment, Speech to Sign, Speech to Text, Animations, Natural language processing, Application, Storytelling, Sign Language, Tokenization, Voice recognition, Sign Language Avatar*.**

I. INTRODUCTION

Sign language is a language used by deaf and dumb people as their mother tongue. It is used by people who cannot speak or have problems in speaking and by normal people to communicate with hearing disabled people. For deaf people having access to sign language is essential and helpful for their social, emotional and linguistic growth. Unlike sound patterns, sign language uses body language and communication to easily convey the person's thoughts.

Sign language is a visual means of communicating through hand signals, gestures, facial expressions, and body language. It is a form of communication for the patients who belong to the Hard-of-Hearing community, but sign language is useful for other groups of people also. The language arises because of the deaf, dumb and hard of hearing people in India. The Indian Sign Language (ISL) is the standard language used by Indians for expressing thoughts and communicating with each other.

In India, approximately 5.07 million people suffer from hearing disabilities. Among them, more than 30% of people are below 20 years of age and about 50% are between 20 years and 60 years of age. The only source of communication possible for them is with the help of sign language. As sign languages don't have proper structure and grammar, there is very little acceptability of the signs outside the small world of these Hard-of-Hearing communities. Research on American Sign Language proved that sign language is a full-fledged language that has its grammar and syntax, and also other linguistic attributes. And thereafter research on Indian Sign Language(ISL) started in 1978 where the conclusion was found that ISL is a complete natural language with its grammar and syntax.

Communication for deaf people in public places like railway stations, bus stands, banks, hospitals etc, is challenging because a hearing person may not understand the sign language used by the deaf person to communicate. Also,

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A COMPARATIVE STUDY ON BLOCKCHAIN BASED E-VOTING SYSTEMS

Nitesh Duseja, Prasad Govekar, Karan Sachdev, Bhavika Motwani and Pallavi Gangurde
Vivekanand Education Society's institute of Technology, Mumbai, India

ABSTRACT

Increasing digital technology in the present helped many people's lives, especially in the post-covid era. Unlike the usual electoral system, there are many conventional uses of EVMs in its implementation. The aspects of security and transparency are very vulnerable in still widespread elections with the traditional systems (offline). General elections still use a centralized system, there is one central authority that manages it. Some of the problems that can occur in traditional electoral systems is that with an organization that has full control over the database and system, it is possible to tamper with the database of considerable opportunities. Many cases have come up in the past regarding the tampering, hacking, of EVMs and sometimes, misplacement and thefts of EVMs. Blockchain technology is one of the solutions, because it embraces a decentralized system and the entire database is owned by many users (a.k.a nodes). Blockchain itself has been used in the Bitcoin system known as the decentralized Bank system. By adopting blockchain in the distribution of databases on E-voting systems can reduce one of the cheating sources of database manipulation. Also, The fact that EVMs can be tampered, can't be ignored. Adopting blockchain for

E-voting systems can help us avoid crowding at the polling booths, which we need to take care of the most in this post-covid era. It will also help reduce violence and riots, like we've seen during Bengal 2021 elections. It will also reduce the time and effort required in the traditional system of voting, while giving us a higher percentage of transparency and security.

There is no doubt that the revolutionary concept of the blockchain, which is the underlying technology behind the famous cryptocurrency Bitcoin and its successors, is triggering the start of a new era in the Internet and the online services.other trending, yet critical, topic related to the online services. The blockchain with the smart contracts can emerge as a good candidate to use in developments of safer, cheaper, more secure, more transparent, and easier-to-use E-voting systems.

Keywords — blockchain; ethereum; smart-contracts, E-voting.

INTRODUCTION

Blockchain technology which has become a trending topic after the entrance and widespread acceptance of cryptocurrency. Earlier, Blockchain was only used for monetary transactions and trade, but reports have started to suggest that it can be used in many more areas and be more efficient than systems that are currently in use, because there is a high degree of transparency in this system [3]. Like in Bitcoin, since the wallets are in a distributed structure, the total amount of coins and instant transaction volume in the world can be tracked every moment in real time. No central authority is required here to approve or complete the operations since this is a Peer to peer-based system [15]. Because of that, not only the monetary transactions but also all kinds of structural information can be kept in this distributed chain, also known as Distributed Ledger System (DLS), and with the use of some cryptological and encryption methods, the system can be maintained securely. A lot of information can be stored with the help of this system with relevant modifications . Ethereum coin (a.k.a. Ether), another cryptocurrency with multipurpose development environments, unlike bitcoin which was built around just one application, which was introduced a few years after Bitcoin, characterizes the blockchain in a real sense, revealing that this technology can produce software that can hold information that is structured as explained above. The software programs enforced by smart contracts are written into the blockchain and are immutable. They cannot be (illegally) removed nor manipulated or be tampered with once written. Hence, they can work properly, autonomously, securely and transparently forever, without any external stimuli . As already mentioned, with its unique distributed and secure concept, the blockchain technology may be a solution to many issues other than digital trade, like E-voting [5,12]. E-voting is being studied extensively, and many implementations are tested and even implemented for a while. However, very few E-voting systems are reliable enough and are still in use. Of course, there are many successful systems of online polls and questionnaires, yet we cannot say the same for online elections for governments and businesses. That's primarily because official elections are an essential part of the democracy and democratic administrations, which are the most preferred administrative methodology in the modern world. Moreover, what is most valued in democratic societies is an electoral process that provides transparency, privacy, security and more freedom to the voter.

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A Survey of work on Automatic Generation of Questions from Text

Chetan Naik[1], Saloni Ingle[1], Soham Kamat[1], Veena Trivedi[2], Pallavi Gangurde[2]

B.E. Student, Department of Computer Engineering, Vivekanand Education Society's Institute of Technology, Chembur, Mumbai, India[1]

Assistant Professor, Department of Computer Engineering, Vivekanand Education Society's Institute of Technology, Chembur, Mumbai, India [2]

ABSTRACT: Automatic question generation specifically MCQ based is a widely appreciated application of natural language processing and deep learning. Since the dawn of the pandemic, the world has shifted towards the online paradigm along with universities and institutions. Hence, examinations and assessments are going through a huge change. Most of the institutions have changed their examination pattern towards objective-based questions. However, the manual generation of objective questions and designing specific options/ distractors is a tedious task. This paper thus reviews the work of various system that automatically generates question and answer with text as input. A comparative study of different relevant systems done in this paper gives an overview of the traditional workflow in solving the automatic QG problem.

KEYWORDS: Question Generation, Deep Learning, Machine Learning, e-learning, Automatic QG.

I. INTRODUCTION

Multiple-choice questions are the type of questions with one correct answer which needs to choose from multiple given options. The incorrect options are called distractors and are closely related to the correct answer. The aim of this survey paper is to find relevant research papers which claim to generate question answers from the text. Question answering has been a very active area of research in the field of natural language processing for a long time. Any major advancement in this field will positively impact the educational assessment paradigm around the world. Multiple Choice question is a specific use case of the broader Question Answer generation problem. The Wikipedia definition of QA is "Question answering (QA) is a computer science discipline within the fields of information retrieval and natural language processing (NLP), which is concerned with building systems that automatically answer questions posed by humans in a natural language" [1].

It's important to improve the progress of learning by removing the gap between assessment and self-learners. Hence, there is a dire need for the generation of questions and answers automatically using modern tools of machine learning and deep learning. At the same time, the pattern of assessment is majorly shifting towards the objective assessment i.e. MCQ based, it is very hard to construct and requires a considerable amount of time for setting numerous questions. As in any education system, the examination is conducted to judge the calibre of the students. Hence, to eliminate the manual effort to generate the questions, a system needs to be established which will help educators automatically generate the multiple-choice questions along with their answers. The above discussion provides two important aspects, one from the student's side and the other from the educator's side where the need to generate questions for assessment is imminent and both the parties will be benefitted from an automatic system to do the work for them. The recent advancements in the field of natural language processing and deep learning can be utilised to create a system that can automatically generate relevant multiple-choice questions. This paper tries to provide an introduction to the work done in this particular area of question-answer generation.

A. Terminology

Some important terminology related to MCQ's [2]:

1. Stem - It is the sentence or the phrase from the passage which acts as the question [2].
2. Key - It is the word that acts as the correct answer to the stem [2].
3. Distractors - These are the words that closely relates to the key but are not the actual answer [2].

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TD score: Time Aware Domain Similarity based Link Prediction

Yugchhaya Galphat
Assistant Professor, Computer Engineering, Vivekanand Education Society's Institute of Technology, Mumbai, India

Abstract: Online Social Network has gained immense traction of users in past decade. Link prediction across social networks has become a new exploration area for researchers, where existing links are investigated and new links are anticipated among billions of online customers. Majority of work in this area focusses on exploring the current status of a particular network at a specific time, without exploring the behavior of the network links as time goes by. Only a Small amount of work has been performed with the consideration of temporal aspect of network. As the interests and interactions of user change over time, the links among nodes become weaker or noisy which affects the prediction accuracy. This paper intend to explore a new integrated temporal method TD score which includes time stamp of interaction and domain similarity information for each pair of unconnected nodes to predict links. Experiment over co-authorship network reveals that link prediction covering time aware domain similarity is effective and efficient approach than traditional ones.
Keywords: Co-authorship network; link prediction; node similarity; global feature; temporal feature; domain similarity.

I. INTRODUCTION

The concept of online social network (OSN) is introduced by J.A. Barnes in 1954 and from 1967 it has been taken as new research area. OSNs are ubiquitous in nature, some social networking sites are application specific while some of them are designed for social interaction. It provides platform that brings people together with common interest. A social network represent a relationship amongst a set of entity joined together by some kind of relationship, such as co-authorship in which two author are connected if they co-authored any paper(published paper together).These networks can be represented as graph or hyper graph. Link prediction has become a growing research focus in network analysis domain having wider application areas such as recommender System, viral marketing, communication surveillance, information integration. An entity in given network can be linked by some relation with another entity in the future, even when no past relation has been observed between them. Link prediction issue has mainly been addressed as inferring new links only by exploring state of network at particular moments of time.

Immense work has been carried out on the static link prediction like: authors [20] suggested a way to predict future link by exploring a location feature along with supervised learning using place-of-friend and friends-of-friends attribute along with supervised learning. Various methods have been evaluated which consider the topology of a given network without focussing on attributes for individual nodes [21]. Clustering and hierarchical structure was also used as basis for prediction [22] where nodes of a graph presented as leaves of a tree representing a community with a recursive structure. However some authors also applied probabilistic relational model [23] [24]. Still there is a need to temporally evaluate network structure to perform link prediction. *Potgieter et.al* [12] had shown the benefits of temporal feature in their earlier research.

Most of the social networks are time evolving and dynamic in nature where strength of link varies over time. Consideration of only static view of network is not perfect measure for prediction, it is also equally important to evaluate the network behaviour across time domain. Traditional approaches for link prediction fails in exploring the network evolution because they consider network data up to the present time without giving any consideration when links were developed in the network. Temporal feature is not explored fully up till now for the prediction. Only small amount of work has been done using time base information like history of network evolution, data on time of interaction across various entities which results in more accurate predictions. For the co-authorship network, links and its strengths vary over time because of authors, who were active in particular field, have lost their interest in that or became inactive after some years. So considering the static view of network (single time snapshot) will give noisier information. It is inefficient to use such information for link prediction. So that this paper propose an integrated novel approach which calculates similarity Score for each pair of non-connected node, based on common neighbour, time of interaction of users and their area of interests (research areas) with respect to time**.** The learning algorithm in this approach takes the dynamic view of network as input which is efficiently utilize time aware domain information of individual authors. In order to verify the feasibility of the proposed approach, we executed number of experiments on arXiv dataset covering network data for co-authors). The experimental results showed that by including this temporal feature, performance accuracy is increased than the traditional ones.

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An Investigation of Various Versions of AODV Protocol for Discovering Routing Path and Eliminating Packet Loss

Veena Trivedi[a], Padmalaya Nayak[b]
[a]Research scholar, Mewar University , Chittorgarh Rajasthan, ieeemtech6@gmail.com
[b]Research Supervisor , Mewar University ,Chittorgarh , Rajasthan

Abstract

A Mobile Ad hoc Network (MANET) is a network made up of mobile nodes that communicate through radio. It is a self-contained computer that can be individually programmed, ordered, and controlled. The nodes of an ad hoc network move at their own pace. Ad hoc network nodes are unable to communicate directly with one another due to their short propagation ranges. The topology of the network moves as nodes in a network switch, resulting in frequent route failures. The nodes of the ad hoc network are powered by a battery with a limited energy supply. When a node's battery dies, the network lifespan is shortened, resulting in network loss. Routing is a critical component of MANETs. As a result, Energy Efficient Routing Protocol is chosen to boost network efficiency. There are many routing protocols used to transfer data packets in wireless Ad hoc networks, the most important of which is the Ad hoc On-demand Distance Vector (AODV) Routing Protocol. The key issue with using AODV is that connection errors occur as a result of node movement that is unpredictable. As either the source node or an intermediate node shifts during data packet transfer, the energy in the nodes is lost again due to the additional path exploration process, which occurs several times. This paper provides a literature review of various implementations of the AODV protocol in the form of routing route exploration and packet loss reduction.

Keywords: MANET, Wireless Communication, AODV, Routing, RREQ

INTRODUCTION

A Mobile Ad hoc NETwork (MANET) [1] is a transitory network of mobile nodes that communicate with one another via wireless links. Both network nodes are dynamic, meaning they can serve as both a host and a router to route information that is not intended for them. Nodes are free to join, leave, and move as they please, resulting in unpredictable topology changes. The ability of ad hoc networks to self-create, self-

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COVID-19 Detection using Chest X-Ray

Nirmiti Sali[1], Nimisha Khadilkar[2], Srushti Biwalkar[3], Amisha Swamy[4], Nusrat Ansari[5]
[1, 2, 3, 4]Student, Department of Computer Engineering, Vivekanand Education Society's Institute of Technology, Chembur, India
[5]Assistant Professor, Department of Computer Engineering, Vivekanand Education Society's Institute of Technology, Chembur, India

Abstract: Over the past few months, the exponential increase in COVID-19 cases has been overwhelming for many healthcare systems across the world. With 114 million cases globally as of 28th February 2021, with India itself having 11.1 million cases, it has challenged us with the testing, quarantine, and safety measures. Having limited testing kits, not all patients that have symptoms of respiratory illness can be tested using conventional techniques (RT-PCR). In this project, we propose the use of chest X-Ray to prioritize the selection of patients for further RT-PCR testing. It would also help in identifying patients with a high likelihood of COVID with a false negative RT-PCR who would wish to repeat testing. Further, we propose the utilization of recent AI techniques to detect the COVID-19 patients automatically using X-Ray images, particularly in settings where radiologists aren't available, and help make the proposed testing technology scalable.
Keywords: COVID-19, healthcare systems, X-Ray, RT-PCR, patient, AI.

I. INTRODUCTION

The sudden spike in the number of patients with COVID-19, a new respiratory virus, has put an unprecedented load on healthcare systems across the world. In many countries, healthcare systems have already been overwhelmed. As there are limited kits available, for diagnosis, along with limited hospital beds for admission of such patients, and limited personal protective equipment (PPE) for healthcare personnel, it is thus very important to differentiate which patients with severe acute respiratory illness (SARI) could have COVID-19 infection to efficiently utilize the limited resources. In this work, we propose the use of chest X-Ray to detect COVID-19 infection in patients exhibiting symptoms of SARI. Our tool can classify a given X-Ray as one among the three classes: normal, pneumonia, and COVID pneumonia. The main contribution of this work is in proposing a unique deep neural network-based model for highly accurate detection of COVID-19 infection from the chest XRay images of the patients. Therefore this automated tool can serve as a guide for those at the forefront of this analysis. As we are seeing now too, (February 2021), despite many vaccines in use and development, our country is facing a second wave of the virus and the virus is spreading again. To combat this, our system will provide faster results and help in detection and prevention of further spread faster.
We have also considered symptoms to know whether covid is symptomatic or not.For this we have used Decision tree Algorithm.

II. LITERATURE REVIEW

A. Respiratory illness detection in Chest X-Rays

Various deep learning-based approaches square measure developed to identify completely different diseases like respiratory illness [7, 8, 11, 13]. The model is trained to classify X-Ray pictures into fourteen completely different sickness classes, as well as respiratory illness. Seeing the similarity of the input samples, we tend to found this to be the nearest pre-trained backbone to develop a model for characteristic COVID-19 respiratory illness.

B. COVID-19 detection in Chest X-Rays

Their square measure solely restricted such ASCII text file applications obtainable to be used [1,5,10] that use chest X-Ray pictures. COVID-Net [10] has AN ASCII text file and actively maintained tool which can determine COVID-19 moreover as different respiratory illness whereas showing respectable sensitivity for COVID-19 detection.
[14]have given a fast, absolutely parameterizable GPU implementation of Convolutional Neural Network variants. This paper explains the basics of a system of logic and its use for image classification. It uses Matlab's system of logic tool cabinet at intervals the definition of a system of logic illation rules. These rules square measure tested and verified through the simulation of classification procedure indiscriminately sample areas. [15]

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Money Heaven
The Complete Financial Analyzer

Nusrat Ansari,
Asst Prof. CMPN Dept
VESIT
Chembur,Mumbai
nusrat.ansari@ves.ac.in

Baldev Sundarani,
B.E.Computer Engineering
VESIT
Chembur,Mumbai
2018.baldev.sundarani@ves.ac.in

Abhishek Waghmare
B.E.Computer Engineering
VESIT
Chembur,Mumbai
2018.abhishek.waghmare@ves.ac.in

Simran Gurnani,
B.E.Computer Engineering
VESIT
Chembur,Mumbai
2018.simran.gurnani@ves.ac.in

Hitesh Santani,
B.E.Computer Engineering
VESIT
Chembur,Mumbai
2018.hitesh.santani@ves.ac.in

Abstract - "Money Heaven" is a one-stop destination for financial services and forecasting the future. It assists customers in managing their stock, cryptocurrency, and other investments. Our goal is to empower customers to manage, save, and earn more by combining their complete financial life into one application, including investments, health insurance, asset insurance, and so on. Money Heaven's main goal is to forecast future prices for the user's investments. Predicting price movements in the stock market and cryptocurrencies with accuracy is a major economic benefit. Because of the volatility and non-linear character of the global stock markets, accurately predicting stock and cryptocurrency market returns is a difficult endeavor. Machine learning makes use of a variety of models to create accurate predictions.Given the high number of newcomers to the stock market, it is critical to provide a one-stop destination for managing all of an individual investor's funds. Managing several investments across many platforms can be hectic and time-consuming. Before investing their hard-earned money in the stock market, a novice must understand the previous trends of each share and make predictions about future prices. Our goal is to assist investors in investing in the appropriate companies and growing their money, because the capacity or skill to transform earned income into passive income is the key to financial freedom and enormous wealth.

Keywords - *Cryptocurrency,Stock Market, LSTM, Random Forest Regression.*

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EMOTION MAPPING BASED MUSIC RECOMMENDATION SYSTEM USING MACHINE LEARNING

[1]Ayush Raj Singh, [2]Aakash Chauhan, [3]Nikita Samtrai, [4]Tina Rajpal, [5]Sunita Suralkar
[1, 2, 3, 4] Student, [5] Assistant Professor
Department of Computer Engineering,
Vivekanand Education Society's Institute of Technology, Chembur, Mumbai-400074, India

Abstract: Emotion Mapping based Music Recommendation System is to provide users with suggestions that match their emotions and to assist them accordingly. The image is first captured and then converted to an emoji, and future analysis is done through the emoji's face. Analyzing a user's emotional facial expressions can help them understand the subject's current emotional or mental state. Music is an area that is likely to change a person's mood. It is well known that people use facial expressions to express what they want to say and the meaning of words more clearly. By developing an emotion mapping system, users can determine their mental state, and if they are unwell, they can change their mood by listening to pop-up messages containing songs. User's facial features are captured with the help of a webcam. By combining the user's photographs and emotion, the appropriate analysis is done, and the songs are displayed.

Index Terms: **Sentiment, Emotion Analysis, Music Recommendation, Emoji, Human face, Neural Networks, CNN, RNN.**

I. INTRODUCTION

Emotion Mapping based Music Recommendation System using Machine Learning is a device wherein a human face is scanned and concurrently their face is transformed into an emoji. Emojis are an indispensable part of regular communique for expressing emotions. People have a tendency to express their feelings, specifically through their facial expressions. By taking pictures and recognizing the emotion of someone and playing songs for their mood can increasingly calm their thoughts and universally emerge as giving a pleasant effect.

The project aims to capture the emotion expressed through facial expressions. Emoji faces, which are ubiquitous in our daily communication are designed to support emotional communication so from an emojified image, human sentiments are detected and accordingly music is played with the notification stating the person's current mood being scanned. The song played corresponds to the perceived emotion.

The main objective of the project is to change a person's emotion as music plays an important role in changing their mood. If the emotion detected is happy, the user will be redirected to a website which will show a playlist containing happy songs. The system is designed to capture human emotions through the webcam interface available on computer systems. The software uses image segmentation to capture the user's image. For scanning the person's face, we will be using the OpenCV library. It allows the use of Machine learning algorithms to search for faces within a picture. When it comes to emotion detection, the basic task of any emotion analysis program is to isolate the polarity of the input (facial expression) to understand whether the primary emotion presented is positive, negative, or neutral. With the use of sentimental analysis and listening to songs, we can avoid many health risks, and improve our mood.

II. OBJECTIVE

The objective of our paper is to implement machine learning ideas in a system that scans human faces and transforms them into quantifiable emotions to monitor the user's mood. This will be instrumental in recommending music to them, to change the user's emotion as music plays an important role in changing a person's mood, to provide an interface between the music system and to bridge the gap between emotion analysis and music techniques.

KRISHI SETU - BRIDGING THE VALUE GAP

[1]Anjali Badlani, [2]Priyanka Asrani, [3]Sejal Kriplani, [4]Sarthak Thakur, [5]Sunita Suralkar
[1, 2, 3, 4] Student, [5] Assistant Professor
Department of Computer Engineering,
Vivekanand Education Society's Institute of Technology, Chembur, Mumbai-400074, India

Abstract: Krishi Setu is an attempt to eliminate middlemen so that farmers get maximum profit from the trade chain. Our portal is a simple website where a farmer can upload the quantity of harvested crops and wholesalers can purchase as per requirements and availability. Some peculiar features of the website include news related to farming, current prices of crops, and multilingual support that will be visible on the dashboard. Website also consists of features which will determine crop disease by uploading a picture of the crop. The consumer will get recommendations on their purchases as per season and locality. The buyer can visit the place or have courier services integrated. We would choose the most optimized path if the goods are supposed to be delivered to another location and there are drop points that come in between. This also reduces delivery cost-efficiently.

Index Terms **- Agriculture, small-scale farmers, eliminating middlemen, crop disease prediction, buying and selling**.

I. INTRODUCTION

Agriculture, "The backbone of Indian economy" as quoted by MK Gandhi is defined as an integrated system of techniques to control the growth and harvesting of animals and vegetables. It is an uncomplicated endeavour consisting of technical and practical processes that helps in the maintenance of the ecological balance and protects human resources; most importantly it is a viable food production system (Agro Products 2015). In 2012-13 agriculture contributed to 13.9% of the total GDP (Economic Survey & CSO 2014, p. 23), and employed 47% of the total workforce population (World Bank 2014). The combined efforts of the Central Government, State Governments , and the farming community have succeeded in achieving a record production of 264 MT of food grains during 2013-14 (Economic Survey & CSO 2014, p. 19). This record production has been achieved through effective transfer of latest crop production technologies to farmers under various crop development schemes being implemented by the Department of Agriculture & Cooperation backed by remunerative prices for various crops through enhanced minimum support prices**.**

As the Indian economy has diversified and grown, agriculture's contribution to GDP has steadily declined from 1951 to 2014, yet it is still the largest employment source and a significant piece of the overall socio-economic development of India. Crop yield per unit area of all crops have grown since 1950, due to the special emphasis placed on agriculture in the five-year plans and steady improvements in irrigation, technology, application of modern agricultural practices and provision of agricultural credit and subsidies since the Green Revolution in India. However, international comparisons reveal the average yield in India is generally 30% to 50% of the highest average yield in the world.

Even after knowing all this information, farmers in India are the most exploited and underprivileged. They never get the deserved profits, owing to their efforts. The reasons include faulty farm practices like overuse of chemical fertilizers, uneven rainfall, and soil infertility. But one of the major causes is the transportation of the harvested produce to regulated markets. Farmers are paid only one-quarter of the money that consumers are going to pay while the middlemen get 75percent of the entire chain. With food inflation at an all-time high, these middlemen are only boosting the soaring food prices further. Gaining from these profits, the middlemen deprive farmers and consumers of a fair price.

To benefit the farming from the new global market access opportunities, the internal agricultural marketing system in the country also needs to be integrated and strengthened. In particular, the market system has to be revitalized to:

a) Provide incentives to farmer to produce more;
b) Convey the changing needs of the buyers to the producers to enable production planning;
c) Foster true competition among the market players and
d) To enhance the share of farmers in the ultimate price of his agricultural produce.

Today the farmers cultivate crops based on the experience gained from the previous generation .Since the traditional method of farming is practiced there exists an excess or scarcity of crops without meeting the actual requirement. The farmers are not aware about the demand that takes place in the current agricultural economy. This results in the loss to the farmers. The expressed reasons in order of importance behind farmer suicides were – environment, low produce prices, stress and family responsibilities, poor irrigation, and increase in the cost of cultivation. The main reason is the low prices of the products and the increased cost of cultivation. The cost of crops are determined by economic demand and the limits of the production.

In recent years, different application domains have been introduced with new constraints and methods for the technology. Information technology has become a part of our day to day life, and is increasing in the field of agriculture. Farmer Portal in the field of agriculture is a milestone in the field of development. Farmer portal basically includes the buying and selling of products. The objective of our farmer portal is to eliminate the middleman in that buying and selling of agricultural produce, so as to ensure that the farmer gets the correct price for his produce and ultimately to earn deserved profit.

II. LACUNA IN EXISTING SYSTEM

A) Interface issues

Existing systems provide a complicated interface[1].This is a user friendly interface with the required language support.

B) Language support

Existing systems had a mono-language interface. This system provides multilingual support.

C) Additional Features

Statistical Analysis of Estimated Displacement Measurements using Digital Image Correlation

Kavita Tewari[1], R. K. Kulkarni[2]

Kavita Tewari[1]

[1]Department of Electronics Engineering, Vivekanand Education Society Institute of Technology, Mumbai 400074, INDIA.

kavita.tewari@ves.ac.in

R. K. Kulkarni[2]

[2]Department of Electronics and Telecommunication Engineering, Vivekanand Education Society Institute of Technology, Mumbai 400074, INDIA.

ramesh.kulkarni@ves.ac.in

***Abstract*:** This paper presents details of the statistical analysis of the estimated displacements on a sample of pearlitic steel. It is mostly used in construction, automobiles, and industries. The displacement measurement of deformation is computed in the horizontal and vertical direction with pixel accuracy. Digital Image Correlation (DIC) is a non-contact technique to estimate u and v displacement. The deformation of the sample is computed using NCORR software. Detailed statistical analysis has shown that the displacements have a strong correlation between them.

***Keywords*: Digital Image Correlation, Displacement Measurement, Open source DIC software Ncorr.**

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I. INTRODUCTION

For structural assessment, studies on material deformation have gained importance in recent times. In most of these studies, materials are deformed under various conditions and the accumulation of strain is analyzed in terms of stress or strain rates. This approach, though provides a gross assessment about the deformation of a material, it does not give any clue about the variation in the strain distribution within a material. Such assessments many a time overestimate the strength of the material. To overcome this shortcoming finite element-based simulations have been implemented. A combination of simulation and experimental analysis solves the distribution-related issues but it is not able to take into account the structural variation within the material. To incorporate the materials-related variations, microstructures of the materials are investigated, and post-failure analysis is used to assess the material after deformation.

In the present research work, a better approach has been adopted where with the help of a scan electron microscope high-resolution images of material are captured before and after deformation. Subsequently with the help of digital image correlation a particular point or region within the material is traced on deformed microstructure to access the movement of a pixel in x-direction and y-direction. The horizontal movement of a pixel in the x-direction is called u-displacement and the vertical movement of a pixel in the y-direction is called v-displacement. To measure u-displacement and v-displacement, it is necessary to mark a region of interest in the reference image. Under this region of interest, a subset of an image can be chosen in the reference image and tracking of a subset in the deformed image can be done using appropriate DIC algorithms. The approach used in the present study provides information about the accumulation of strain in local regions which can be used to identify the regions of failure in very early stages, whereas most of the present techniques are not sensitive to such early response of the materials.

The first step towards deformation analysis is displacement measurement. With the help of displacement measurement, strain analysis can be completed. Displacement measurement and strain analysis help to test the strength of material by finding the breaking point or failure point of the material. This type of analysis helps to modify the manufacturing process of materials. There are various existing methods to measure strength e.g. scratch strain gauge, electric resistance strain gauge. The problem with these existing methods is that a strain-measuring instrument has to be attached to the sample. Such physical contact sometimes may induce additional stress, which is unwanted. In this experiment, a non-contact technique is implemented. The advantage of such a technique is that I do not induce instrument related stress to the sample

Swift advancements in the field of digital image processing in the past few years have drawn considerable attention and owing to these advancements, many analyzers have developed various DIC techniques for the measurement of the entire strain field [1,2]. The Digital Image Correlation technique can be applied with high accuracy just by comparing the two images of the same region; one before and the second after the deformation [2]. One of the main superiorities of the DIC technique is that it is a non-contact technique that provides full field and considerately high accuracy for the calculations of full-field displacement.

In the present paper, to estimate full-field displacement in a metallic sample a 2-D DIC system, which uses open-source software Ncorr, has been employed. To study deformation, pearlitic steel was selected as a material. The typical microstructure of pearlitic steel is composed of fine lamellar arrangements of two phases, namely, ferrite and cementite (shown in figure 1). Fine distribution of lamellae (~ 2μm) helps in capturing small details in displacement during deformation, as arrangements of lamellae change significantly, which can easily be recognized and can be used to accurately determine in estimating the displacement precisely [3,4].

2. MATERIALS AND METHODS

DIC uses recorded images of a material as it is being deformed as inputs and calculates displacements (shown in figure 2). The reference image is broken into subsets, and image-processing techniques are used to track the position of subsets from one image to the next. DIC is a technique that uses images of a material as it undergoes deformation to calculate

RESEARCH ARTICLE

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Locating Cracks in 1050 Aluminium Alloy by Digital Image Correlation

Kavita Tewari*[1], R.K.Kulkarni[2]

[1,*] Department of Electronics Engineering, VESIT, (Mumbai University), Mumbai, India-400071; e-mail: kavita.tewari@ves.ac.in.
[2.] Department of Electronics Engineering, VESIT, (Mumbai University), Mumbai, India-400071.

ABSTRACT

In this paper deformation of commercial 1050 grade aluminum alloy is studied by digital image correlation (DIC) technique using open-source software, Ncorr. For this purpose, samples of aluminum alloy were subjected to uniaxial deformation under a scanning electron microscope (SEM) till the initiation of crack. Intermittently images were captured during deformation and by using DIC technique, variations in the microstructure of the deformed samples were identified in terms of displacement. Using these displacements, normal strains E_{xx}, E_{yy}, and E_{xy} shear strain were estimated to subpixel accuracy. By superimposing the region of crack and distribution of strains in the microstructures, it was possible to show that near the crack, strains not only attain high values but also show large fluctuations. Various aspects relating to the nature of strain distribution are discussed in the paper.

Keywords: Digital Image Correlation, Ncorr, Strain Measurement, 1050 Al.

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INTRODUCTION

Commercially pure 1050 aluminum alloy is being widely used in various industries, because of its high electrical conductivity and corrosion resistance [1]. This alloy is also used as a heat sink, as it has a higher thermal conductivity in comparison to other alloys [2]. It has relatively lower mechanical strength as compared to other aluminum-based alloys, but the alloys can be strengthened by cold working [3]. During application, 1050 Al based structural components undergo various stresses which occasionally induce deformation leading to the failure of the component. In many applications, which include electrical current-carrying components, chemical carrying pipelines, to name a few, failure of a component can be more svere than the general failure observed in components.

With the advances made in microscopic and image processing capabilities, it is possible to study the distribution of stresses and identify the regions of stress concentration prior to the crack formation.

Corresponding Author : Kavita Tewari, Department of Electronics Engineering, VESIT, (Mumbai University), Mumbai, India-400071; e-mail: kavita.tewari@ves.ac.in

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Ghadbeigi et al. [4] have studied local deformation in dual-phase steel by using digital image correlation (DIC) techniques to show that severe deformation remained localized within the ferrite grains and the formation of micro-cracks initiates at the interface between martensitic and ferrite phases. Lunt et al. [5], through DIC, could successfully quantify stress distribution in both the phases; equiaxed á and fine precipitate $\alpha 2$ phases in the Ti-6V-4Al alloy.

DIC-based techniques, therefore, have tremendous scope in metallurgical systems where these

RESEARCH ARTICLE

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Reconfigurable Successive Approximation Register ADC and SAR-Assisted Pipeline ADC

Jayamala Adsul[*1], Harsh Sawardekar[2]

[1,*] Department of Electronics Engineering, VESIT, (Mumbai University) Mumbai, India-400071; e-mail : jayamala.adsul@ves.ac.in,
[2] Department of Electronics Engineering, VESIT, (Mumbai University) Mumbai, India-400071.

ABSTRACT

The paper proposes an analog to digital converter (ADC) which is reconfigurable and it consists of successive approximation register (SAR) ADC and SAR-Assisted pipeline ADC that can improve the resolution and conversion time based on the application. This reconfigurable ADC is designed to obtain an 8-bit resolution with low conversion time, a 16-bit (8-bit + 8-bit) resolution in pipeline mode with optimum conversion time and 16-bit (8-bit + 8-bit) resolution in sub ranging mode with more conversion time using exsisting components. This proposed ADC behaves as 8-bit SAR ADC, 16-bit (8-bit + 8-bit) two stage SAR-Assisted pipeline ADC and 16-bit (8-bit + 8-bit) two step sub-ranging ADC. The reconfigurability is obtained using control signals. This circuit has been designed and simulated in NI Multisim 14.0, and the results are presented in the paper.

Keywords: Reconfigurable, SAR ADC, SAR-Assisted pipeline ADC.

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INTRODUCTION

Reconfigurable ADCs are programmed to achieve conversion with optimum ADC parameters like number of bits, conversion time and etc. Such ADCs are required for different communication systems [1], signal processing and wireless sensor networks [2]. Several methods are used to reconfigure various types of ADCs such as flash, SAR, pipeline, single slope, delta-sigma signal ADCs etc. Reconfigurable ADCs are being used in various applications such as the bio instrumentation [3] biomedical sensors [4] wireless personal area network application [5] sensor applications [2]. It is difficult to achieve high resolution high speed low power at the same time in conventional ADCs. A tradeoff must be made in order to get these features. Hence ADCs are reconfigured to overcome these drawbacks. Reconfigurable ADCs are power budgeting [3], it can change the operable resolution and sampling rate [6]. For 8 to16-bit resolution and sample frequency around 5MHz applications, SAR ADC is used [7] which is advantageous due to low power dissipation, high accuracy and low latency [8]. The SAR ADC has been used often for data processing which is part of processing industrial systems, and also optical communication systems [9]. The conversion time of SAR ADC increases due to increase in resolution. So, to accomplish different applications of SAR ADC with high resolution and low conversion time this ADC has been reconfigured in this proposed method.

Figure 1 shows general diagram of a basic SAR ADC. It includes comparator, sample and hold circuit, SAR logic, DAC and control circuit. The analog input

Corresponding Author : Jayamala Adsul, Department of Electronics Engineering, VESIT, (Mumbai University) Mumbai, India-400071; e-mail : jayamala.adsul@ves.ac.in

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Understanding and Mitigating EMI in a System Incorporating Multiple RF Sources like Microwaves, Bluetooth, and Wi-Fi.

Suraj Daryapurkar[1], Dr. Asawari Dudwadkar[2]

[1]Student, [2]Assistant Professor
[1,2]Department of Electronics Engineering, Vivekanand Education Society Institute of Technology, Mumbai, Maharashtra, India

Abstract: *Electromagnetic Interference (EMI) is the interference caused by unwanted electromagnetic waves that affect the efficient functioning of the designed circuit. EMI being generated because of the circuit in the discussion itself or due to other electronic circuits is one of the critical reasons behind failures of circuits that do not have enough EMI protection. Issues due to EMI often hamper the development process and is a time-consuming and costly manoeuvre. This paper discusses the possible sources of EMI in a system we designed to incorporate microwaves, Wi-Fi, Bluetooth Low Energy (BLE), and a high wattage AC supply. This paper aims to discuss two design iterations which are chronologically discussed wherein the second iteration of the design aims to mitigate the EMI problems in the first design iteration. The changes are discussed as methods to stop or reduce the effect of the interfering signals. Furthermore, the paper will present proven guidelines which were used in this application for designing any other application with microwaves, circuits involving magnetic field, Wi-Fi, Bluetooth Low Energy (BLE), and high wattage AC supply, to minimise EMI problems.*

Keywords: **Electromagnetic Induction (EMI), microwaves, Bluetooth, Wi-Fi, PCB designing, guidelines.**

1. Introduction

In this device, the technology of microwaves has been used. A magnetron generates microwaves ranging from 1GHz to 1000GHz. The aim has been to maximise the harnessable power output within commercial standards. This device has two different power supplies wherein one power source supplies approximately 1500W of power to the magnetron and the other power source supplies 3000W of power to an additional circuitry that generates a magnetic field. The additional circuitry as well as the purpose of the product have not been described in detail as they are out of the scope of this paper. The device also houses a microcontroller that runs on an 8MHz clock frequency, two OLED displays configured with SPI protocol with additional components, and a provision of mobile application connectivity so Wi-Fi and BLE as options are also included.
The major issues faced during the testing were flickering display, controller board freezing, instruction cycles being skipped, reduced efficiency, and toggling of the transformer output. Intensive testing and elimination of possible fault junctures brought out the conclusion of possible EMI issues as the reason behind the faulty operation of the device. Redesigning the electronics and mechanical structure to eliminate the issues is not always a feasible option which was the case here.

RESEARCH ARTICLE

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Comparative Analysis of Image Enhancement Algorithms

Sumedh Bane, Ritik Choudhary, Shashwat Gupta, Kavita Tewari

Department of Electronics Engineering, Vivekanand Education Society's Institute of Technology, Mumbai, Maharashtra, India

Abstract

In the complex instruments utilised in essential fields such as satellite cameras, CT scanners, and High-Resolution Cameras (Underwater), image capture is critical without human-rated aberrations, sounds, or atmospheric disturbances. Even full reference QA (quality assessment) approaches have a limited ability to predict quality accurately. As a result, the difficulty of evaluating and enhancing photographs is further subdivided into domain-specific issues by focusing on a small set of artefacts. The most popular is entropy, which is usually relevant in picture coding: it is a lower limit for the average coding length in bits per pixel that may be attained without any loss of information by an optimal coding scheme. The word 'specific' is significant because it establishes right away that the strategies covered in this paper are primarily problem-solving techniques. For example, a procedure that works well for improving X-ray images may not be the ideal option. Thus, a method that works well for boosting X-ray photos may not be the greatest option for enhancing photographs obtained by a satellite thousands of miles away from the Earth. Image enhancement algorithms proposed in this paper are Intensity-Hue-Saturation transformation, Histogram Equalization algorithms, Edge Detection techniques and Retinex theory algorithms. These algorithms are implemented under satellite imagery, medical scans, underwater images, and their parameter analysis.

Keywords: Edge detection, Entropy, Histogram equalization, Image enhancement, Retinex algorithm.

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Introduction

Image enhancement is considered one of the most predominant techniques in the field of image research. Image enhancement's main goal is to improve an image's quality and visual appearance or offer a better transform representation for future automated image processing. Images captured in medical scans, satellite, and real-life photographs suffer from poor and bad contrast and unwanted noise. It is essential to increase contrast and reduce noise to improve image quality.[1] Image Enhancement Techniques are one of the most important steps in detecting and interpreting medical pictures. It enhances visual clarity for human sight by eliminating blurring and noise, boosting contrast, and revealing details. These are examples of enhancement operations. Depending on the goal, the improvement technique differs from one field to another. There are two types of picture enhancement techniques available: spatial domain and frequency domain enhancement. We offer an overview of Image Enhancement Processing Techniques in the Spatial Domain in this study. More particular, we classify processing methods based on representative image enhancement techniques. As a result, this paper's contribution is to classify and review Image Enhancement Processing Techniques. This is determined by comparing the several parameter values obtained. It will be functional and easier to detect the enhancing techniques for future research.

Corresponding Author: Sumedh Bane, Comparative Analysis of Image Enhancement Algorithms, e-mail: 2018.sumedh.bane@ves.ac.in

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Algorithms and Working

Intensity-Hue-Saturation (IHS)

IHS scheme is an alternate approach to RGB color scheme. It presents colors more nearly to the IHS Transformation human who perceives the image. Low saturation indicates impure color, and high saturation indicates pure and intense color. Usually, RGB images lack saturation even after being contrast

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Automated Attendance Management System

Shardul Khot[1], Deepesh Shahdadpuri[2], Mahek Tardeja[3], Aakash Hotchandani[4], Gaurav Tawde[5]

[1-4]Student, Dept. of Electronics and Telecommunication Engineering, Vivekanand Education Society's Institute of Technology, Maharashtra, India
[5]Assistant Professor, Dept. of Electronics and Telecommunication Engineering, Vivekanand Education Society's Institute of Technology, Maharashtra, India

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Abstract - *Almost everything that we do today is done using technology and is automated and linked online. The use of internet of things, machine learning libraries and image processing has been effectively used in almost all the fields. On top of that the covid-19 pandemic hit us hard this year and forced us to carry out learning in an online way, apart from that some universities and colleges consider to continue with far distance learning in the future even. We propose an automated online attendance management system that will be based on face recognition. This is achieved using machine learning algorithms and deep learning approaches after initiating pre-processing of images of the students and then training the model based on the face geometry. This integration would make it easier for the teachers and staff to manage classes in an automated way*.

***Key Words*: Online attendance, Machine Learning, Face Recognition, Deep learning, Eigen faces, SVM algorithm.**

1. INTRODUCTION

Amidst the worldwide pandemic, a need to virtually carry out all the traditional processes was mandatory, In Fact all the schools, colleges and universities have adjusted to carry out teaching, posting, collecting assignments and even conducting exams through online platforms. In such a situation it becomes very crucial to carry out all the procedures in a traditional way as we used to do before the pandemic, so with the help of our idea we have tried to wave off some of the burden and make things ultimately simpler.

1.1 Implementation of Machine learning in facial recognition technology:

As a rapid transformation has been witnessed in the fields of AI, ML and deep learning technologies in the past few years, this industry is rapidly progressing towards various technologies and especially the growth factor in facial recognition technologies has been tremendously good. To get a proper gist of, what we can understand is that, this technique is basically capable of recognizing a person based on their different facial features. The technique of recognition of facial features serves 4 vital purposes viz. detection of all the faces, aligning them properly, performing feature extraction and finally recognizing them

- Firstly, to locate the face in the image or video is very crucial and until now most of the cameras already have those built-in functions of detecting the face accurately and this technology is something that today even most of the social media platforms also like Instagram, Snapchat, Facebook and many more allow their users to add on various effects to their pictures and videos.

- Now coming to proper alignment of faces then, what happens exactly is that faces are turned away from the main point of focus so in such cases a ML algorithm is trained in such a way that wherever facial landmarks or features are marked out, the desired results are obtained.

- Moving further, then in this particular step what will happen is it will cater into measuring and extracting various different features and this complete process is known as embedding, thereby allowing it to distinguish the face from others.

- Finally heading towards the last step, herein the unique parameters of each face are measured and with the help of a final machine learning algorithm the measurements of the face are taken against known faces present in a database.

2. LITERATURE REVIEW

In [1], researchers have made a complete web-based application by producing better efficiency by integrating various technologies. The authors have successfully managed to build an existing system which is currently used for managing attendance in Malaysia. But the efficiency could still be improved by using modern face recognition algorithms to create a more robust system for achieving better time complexity.

In [2], the authors have presented an automated attendance system that uses biometrics. A fixed camera will capture images and mark attendance which will be reflected in the database. Also the system sends automated messages to absent student's parents. But this requires installation of hardware.. For face recognition PCA algorithm is used but it can be further improved by using LBP algorithm since it makes the model more dynamic.

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ISL Translator for Caregivers

[1]Madhumita Menon, [2]Mayur Shinde, [3]Avinash Tripathy, [4]Gaurav Tawde
[1]Student, [2]Student, [3]Student,[4]Assistant Professor
[1-4]Electronics and Telecommunications Engineering,
[1-4]Vivekanand Education Society's Institute of Engineering, Mumbai, India

Abstract : Millions of people are deaf in India, let alone the entire world. The language that deaf people use to communicate with other people is quite uncommon and thus, the deaf community faces a lot of difficulty in communicating simple messages. The idea of educating the common masses about sign language has largely been futile and costly to begin with. Furthermore, it is quite a difficult task to enforce or create the awareness to learn sign language since the chances of a common person having an interaction with a deaf person is quite low. Hence, to solve this huge gap of communication that exists, we propose a sign language to text converter using LSTM based neural network. We focused largely on creating an ISL training database and attempting to teach certain words and phrases and recorded an accuracy of 94.22%.

IndexTerms – Computer Vision, Mediapipe Holistic, Tensorflow, Keras, Long Short-Term Memory, Indian Sign Language**.**

I. INTRODUCTION

The idea of being deaf or suffering from some sort of hearing disability has been a regularly ignored issue throughout the world. The WHO definition of "deafness" refers to the complete loss of hearing ability in one or two ears. The cases included in this category will be those having hearing loss more than 90 dB in better ear (profound impairment) or total loss of hearing in both the ears. The WHO definition of "hearing impairment" refers to both complete and partial loss of ability to hear. Going by this definition, over 5% of the entire global population or roughly 350 million people suffer from some sort of hearing disability.

According to WHO statistics, every 4th person in the world would suffer from hearing loss by 2050.[7] People who have hearing loss use sign language to communicate with other people. In India alone, the WHO estimates that there are 63 million people who suffer from Significant Auditory Impairment. This places the disability at a staggering 6.3% of the Indian population. It is estimated that by 2050, every 1 in 4 children in India will suffer from some form of hearing disability. To summarise, Hearing Disability is a bigger problem than Vision Impairment.

To solve this problem, we have Sign Language which is creating a combination of signs using your hands to indicate either words or numbers and sometimes even phrases. Every country has its own version of sign language. For example, the USA has the American Sign Language or the ASL while India has the Indian Sign Language or ISL. Learning basic letters and numbers is quite easy and can be learnt within a few hours. But the problem arises in trying to gain mastery over Sign Language. To master any language, one needs to have proper knowledge of its grammar as well as the syntax and that is where the main problem arises. To learn Sign Language, you need to invest time that can vary from 6 months to even 2 years depending on what level of mastery one wishes to acquire and seeing the application of sign language to be so limited and rare, it doesn't seem to be quite beneficial for people to invest their time in. To add on to this, the learning curve of sign languages differ from country to country and since every country has its own version of it, if one is supposed to travel to a different country, their efforts of learning sign language are futile since they would have to start from scratch again.

The Indian Government did try to address the problem by introducing the The Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act 1995. The Act provides for both the preventive and promotional aspects of rehabilitation such as education, employment, vocational training, reservation, research and manpower development, creation of a barrier- free environment, unemployment allowances and special insurance schemes for disabled employees, establishment of homes for persons with severe disability, and so on. The lack of funds over the years have plagued the efforts that were so greatly cheered on by the Deaf Community of India and as we speak today, the developments have come to a standstill just due to the lack of infusion of funds.

Seeing so many problems arise when going by the traditional method, we have attempted to solve this problem using the technology available to us. Our solution revolves around a concept called the Long Short-Term Memory, RNN and Machine Learning. Our prototype has the ability to scan the sign shown by a person and convert it into text or speech within a few seconds. Our prototype can train itself over time through the data that goes through it every time it converts sign language to text. The

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Health Monitoring System Using LPC2148 Microcontroller

[1]Srushti Jagtap, [2]Aryan Gupta, [3]Esha Kadam, [4]Gaurav Tawde
[1]Student, [2]Student, [3]Student, [4]Assistant Professor
[1] Electronics and Telecommunications Engineering,
[1]Vivekanand Education Society's Institute of Technology, Chembur, Mumbai, Maharashtra, India.

Abstract: In developing countries such as India, where population and health maintenance is a major concern, new alternative solutions for health parameters are being introduced. The process of seeing a doctor for routine check-ups is a waste of time as well as a financial burden. We thereby present to you a paper on a health monitoring system that gives useful health information. It is an affordable and a portable device that measures body temperature, heart rate and blood pressure. Sensors are used to automate this tedious process. The solution will be a portable equipment that can accurately measure all of the important parameters at the same time. Temperature, blood pressure and air quality will be measured by the equipment and the results will be reflected on an LCD.

IndexTerms **- Health monitor, LM35 temperature sensor, MQ135 air quality sensor, LPC2148, Proteus Professional 8, Flash Magic.**

I. INTRODUCTION

Health care engineering applications play a pivotal role in medical advances in today's world with new inventions, innovations, and advanced levels of their implementation. Science and technology are continually evolving in today's world with new ideas, advancements and sophisticated degrees of implementation. Medical advancements rely heavily on health-care engineering applications.

Different sensors like temperature sensor, pulse rate sensor, air flow sensor, ECG sensor and glucose level detection sensor are required to monitor health of patients. As a first aid source, information presented here is used to monitor the health condition of patients at home. These days visiting hospitals and consulting doctors often are expensive and time consuming as well. For this reason, a module of the microcontroller LPC2148 is designed for monitoring a patient's health in an integrated way.

The equipment delivers a message when the parameter reaches the threshold value. When programming the LPC2148, the threshold value or cut-off is specified. The typical heart rate ranges from 20 to 120 pulses per minute, while the temperature determined by the LM35 ranges from 18 to 38 degrees Celsius. The LCD panel shows the temperature, pulse rate and air flow information.

II. RELATED WORK

Improvement of speed in data collection rate in tree based wireless sensor network: This paper, which focuses on real-time high-data-rate sensor networks, considers different levels of loads for different hops, which in turn reduces the traffic on each hop. Reducing number of time slots results in improving the data collection rate at the sink node using TDMA scheduling. [1]

An Improved Performance of Home E-health Portable Monitoring System: The methodology used here is monitoring parameters such as body temperature, heart rate, ECG, brain tumour at home before doctor's consultation. The parameters were successfully detected and information was sent through SMS to the concerned person. [2]

Patient E-health Monitoring System on ARM7-LPC2148 Microcontroller and GSM: The paper focuses on Sensing body temperature, heart rate, air flow, ECG using ARM7, microcontroller LPC2148 with GSM technology. It resulted in receiving health related data before consulting a doctor. [3]

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Smart Parking Model using Ultrasonic sensor and Arduino for a Bluetooth Controlled Car

Janhavi Bhagat[1], Shubham Gupta[2], Gaurav Tawde[3]

[1]Department of EXTC, Vivekanand Education Society's Institute of Technology, Maharashtra, India
[2]Department of EXTC, Vivekanand Education Society's Institute of Technology, Maharashtra, India
[3]Asst. Prof ,Department of EXTC, Vivekanand Education Society's Institute of Technology, Maharashtra, India

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Abstract **-** Self-Driving car automation has now been realized as a true potential, thanks to the efforts of many companies, and they will continue to evolve. But with these fast-paced advancements in our society, one cannot compromise on the safety of humans, as well as the risks of accidents. Many automobile industries in the world use a very basic visual system for parking, which is not able to deliver the safety of the car. That's where our concept, simple yet inevitable, comes into the picture. To demonstrate our concept, we have implemented a small-scale prototype, built on the foundation of object proximity detection using HC-SR04 Ultrasonic sensor, that could alert the operator of the prototype about certain crucial thresholds it is about to cross, and could also result in complete shut down if alerts are neglected. Just like our prototype, the automobiles when the mechanism enabled, would function the same way, hence attempting to reduce the accidents to a greater extent

Key Words: automation, automobile, proximity detection, Ultrasonic Sensor, threshold, Complete shut down, Prototype

1.INTRODUCTION

In this evolving 21st century, we have witnessed some of the milestones that budding entrepreneurs have achieved, be it in the field of science, technology, or mankind. But these often get interrupted by some of the unknowing and unwelcomed challenges, one just simply cannot ignore. One such challenge is the highlight of this paper and our attempt to overcome it, which is accidents. It's a very strange subject, so common, yet so disastrous which has the potential to bring years of hard work to ruins

Now the question is, what could be the major reasons for it. Well, it's a known fact that most of us, while performing any task, tend to make mistakes, the major reason being lack of attention. Parking is one of the easiest yet crucial tasks to perform and the slightest miss of the driver's attention could lead to catastrophe. Have you ever come across a situation where you simply cannot have your dependency on parking cameras and have you wished to get a hard and fast solution to this problem?

2. LITERATURE SURVEY

2.1 Parking Space Detection Using Ultrasonic Sensor in Parking Assistance System [1] this paper gives a brief overview of how ultrasonic sensors can be used for measuring the space available in a parking lot.

2.2 Smart Parking System (SPS) Architecture Using Ultrasonic Detector [2]. The concept of using ultrasonic sensors to determine if the car has been parked correctly was introduced by this paper way back in 2012, but modification of that concept for collision avoidance and automatic power cutoff if dangerous threshold is crossed is what our prototype advocates.

3. MATERIALS

Before starting with any implementation, a prototype serves as a first step analysis for any innovation and clears the haze between the path to completion. We have also implemented this principle, basically, visualize the idea and get concurrent results in real life. The components that our prototype includes are:

3.1 Arduino UNO

It is the most recommended board for every electronics enthusiast as it enables us to create basic circuits as well as large-scale, real-world applications-based projects. Arduino is an open-source platform used for constructing and programming[3]. It is a microcontroller-based device that can be used to regulate the working of various other components. These controlling and regulation operations take place through the various codes that we upload into it. Now a common confusion about Arduino boards is that we need assembly language to program them but all we need is some basic knowledge about C programming. For writing and uploading these various codes we require an IDE (integrated development environment). Arduino even has this covered for us, a special and open-source software called the Arduino IDE is available over the internet and any person having a personal computer can download it.

Coming back to the working of the Arduino board, this board has ATmega328P 14 pin microcontroller IC as its primary

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Driving Assistant with Crash Detection and Alert System using ML and IOT

Neeta Chavan[1], Varun Vicharay[2], Omkar Salunkhe[3], Siddhant Sawant[4], Ayush Sachdev[5]

[1]*Assistant Professor, Dept. of Electronics and Telecommunication Engineering, Vivekanand Education Society's Institute of Technology, Maharashtra, India*

[2-5]*Student, Dept. of Electronics and Telecommunication Engineering, Vivekanand Education Society's Institute of Technology, Maharashtra, India*

***Abstract*— In today's world, almost everything we do has been simplified by automated tasks. In an attempt to focus on the road while driving, drivers often miss out on signs on the side of the road, which could be dangerous for them and for the people around them. 85 percent of road accidents occur due to the drivers not being able to control or stop the car on time. So to prevent this we have come up with an idea of car crash prevention and detection and also detecting the road signs simultaneously. So, In our project, Traffic Sign Detection and recognition(TSDR) plays an important role here by detecting and recognizing a sign, thus notifying the driver through voice of any upcoming signs. TSDR application not only ensures road safety, but also allows the driver to be a little more at ease while driving on tricky roads. In car crash prevention and detection on normal roads we are going to implement a cheaper and easier way to stop accidents. For crash prevention we use ultrasonic sensors to detect and calculate the distance between cars to alert the driver using the LED and buzzer installed. Most of the time it has been seen that the injured person did not die from the injury suffered due to the accident but due to the late response from the emergency department. So, in crash detection we use GPS and GSM to locate the place of accident and alert the registered number about the accident.**

Keywords*— *Crash Detection, Crash Prevention, Traffic Sign Detection and Recognition, Convolutional Neural Network, Ultrasonic Sensor, GPS, GSM, Accelerometer

I. INTRODUCTION

In the twentieth century, the number of vehicles exponentially increased due to growth in the automobile industry. As the number of vehicles increases, the number of accidents also increases. The reasons for most of the road accidents are heterogeneous traffic and lack of traffic separation. According to the World Health Organization(WHO), India is the leading country in road accident deaths. In India, 13 million People died in road accidents in the year of 2014-15. In today's world, almost everything we do has been simplified by automated tasks. So we have come up with an idea of car crash prevention and detection at the same time and also detecting the road signs simultaneously.

1. *Bluetooth car*

Smartphones have quite changed the traditional ways of human to machine interaction. Smartphones are now a vital part of a person's life. Android is a software platform for mobile devices that includes an operating system, middleware and key applications. Android is a safe and secure operating system. Bluetooth is used for its various advantages over other wireless technologies. Hence, we can say that Android smartphones will serve a great benefit for industrial, commercial and other general-purpose applications. The system hardware consists of a controller equipped with a Bluetooth module. It'll be connected to the motors and other alternative components of the car. The DC motors are widely used for providing variable speed drive system in industrial applications resembling automation, electrical traction, military instrumentality, fixed disk drives, thanks to their high potency, noise-free operation, compactness, dependability and low maintenance and cost. When the app is turned on and is connected with the current system via Bluetooth, one will operate the car by giving wireless commands from the app using the functions already programmed in the app. The vehicle will move all four told directions: left, right, front and back.

2. *Crash Prevention and Crash Detection*

Every day a lot of road accidents are reported. Sometimes an accident is so severe that the victim could not sustain it. However, most of the time it has been seen that the injured person did not die from the injury suffered due to the accident but due to the late response from the emergency department. This incident happens, because the information of an accident could not reach the rescue department instantly. As a result of this delay the victim could not sustain and lost his life. So there must be an automatic system in every car that not only detects a road accident efficiently but also notify it to the emergency contact very instantly.

Accident prevention using ultrasonic sensor is a novel idea. An ultrasonic sensor is used to measure the distance. It transmits sound wave and wait for the wave to come back after colliding with an obstacle. The time taken by the wave to come back, determines the distance between the sensor and the obstacle. Accelerometer detects the sudden change in the axes of the vehicle for the detection of an accident. When an accident occurs, it is detected with the help of a sensor which activates the device, the sensor gives its output to the GSM.The alert message is sent via the GSM module with the location of the accident. Location of accident is sent in the form of Google Map link, derived from the latitude and longitude from the GPS module. The system implemented by us aims at automatically detecting an accident and alerting the emergency contacts about the exact location of the accident. This device can detect accidents and sends an alert message to the contacts in

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A Review Study on Green Corridor Implementation and Real-Time Adaptive Traffic Regulation using Machine Learning and Image Processing

Aarya Naik[1], Rohan Khare[2], Anusha Srivastava[3], Shikhar Raj[4], Shobhit Khandare[5]

[1-4]Student, Dept. of Electronics and Telecommunication Engineering, Vivekanand Education Society's Institute of Technology, Maharashtra, India
[5]Assistant Professor, Dept. of Electronics and Telecommunication Engineering, Vivekanand Education Society's Institute of Technology, Maharashtra, India

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Abstract - *Traditional traffic light control systems rely on fixed time intervals for the trafficlights. These traditional fixed traffic light controllers have limitations and are less efficient because they use hardware that functions according to a system that lacks the flexibility of real-time modification and adaptation. As a result of the fixed time intervals between green and red signals, there is excess and unnecessary waiting time on roads, and vehicles use more fuel the purpose of this project is to create a traffic system which is adaptive to the present traffic scenario in a lane. Usually, we have fixed average waiting time for all lanes. This project suggests changing the average waiting time by monitoring the number of vehicles in a lane. Additionally, a predictive model will be instituted which will take decisions based on the previous patterns of traffic, mainly at routinely congested intersections. Moreover, emergency vehicles will be identified and a convenient route will be deployed for them.*

***Key Words*: Traffic congestion, real-time object detection, adaptive traffic regulation, smart green corridor formation, predictive analysis, vehicle density**

1.INTRODUCTION

India takes pride in being the second-biggest street organization on earth. The complete stretch of the Indian street systems is an astounding 5.4 million km! Traffic Signal lights indeed play an important role in controlling and regulating traffic on a daily basis. Presently, the traditional types of traffic lights used, such as the timed traffic lights wherein the timing for each signal is pre-determined is based on the previous study of traffic density in a particular area. Heavy traffic congestion has been undeniably increasing in major cities and is majorly been seen at the main junctions, especially during peak hours. Thus, it shapes a challenge for the Indian Government to give impeccable streets at each progression.

1.1 Major Causes of Traffic Congestion

A)Traditional Fixed Signal Timers:

The static timer approach has the disadvantage that even when there is less traffic on a road, a green signal is still assigned to the road until its timer value falls to 0, while traffic on another road, which has more traffic, faces a red signal at that time, causing even more congestion and time loss to commutators. The majority of current systems are not automated.

B)Routinely congested junctions:

The road junctions where there is traffic congestion during peak hours add up to the existing problems. These intersections are usually those near commercial complexes, the neighbourhoods of corporate office areas wherein the traffic aggravates during the office leaving or starting times and thus create a commotion on the roads. If the traffic patterns at these sections of the road traffic network are properly studied then smart predictions can be made, for dexterously handling the traffic in real-time.

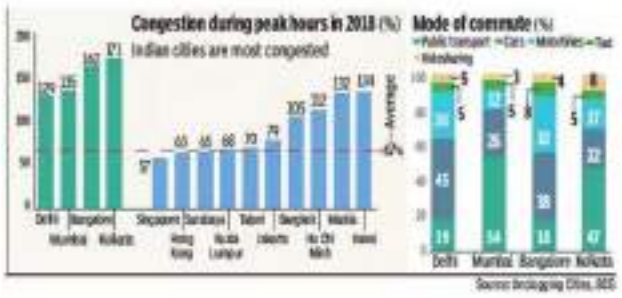

Fig-1: Congestion during peak hours in different Indian cities

[Source: Unclogging cities, BCG/Times Of India,

<https://timesofindia.indiatimes.com/india/traffic-congestion-costs-four-major-indian-cities-rs-1-5-lakh-crore-a-year/articleshow/63918040.cms>]

C) Conventional Method of Handling Emergency Vehicles:

The traditional method of transporting organs requires policemen aiding an ambulance. The ambulance then move around the traffic wherein a specific traffic lane is chosen and all signals on the route are changed to become green.

Cardiac Arrhythmia Detection using Deep Learning

Monali Choudhary
Assistant Professor, Electronics and Telecommunication
VESIT, Mumbai University
Mumbai, India
monali.chaudhary@ves.ac.in

Anisha Patnaik
Student, Electronics and Telecommunication Dept.,
VESIT, Mumbai University
Mumbai, India
2017.anisha.patnaik@ves.ac.in

Dipali Phatak
Student, Electronics and Telecommunication Dept.,
VESIT, Mumbai University
Mumbai, India
2017.dipali.phatak@ves.ac.in

Dhanashri Deokar
Student, Electronics and Telecommunication Dept.,
VESIT, Mumbai University
Mumbai, India
2017.dhanashri.deokar@ves.ac.in

Dilip Hingorani
Student, Electronics and Telecommunication Dept.,
VESIT, Mumbai University
Mumbai, India
2017.dilip.hingorani@ves.ac.in

***Abstract*— An electrocardiogram (ECG) is a significant indicative device for the appraisal of cardiovascular arrhythmias in clinical daily practice. In this study, a profound learning system beforehand prepared on an overall picture informational index is moved to do programmed ECG arrhythmia diagnostics by arranging patient ECG's into comparing heart conditions. Arrhythmias are more normal in individuals who are 60 years and more established. A convolutional neural organization (in particular AlexNet) is utilized for feature extraction and the removed highlights are taken care of into a basic back spread neural organization to complete the last classification. Fundamental focal point of this investigation is to execute a basic, solid and effectively pertinent learning method for the grouping of the chosen three diverse heart conditions (heart arrhythmia, Congestive Heart Failure, Normal sinus rhythm) so that diagnosis can be done for the same. The results exhibited that the moved profound learning highlight extractor fell with a traditional back proliferation neural organization had the option to get exceptionally elite rates. A comparison study was done where validation accuracy is 100% in GoogleNet, 94% in Squeezenet while it was near 97.33% in AlexNet.**

Keywords*— *ECG classification; continuous wavelet transform; transfer learning arrhythmia; Convolutional neural networks; AlexNet

1. INTRODUCTION

The Electrocardiogram (ECG) is an established technique in cardiology for the analysis of cardiac condition of the patients. In its basic definition, ECG is the electrical representation of the contractile activity of the heart, and can be recorded fairly easily by using surface electrodes on the limbs or chest of the patient. The ECG is one of the most recognized and used biomedical signals in the field of medicine. The rhythm of the heart in terms of beats per minute (bpm) can be easily calculated by counting the R peaks of the ECG wave during one minute of recording [11]. More importantly, rhythm and the morphology of the ECG waveform is altered by cardiovascular diseases and abnormalities such as the cardiac arrhythmias, whose automatic detection and classification is the main focus of this paper. In current medical routine, careful study of the ECG by expert cardiologists is necessary for the diagnosis of life threatening cardiac arrhythmias. However, automatic classification of cardiac arrhythmias can both provide objective diagnostic results and save time for the cardiologists. These advantages have provided considerable commercial interests in the computer aided classification and diagnosis of the ECG signals in hospital and health communities [6].

The interpretation of the ECG signal is an application of pattern recognition. The purpose of pattern recognition is to automatically categorize a system into one of a number of different classes. An expert cardiologist can easily diagnose various cardiac arrhythmias just by looking at the ECG waveforms printout. In some specific cases, sophisticated ECG analysers can achieve a higher degree of accuracy than that of a cardiologist, but at present there remains a group of ECG waveforms that are difficult to identify by computers.[2] However, the use of computerized analysis of easily obtainable ECG waveforms can considerably reduce the cardiologist's workload. Some analysers can assist the cardiologist by producing a ready diagnosis while others can provide a limited number of parameters by which the

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SMART SHOPPING CART WITH SMART BILLING USING NODE MCU AND RFID

[1]Prof.Rasika Naik and [2]Kumar Bajaj, [2]Omkar Bodake, [2]Shrirang Rathi, [2]Nikhil Tekchandani
[1]Assistant Professor and [2]Student
[1&2]Vivekanand Education Society's Institute of Technology
Chembur, Mumbai, India

Abstract: A creative item with societal acknowledgment is the one that guides the solace, accommodation and effectiveness in regular daily existence. Acquiring and shopping at enormous shopping centers is winding up day by day action in metro urban areas. We can see huge surge at these shopping centers on seastas and ends of the week. Individuals buy distinctive things and place them in trolley. After fruition of buys, one needs to go to charging counter for installments. At charging counter, the clerk set up the bill utilizing standardized identification per user which is extremely tedious process and results in long line at charging counter. In this paper, we talk about a item "Smart Shopping Cart" being produced to help a man in regular shopping as far as diminished time spent while buying. The primary target of proposed framework is to give an innovation situated, minimal effort, effectively adaptable, and rough framework for helping shopping face to face. Now a days shopping at the mall have become a daily routine in big cities. People buy a different product and deposit them in the trolley. After total purchase one need to go to billing counter for the payment which is very time consuming and at times very frustrating. So, our main objective for designing this prototype is to reduce the human efforts, eliminate the queue and also eliminate the time taken during billing. Our prototype consists of components such as RFID tags which is used for identification of the product, RFID reader which is used for scanning of product when put in the trolley and it display in the LCD Display. So, at the billing counter the data is sent into the server.

Keywords: RFID; Node MCU; Lcd.

I. Introduction

Nowadays a number of shopping mall has increased around the world. Sometimes customers have problem regarding the incomplete information about the product on sale and waste of time at billing counters. In existing system, shopping malls are using barcode standards. This technique has replaced the previous manual system however has limitations. Barcode scanner requires a manual tracking, whereas RFID can be automatically tracked. Barcodes additionally need a considerable quantity of manpower and human effort. Barcodes will get broken simply. Not solely this, The Barcode system needs the client to the square in long queues so as to induce their product scanned and their bills generated. This method will persuade be wearisome and it additionally consumes heaps of your time of the shoppers, thereby adding to their frustration.

With such a big amount of disadvantages there too, the Barcode system remains in use. It is obvious that there is a desire to bring on a better and a lot of economical systems. The advent of newer techniques like RFID technology and wireless networks have makes the process of shopping at a faster pace, making it more efficient as well as making it more transparent. Smart shopping cart using nodemcu and RFID may be a new advancement in the field of Supply Chain Optimization. This method shall not only to skip the long queues in supermarkets and malls but also save plenty of your time for the purchasers. The system also helps the customer in saving money. The system uses RFID tags instead of Barcode tags which are much more efficient and powerful when it involves scanning of products. The device developed using Arduino and RFID shall be installed on the handbasket or trolley. The customer shall scan their products by themselves and the calculation of the total amount happens on the cart and displays in the app itself. This shall also give a plan to the shoppers on what proportion their particular shopping session shall cost them.

Hence, time management and money management shall be taken care of. The paper is ordered into five segments. the primary segment gives a fast introduction to the system. The second segment is about shopping systems and therefore the study of related existing systems. The third segment details the implementation of the system. The fourth segment displays the results obtained using the node MCU and RFID- containing device. Finally, the conclusion provides the summary and future scope of the system.

II. Literature Survey

Priyanka Sahare et al.[1] implemented an IOT (Internet of Things) based automated trolley system . Framework is utilized to ease lines in shopping centre by utilizing RFID module. TheRFID reader will peruse the RFID Tag set on the item when the item falls in the trolley. In theevent that, the client needs to expel any item then he should expel that item from the trolley. The LCD will show the subtleties of the expelled item like name, cost and the absolute bill and with the help of Xampp server the bill will be send to the cashier.

P.T. Sivagurunathan et al.[2] describes the implementation of a Smart Shopping Cart using ZigBee networks. The reliable and cost-efficient system design also ensures detection of deception. Thus, the smart system attracts both the buyers and sellers and ZigBee acts like Xampp server but is more reliable.

Tharindu Athauda et al. [3] designs a shopping cart by taking inspiration from a shopping basket which is under development by Panasonic, in which each item is tagged using UHF RFID [range: 916-924 MHz] Two Circular Polarized (CP) Patch antennae used to read RFID tags in different orientations. They also include a factor for measuring effectiveness of function called as RSSI (Return Signal Strength Indicator) RSSI measurement plays a significant role in this smart trolley application as RSSI measurement indicates the directionalgains that are needed

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Electronic System for Optical Signal Processing and Amplification

Kadambari Sharma[1], J.M.Nair, P.P.Vaidya

Research Scholar, Dept. of Electronics, VESIT, Chembur, Mumbai, India[1]

ABSTRACT: High frequency signals have wide range varying from 3MHz to 300GHz. Fibre optic Sensors (FOS) make use of such high frequency signals for their operation. The optical signal is converted to analog voltage signal at the receptor end using photodiode in transimpedance stage. This voltage signal is a low magnitude, high frequency signal which further needs processing before digitization. The first stage of processing is amplification but proper attention needs to be given on circuit design, board layout before obtaining the final result as these signals are prone to noise pick-ups and may not give the desired output. Points that help in preparing a good board layout for such circuits have been described in this paper. The circuit has been designed and simulated first to check its functioning. PCB layout was prepared following the criteria and was fabricated. The hardware results were obtained and are reported in the paper. This amplifier circuit if properly designed can be utilized for FOS and is very economical.

KEYWORDS: Optical Signals, Fibre Optic Sensors, Amplifiers, Noise.

I.INTRODUCTION

According to the International Telecommunication Union (ITU) the various operating frequencies are limited in bands starting from lowest frequency band to the highest operating band. Each of these frequency bands have their own significance and applications.

The high frequency signal bands ranging from 3MHz to 300GHz are used in various communication systems for data transmission, broad band reception, radar communication. The ultra sound, digital X-rays, digital spectrum analyzers, digital oscilloscopes, etc. also utilize high frequency [1].

High frequency offers wide bandwidth which is one of the major requirements of the optical signals. These signals are being utilized in the field of Instrumentation for sensing various physical parameters like temperature, pressure, acoustics etc. These sensors are known as fibre optic sensors(FOS).

II.FIBRE OPTIC SENSORS

The basic block diagram of FOS Fig1. system includes the light source which may be LASERs, LASER diodes or other light sources. This light passes through the fibre and any variation in the physical parameter to be measured causes the property of light to change which could be in terms of changes in intensity, wavelength, phase, etc. [2]. This light then falls on the detector circuit which is a photodiode followed by certain signal processing. The analog signal is then digitized for further digital signal processing required to obtain the correct information about the physical parameter change.

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Application of Kalman filtering technique for evaluation of neutron cross section data of ^{100}Mo (n, 2n) ^{99}Mo reaction

Sangeetha Prasanna Ram [a], Jayalekshmi Nair [a], Saraswatula Venkata Suryanarayana [b], S. Ganesan [c]

[a] V.E.S. Institute of Technology, Department of Instrumentation, Mumbai 400074, India

[b] Former Scientist, Nuclear Physics Division, Bhabha Atomic Research Centre, Mumbai 400085, India

[c] Former Raja Ramanna Fellow, Reactor Design and Development Group, Reactor Physics Design Division, Bhabha Atomic Research Centre, Mumbai 400085, India

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Abstract

In this paper, for the first time, evaluation of neutron cross section data of ^{100}Mo (n, 2n) ^{99}Mo reaction is performed using experimental data available in IAEA-EXFOR database library and nuclear model-based data generated using Talys 1.9 code by applying a novel method of combining Kalman filtering technique with Machine Learning (ML) regression algorithms. The neutron cross section data evaluation has been performed after a detailed study of all the EXFOR papers corresponding to ^{100}Mo (n, 2n) ^{99}Mo reaction and nuclear model based cross section generation by executing T6 random input files using Talys 1.9 code. The evaluated curve generated is then compared with the existing evaluated curve of ^{100}Mo (n, 2n) ^{99}Mo reaction from nuclear data libraries such as ENDF/B-VIII.0, JEFF-3.3, JENDL-4.0, CENDL-3.1 and TENDL 2017 and found to be in good agreement with them. Chi-square and generalized Chi-square tests were employed to assess the proposed evaluation techniques and found them to be good in estimating evaluated mean values and evaluated uncertainties of cross section.

Introduction

Nuclear datacomprises of measured data generated from nuclear physics experiments and theoretical data produced using nuclear models. It helps in understanding the nature of various physical interactions occurring in the nuclei of atoms, by providing the fundamental input to many models and simulations.

Nuclear data, especially neutron nuclear data are used extensively in nuclear science and technology. In any application of nuclear data there is a genuine interest to use the best information that is available and in a more convenient form. However, the output of the different nuclear physics measurements usually may not agree with one another mainly because of the differences in the experimental facility and therefore the need of compilation of existing nuclear data, understanding of uncertainties in measurements and bringing them to a common standard is a necessity. This is achieved using nuclear data evaluation where the nuclear data are evaluated to the so called “best” or “recommended” values. Nuclear theory or model calculations play important role in this process for obtaining nuclear data wherever experimental information is not available by means of interpolation and extrapolation techniques.

Nuclear data finds use in many applications such as thermal and fast reactor design, shielding problems, astrophysics, medical physics, radiotherapy and radioactive isotope production. Nuclear data evaluation is important from the aspect of nuclear applications as

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Study of UI/UX Design: Design Thinking

Pooja Gupta[1], Venkatesh Nadar[2], Prof. Ameya Parkar[3]

[1,2]Student, Department of MCA, Vivekanand Education Society's Institute of Technology
[3]Assistant Professor, Department of MCA, Vivekanand Education Society's Institute of Technology

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ABSTRACT

Design thinking is one of the most used words in User Interface(UI)/User Experience(UX) Design. It is about solving a problem in a creative way or we can say it as bringing up a solution in a creative manner. Innovation is emphasized through the use of design thinking, an ideology and a process. Innovative problem solving can lead to differentiation and competitive advantage when approached from a user-centric perspective. In this research paper you will find about how design thinking is related to UI/UX design.

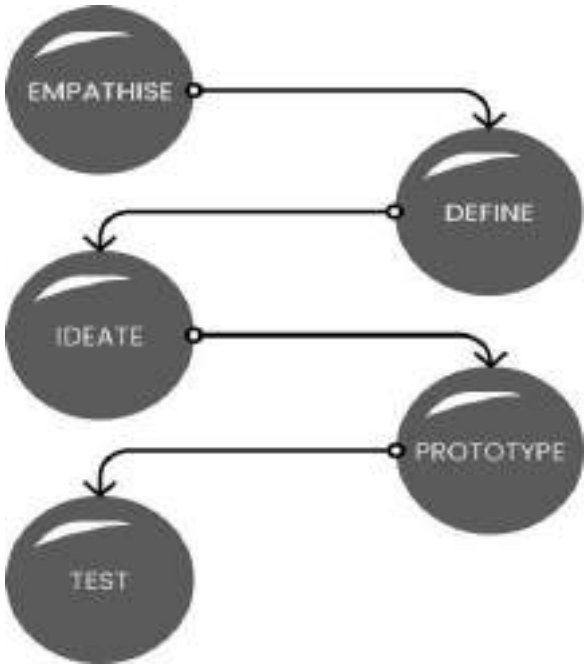
Keywords: **User Experience Design, Creative and Innovative Thinking, User Interface Design, etc.**

INTRODUCTION

Design thinking is an iterative method that helps identify and resolve user problems or redefine them using alternative strategies and solutions that are not immediately apparent at the beginning of the process. In addition to being exceptionally effective at solving ill-defined or undefined problems, design thinking also emphasizes process. Design thinking isn't an artifact that humans made, rather it's a process. An overview of design thinking describes it as an analytical and creative process that involves opportunities to experiment, design prototypes, gather feedback, and rethink. Design thinking has been identified from the literature as having several characteristics (e.g. creativity, visualization) that make a good designer. In order to solve complex problems, design thinking is used.[1]

Definition: Researchers have identified several characteristics associated with design thinking (including creativity and visualization) that are essential to producing effective designs. Discipline and systematic thinking are characteristics of design thinking.

Steps in Design Thinking



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Human Computer Interaction –Child-Computer Interaction in times of a pandemic

Aditya Tare[1], Sushil Saindane[2], Ameya Parkar[3]

[1,2]Student, Department of MCA, Vivekanand Education Society's Institute of Technology, Maharashtra
[3] Assistant Professor, Department of MCA, Vivekanand Education Society's Institute of Technology, Maharashtra, India

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ABSTRACT

Human-Computer Interaction also known as (HCI) is a multidisciplinary field of study focusing on the look of engineering and particularly the interaction between humans (the users) and computers. It is initially concerned with Computers and Users. The desktop applications, internet browsers, computers make a use of widespread graphical user interfaces of today. This article will mainly focus on the effect of pandemic on the children and how a proper superintendence is necessary to govern the current situation of children. HCI can help improve the situation and here we will discuss the issues faced by children during the pandemic and what necessary steps need to be carried out in order to help improve the current situation as well as the future of the individual and the nation.

Keywords: Human Computer Interaction (HCI), HCI, COVID-19, Lockdown, Teachers, Parents, Technology, Telehealth, Mental Health, Human behaviour

INTRODUCTION

It's all taken an unthinkable toll on children & young people— a social, emotional and academic ordeal so extreme that some advocates and experts warn its repercussions could rival those of a hurricane or other disaster. The mental as well as physical health (to an extent) of the youth is deteriorating due to constant stress and anxiety. This has led to short term as well as long term psychosocial as well as mental health issues in children. We as a species were not evolved to be living the immobile way. That in turn leads to psychological imbalances. Studies carried out during the pandemic suggest that although some families are coping well, others are facing financial adversity, struggling to home school, and risk experiencing vicious cycles of increasing distress. The pandemic has led to a quick demand for efforts to use new and upcoming technologies to manage the damage from COVID-19. The pandemic has not just raised opportunities to advance technology-based solutions but also provided an opportunity to study the research and practice of the technology.[1].

METHODOLOGY

We collected articles on mental health of children online during the COVID-19 pandemic. We selected cases and subjectively organized them. The main area of focus is on children, school and college going, children and adolescents with mental health challenges, economically underprivileged children, impact due to quarantine and separation from parents. We decided to target this area as the younger generation is the one witnessing tough situations in the times when they were supposed to explore and develop their interests but are unable to do so properly. This is also a crucial, sensitive age where children are molded & nurtured towards what they observe and reciprocate on.

Predictions

It has been predicted that this pandemic may have long term adverse effects on adolescents and children as compared to adults. The nature and extent of impact on this age group depend on many vulnerability factors such as the developmental age, education, having special needs, pre-existing mental health condition, being economically underprivileged & child/ parent being quarantined due to covid-19 or fear of covid-19 infection.

Pandemic & children

Globally, the pre-lockdown learning of children involved one-to-one interaction with their friends,

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Data warehouse usage and analysis

Samiksha Sampat Dhavale[1], Prof. Ameya Parkar[2]

[1]Research Scholar, MCA, VESIT College, Chembur
[2]VESIT College, Chembur

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ABSTRACT

A data warehouse is a type of data management system that enables and supports business intelligence (BI) activities, particularly analytics. It is a growing sector with a plethora of intriguing research questions.Data warehouse is a data-driven decision support systems can meet the need for information extraction from multiple subject areas. Data warehouses standardize data across an organization to provide a unified picture of data.Essentially, data warehousing is the process of gathering and storing historical data in a single repository, referred to as a data warehouse, and then using that warehouse to provide analyticalconclusions.In this paper, we discuss what a data warehouse is, its architecture, models, tools, and approaches, as well as overall analysis of data warehouse including the challenges and issues that must be addressed in order to complete a successful data warehouse project.

INTRODUCTION

A data warehouse is a type of central storage facility that takes data from a variety of sources, organizes it for effective storage and retrieval, and distributes it to a variety of audiences, usually to support decision-making and business intelligence.Data warehouses are used to create trending reports for senior management reporting, such as annual and quarterly comparisons, as well as for decision making.Data is taken from business-process-supporting applications on a regular basis and copied onto specialized computers. It can then be verified, reformatted, reorganized, summarized, restructured, and augmented with information from other sources. Through ad hoc reporting, analysis, and presentation, the resulting data warehouse becomes the primary source of information for report generation, analysis, and presentation.

A data warehouse is a relational database that is specifically built for query and analysis rather than transaction processing.It allows an organization to gather data from multiple sources by separating analytical and transaction workloads. A data warehouse contains an extraction, transportation, transformation, and loading (ETL) solution, an online analytical processing (OLAP) engine, client analysis tools, and other applications that manage the process of gathering data and delivering it to business users, in addition to a relational database.Some of the features of a data warehouse that distinguish it from other repository systems,as the Transaction System and File System are Subject Oriented, Integrated, Nonvolatile, and Time Variant.

The traditional operational databases were designed to aid in the organization's clerical operations, whereas data warehouse and OLAP technologies are designed to aid decision makers (e.g., managers, analysts, etc.). As a result, new difficulties in the fields of data warehousing and OLAP emerge on a daily basis to meet the needs of higher-level experts.

The topic of data warehousing has seen a lot of study and improvements during the previous two decades. It was a long road from an offline operational database to an integrated data warehouse, but we still have a long way to go.

Benefits of a Data Warehouse:
Data warehouses provide organizations with the overarching and unique benefit of allowing them to analyses large amounts of variant data and extract significant value from it, as well as keep a historical record. Data warehouses can provide this overarching benefit due to four distinct characteristics (described by computer scientist William Inmon, known as the "Father of the Data Warehouse"). Data warehouses, according to this definition, are

Subject-oriented. They can conduct data analysis on a specific subject or functional area (such as sales).

Integrated. Data warehouses ensure consistency among various types of data from disparate sources.

Nonvolatile. Once in a data warehouse, data is stable and does not change.

Android Malware Detection

Mrs. Indira Bhattachariya[1], Mr. Jinang Vora[2], Ms. Manasi Patil[3] , Mr. Priyesh Sharma[4]

[1]Assistant Professor, VESIT, Mumbai University, Mumbai, Maharashtra, India.
[2]MCA Final Year Student, VESIT, Mumbai University, Mumbai, Maharashtra, India,
[3]MCA Final Year Student, VESIT, Mumbai University, Mumbai, Maharashtra, India,
[4]MCA Final Year Student, VESIT, Mumbai University, Mumbai, Maharashtra, India.

Abstract -*The Android operating system is now the most common, which use the operating system of mobile devices, tablets, and smart TV 72.83% of the world market. Therefore, it is widely used by the Android operating system, to attract the attention of those who like the wrong intention, and those who want to violate the privacy of the user who is the creator of everything. Therefore, there is a need to improve existing malware detection, and every new version of Android phone should try, this is the current latest Android version-android 11(Red Velvet Cake) and the beta version of Android OS-12. Automated detection methods, such as antivirus software, are essential to protect Android-enabled devices on the market. Android 11 and limited file system access via the mobile app and more, has long been trying to limit malware and measures. Machine learning is considered algorithms (Random Forest, Support Vector Machine, Gaussian Naive Bayes, and K-Means), and arbitrary forests are used very, very efficiently.*

Key Words: **Machine learning, Malware, Random Forest.**

1.INTRODUCTION

An Android app is always the main competitor to the mobile apps available on the market. No later than June 2021, another 2,714,499 pieces of software will be added to the Google Play store. No later than April 2021, Android will occupy 72.83% of the global market. Because of the constant popularity of Android has become the most targeted operating system, it would seem. The number of Android-enabled devices has increased over the past few years, partly due to increased usage in the company and the financial services industry. The program often presents the process of processing confidential financial and personal information as part of mobile banking, social media, and communication.

Norton Anti-virus (av) is a malicious "program" that is designed specifically to gain access to a computer or in any other way cause it pain, usually without the owner's knowledge. After that, Norton describes various types of malware, such as spyware, Trojans, viruses, worms, Trojans, and adware. And in 2021, according to Kaspersky Lab, the Security Network, which reports that 1,451,660 mobile phone installation packages, 25,314 packages related to mobile banking Trojans, and 3,596 packages for mobile ransomware Trojans will be found.

Trojan checks the presence of it that came in.tencent. mcg package of the device, i.e. the mobile version of PUBG.

This setup drives the need to improve safety and reliability, a large part of the market. This study explores whether it may be that malware can be found by analyzing permissions associated with an Android phone, banner ads for adding previous experience on small test datasets, and similar machine learning algorithms (ML).

2.BACKGROUND

The influx of mobile devices and applications suppresses the need for mobile security research. Android apps are still distributed in the Android Package Kit (APK) format, based on traditional ZIP compression. Reinstalling is a major threat because malicious engineering with APK files is easy when provided with open-source tools that are readily available. In the traditional attack model, re- while dynamic methods require a specific type of sandbox or simulation environment to perform a data collection application. Heuristic methods apply legal-based infiltration to malicious or malicious applications.

2.1Android Architecture

The Android software stack, provides a layered way to support Android apps. The Android app is compiled from source code, data files, and utility files using the Android Software Development Kit into an APK, an Android package, which is a file archive with an .apk . The APK file contains all the necessary content for the Android app and is a file used for the app installation. All components of the application must be listed in a single AndroidManifest.xml file that resides in the APK archive.

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Comparing the performance of a business process: using Excel & Python

Pranav Chaudhari, Sunny Nahar

Department of Masters of computer Applications,
Vivekanand Education Society's Institute of Technology, Chembur, Mumbai 400074, India

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Abstract - *In recent times due to technological advances the need to improve the existing system of processes is greater than ever before. Also, with data-driven decision-making processes that come into play the need to integrate that with the process helps business and management in making the right decision that benefits everyone. This paper focuses on automating existing processes using Python as a translation method, understanding data thus helping decision-driven Data by highlighting issues and providing details in data analysis.*

Key Words*: *Data Analysis, Business Analysis, Automation, Python, Big Data, Machine Learning, Artificial Intelligence

1. INTRODUCTION

1.1 Data Analysis

Data analysis is the process of evaluating, cleaning, modifying, and modeling data for the purpose of obtaining useful information, informing conclusions, and supporting decision-making. Data analysis has many features and methods, which include different strategies under different terms, and are used in different domains of business, science, and social sciences. In today's business world, data analysis plays a key role in making the decisions more scientific and helps businesses more efficient. [4]

1.2 Business Analysis

Business Statistics (BA) refers to the skills, expertise, and processes of repeated evaluation and past business performance research to gain an understanding and advance business planning. Business statistics focus on developing new data and understanding business performance based on data and statistical methods. In contrast, business acumen is traditionally focused on using a consistent set of metrics to both measure previous performance and direct business planning. In other words, business intelligence focuses on definition, whereas business analysis focuses on physician prediction and writing. [3]

1.3 Python for Automation

The most important skills for business analysts in consultation with executives, bank investments, and many other analytics activities (usually at least traditionally) were Excel and PowerPoint. many have become very visible in recent years. The data and its complexity are growing exponentially, requiring advanced data processing tools such as programming languages. In this article, the emphasis is on Python and how it works, and why we believe it is an important skill right now for the future. [1][2]

2. LITERATURE SURVEY

Nikita Khudov [1] describes few characteristics why one should opt for automation using python for performing the business analysis. The idea is to demonstrate certain metrics that gives python the upper hand for better decision making and time saving techniques.

sayoneadmin [2] describes the business analytics trends that are go hand in hand with python to give us the best fit to help us analyze the data and make decisions out of it.

Business analysis [3] is the expert advice of identifying business needs and finding solutions to business problems. Solutions often involve part of software development, but may also include process development, organizational change or strategic planning and policy development.

Data analysis [4] has many features and methods, which include different strategies under different names, and are used in different domains of business. There are various processes within it ranging from data requirements, to its cleaning, testing and modeling.

3. PROPOSED SYSTEM

The proposed system will help users to upload, download data using python as a tool, analyzing data to provide information that can help the business team make decisions to benefit the most from it. We can also store data in different repositories and create different dashboards to present data in a more informative way. Ultimately it will help save a lot of time, effort and risk of human error in order to provide solutions.

Fig -1: Manual Process

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A study on Digitization of Ration Card

Devang V Chandivade[1], Dhanamma Jagli[2]

[1,2] MCA, VESIT, Mumbai University, India

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ABSTRACT

An economical, correct and automatic technique of lamp oil distribution is RFID (Radio frequency identification) primarily based technology that is associate innovative approach in PDS (Public Distribution system). Public distribution system is additionally named as assignation distribution system that is one in all the wide disputable problems that involve malpractices. The present ration distribution system has high level of corruption like inaccurate activity of products, giant waiting time, and lamp oil larceny in ration look and manual distribution isn't simple to handle crowd. In this, the planned system replaces the manual add public distribution system. The most objective of the designed system is that the automation of lamp oil distribution to supply transparency by exploitation RFID & GSM technology that is analogous to the ATM.

INTRODUCTION

The PDS is recognized by the govt. of Asian country, with a network of four.78 large integer honest value retailers (FPS) is maybe the most important retail system within the world. This theme was launched in Asian country on June 1997. Public distribution system provides a card issued by the regime for the acquisition of essential client materials like kerosene, oil etc. The honest value retailers ar in the main accustomed distribute the products at a backed value to the poor. Public Distribution System is one in every of the wide contentious problems that involve unskillfulness within the targeting of beneficiaries and also the ensuing escape of subsidies. Within the planned system we have a tendency to use RFID Technology. Here RFID Cards serves the aim of authentication. careful info of the top of the family is keep within the info. Each client is supplied with a singular approved card that is registered by the govt. info that's accustomed record the acquisition of kerosene. Once client scans the RFID Card, it's verified with the info. Once verification is palmy, the distinctive User ID is displayed on LCD and client receives a message. When palmy authorization, client gets the allotted kerosene. The instrumentation is placed below the nozzle and also the allotted amount of kerosene is distributed, if in between the instrumentation is removed system stops the kerosene offer till instrumentation is encountered. Thus, we've got argue a sensible kerosene dispenser system. With implementation of the projected system prime problems like graft, uneven distribution and alternative difficulties round-faced by beneficiary may be terminated

Hardware and Software

1. **Hardware**
   - Arduino Board Uno
   - GSM Module
   - LCD Display(16x2)
   - RFID Cards and Reader
   - IR Sensor
   - Water Pump
   - Male to Female Jumpers (wires)
   - Male to Male Jumpers (wires)
   - 12V Power Supply
2. **Software**
   - Arduino Compiler

LITERATURE REVIEW

Current System

In the existing system, kerosene distribution, identity card entry, product advisement, to keep up record of group action and delivery of the merchandise etc. are allotted manually. This manual system is facing several issues like

- Ration Distribution to unauthenticated card holders.
- Card holders' dalliance for grouping kerosene by standing in a very queue for hours along.
- heap of dishonorable activities in ration dispensing societies. • a lot of malpractices like sign, black promoting and

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Blockchain-based Self-sovereign Identity Management System

Gauri Shetye[1], Nandini Sonar[2], Dr. Dhanamma Jagli[3]
[1,2]Final year Student, [3]Assistant Professor, Dept. of M.C.A, V.E.S. Institute of Technology, India

Abstract - The whole concept of self-sovereign identity (SSI) is gaining a lot of optimism, with the emerging Blockchain Technology in the current tech-scenario. It is a major change in how online interactions will take place in the future considering the identity of each user. The different aspects of SSI are examined by various works in the literature This paper surveys the origin of identity, various digital identity models and how it leads to self-sovereign identity. It then goes on to discuss related research, as well as the SSI's building blocks, which include decentralized IDs, verifiable credentials, a distributed ledger, and a variety of privacy mechanisms. Finally, it proposes a solution for self-sovereign identity by using the Ethereum platform for blockchain and other technologies
Keywords - Blockchain, Self-Sovereign, Identity, Ethereum, Smart **Contracts, IPFS**

I. INTRODUCTION

The processes and technology used in an organisation to identify, authenticate, and authorise a user to access the resources or systems of a certain entity or other affiliates is known as Identity management. Customers or employees accessing software or hardware within an organisation, the amount of access, rights, and restrictions each user has, the issuance and identification of birth certificates, national identity cards, travel documents or driver's licences, as well as other documents that allow users to confirm their identity and access services from the government or any other administration, and so on.

A. Problems with the current Identity Management Systems

There's a problem with identity. It's subject to loss, theft, or fraud if it's on paper, such as birth certificates kept among other documents in a government office. By allowing for greater interoperability across departments and other organisations, a digital identification eliminates paperwork and speeds up processing inside these administrations. However, storing this digital identity on a centralized server makes it vulnerable to unauthenticated users. The majority of today's identity management systems are insecure and outdated. Identities must be portable and verifiable wherever, at any time, and digitalization makes this possible. However, being digital is insufficient. Privacy and security are also important considerations for identities.

B. Industries that have difficulties with current identity management systems include:

Government: The lack of interoperability between governance departments and other entities has a negative impact on all aspects of government. This, in turn, raises the time and cost of the process.
Healthcare: More than half of the world's population lacks access to adequate healthcare. The absence of interoperability among workers in healthcare institutions (hospitals, small clinics, insurance facilities, doctors, pharmaceutical companies, and so on) results in inadequate care, delayed assistance, and increased patient irritation.
Education: The difficulty in approving and verifying student credentials leads to the hiring of unqualified applicants and the tarnish of the schools, colleges, and employing businesses' brands.
Banking: Using login credentials such as passwords makes banking transactions less secure for users.
Businesses in general: Storing the data of clients and employees is a cause of legal liability for businesses. Clients' trust may be lost as a result of breaches of confidential and personal information, and the company's brand may suffer as a result.

C. Models Systems of Digital Identity

The first digital identity model system involves an organisation providing a person with a valid digital identity in order to grant them access to its services. Every new organization with which a person wishes to interact needs the creation of a new digital identity. As a result, one will have a negative user experience. The user must keep track of all the sites on which he has registered and create new passwords and credentials every time.
The "Federated" model of digital identity management is the second model system. Due to the poor user experience with the original system, third-party organisations began offering digital identification credentials that allow consumers to access a variety of different services and websites. The services "Login with Facebook" and "Login with Google" are excellent examples of this paradigm. Companies outsource their identification systems to huge corporations with a financial stake in large databases

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A Comprehensive Study on Web 3.0

Mr. Adesh Hemwani[1], Mr. Ninad Parab[2], Dr. Dhanamma Jagli[3]

[1,2,3]MCA, VESIT, Mumbai University

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ABSTRACT

Advancement in technology is keeping its pace; we use internet in our day-to-day life. The continuous growth has opened so many opportunities and challenges in web-based systems. Web 3.0 is the third generation of the internet. By implementing blockchain technology, artificial intelligence, Internet of things are going to reshape the internet experience. This paper is research on next generation of web experience i.e., Web 3.0. To begin with is describes evolution of Web 3.0, its terms and what we have known so far about it. After that we are going to discuss its future scope and how it can shape the new way of internet.

Keywords: Web 3.0, Blockchain, Non-fungible token, Internet of things, Artificial intelligence.

I. INTRODUCTION

Today we live in a world where everything is interconnected. The systems are getting smarter every. The terms Artificial intelligence, Internet of things and Blockchain are the very core of Web 3.0 where one can be used to keep track of data you generate on day-to-day basis and the other can be used to analyze and make inferences which can affect your day-to-day life. As of today, when it comes to the vast amount of data being generated on internet, it is stored in centralized datacenters. Most of the data is owned and controlled by the tech giants that provide all the services, programs, and platforms on the internet such as Google, Meta (Facebook), Twitter, etc. These companies can use the personal user data to provide personalized experience to the user on the internet. But there has always been the question on privacy of user data. Most of the data on the internet today is being collected and analyzed without the user's consent. Web 3.0 is highly decentralized, driven by blockchain technology. Users will have control over own data and content. They can trade or sell data without a risk of losing ownership, privacy and relying on other parties. It is possible to log into a website without getting tracked by others.

In 2006 John Markoff, a reporter at The New York Times coined the term Web 3.0, in his article he referred Web 3.0 asthe next evolution of the Internet and Web as a whole. Here are some of the main features that define Web 3.0:

Semantic Web: The new generation of the Web integrates the Semantic Web. Abilities of web technologies to generate, share and connect content are improved using search and analysis by understanding the meaning of words rather than by keywords or numbers.

Artificial Intelligence: Analyzing patterns and combining semantic capabilities with natural language processing (NLP), computers can process information like a human to provide faster and more relevant results.

3D Graphics:3D design is used extensively in websites and services in Web 3.0. Some common examples of it are Digital Museums, pc games, eCommerce, geospatial contexts, etc.

Ubiquity: The content on the internet can be accessed anywhere and at any time via any number of devices. The devices can be anything which can access the internet like smartwatches, devices. Web 2.0 is already ubiquitous, the growth of IoT devices is taking it to the next level.

Blockchain: Blockchain facilitates user data to be protected and encrypted. This prevents big tech companies from accessing users' personal data.

Decentralized: Decentralized data networks store data within a peer-to-peer interconnection. Ownership of user data is maintained by this architecture and users are able to browse the internet without having to worry about being tracked.

With the addition of semantics and machine learning, Web 3.0 is an evolution in which computers can understand the meaning behind information. They can learn what you are interested in, help find what you want faster and understand the relationship between things.

Following example combines these eight features together: In Web 3.0, while driving a car, you can search for: "Best Japanese restaurants." The search will provide personalized response which considers your location, suggesting the closest Japanese restaurant by automatically consulting the reviews on social media, or it can also look into your previous history to suggest you something better.

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Cartmax: Online Shopping Application for Low Cost Vendor

Arbaaz Shaikh[1], Mohit Devagida[2], Arfat Patel[3], Indira Bhattacharya[4]

[1,2,3,4]Vivekanand Education Society Institute of Technology Mumbai, India

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ABSTRACT

In the last few years e-commerce has been greatly prosperous in the present times and it is growing rapidly. Online food/grocery delivery services are one of the fastest growing e-commerce developments. The present system focuses on capturing the existing vendors with good profits who pay an amount for registering into such applications. The low-end vendors are still based on manual delivery to the limited number of customers. The paper focuses on an application that can be used by local small vendors. The vendors can use the application to publish the store items available along with the cost. The customers using the application can order the grocery items from vendors/vendors. Users can also set different locations or let the app auto detect location for the delivery area available stores in that area. The app is made as such it can run on low hardware requirements in an android smartphone with a decent internet connection.

Keywords—E--Commerce, vendor, android app, grocery, delivery

I. INTRODUCTION

Online grocery shopping refers to using a web-based shopping service to purchase food and other household supplies. People can acquire these things online using one of two primary techniques.

People in India have shifted their purchasing habits from traditional to online shopping in the last two years as the use of the internet in our daily lives has increased. Everyone nowadays is familiar with the use of cell phones. As a result, the number of Android-based smartphones is increasing every day, encouraging users to do tasks on their phones. Nowadays, we can do everything with our smartphones, including paying our utility bills, purchasing electronic things online, booking tickets through a mobile app, booking taxis and auto-rickshaws, and so on. Based on this point, why don't people use their mobile phones to buy groceries? This will save people time instead of spending 2-3 hours shopping. Many market analysts believe that online grocery shopping is a profitable concept that will continue to gain traction.

There may be some existing solutions that can help in this case, but they will not help the shopkeeper in any way. There are other applications similar to BigBasket. Blinkit, etc. (single-vendor idea) for purchasing grocery items, but as previously said, it does not benefit merchants; rather, it benefits intermediaries who act between the consumer and the retailer. The system must be designed in such a way that both consumers and retailers are satisfied with the technology provided by the system. This strategy benefits both the consumer and the retailer by facilitating online shopping and allowing them to expand their business.

In the Indian Market of today there are various small vendors who have the right intention and mindset for being able to be a trustworthy name among the locals, but don't have the capital or the exposure to be able to reach those heights. The medieval way of spreading word through mouth has changed a lot since time in the way of spreading word through social media or the way digital transactions and online shopping has intervened in the old ways of grocery shopping.

The world has now moved on to the Internet dependencies the hectic and devious tasks of the bank for example, for which huge queues had to be conquered before have been made easier with the Internet to complete those same tasks with just a few taps on the screen, the same way a number of physically mandatory tasks throughout the life have been replaced with the ease and comfort of the use of Internet. Online is the new ease of interaction with the said party to get your job done.

The transition from the offline to online has hit hard for all the small vendors as this shift led them into a pit of helplessness due to them not being able to match the branded outlets who already had some reach in the retail business therefore being able to sell their groceries online.

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Ed-Tech and it's impact on Education Post Covid

Monish Shetty[1], Jawad Shaikh[2], Dr. Ramesh Solanki[3]

[1,2,3]VESIT, Mumbai, India

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ABSTRACT

Education leaders should set a vision for creating learning experiences that provide the right tools and supports for all learners to thrive. However, to fully maximize the benefits of technology in our education system and to provide authentic learning experiences, education stakeholders need to use technology effectively. These stakeholders mainly include leaders, teachers, faculty, students, researchers, funders, technology developers, community members, organizations and various Ed-Tech companies.

Implementing methods and strategies that would lead to progressions of the system of education is one of the important goals of individuals, particularly the ones, who are in leadership positions. In urban and rural communities, it is essential for the leaders to put into practice the approaches that would lead to up-gradation of the system of education. Innovation and educational technology are regarded as vital aspects that would lead to progression of the system of education. In educational institutions at all levels, instructors are making use of technologies to impart information to the students in terms of academic concepts. Furthermore, students are encouraged to make use of technologies to prepare their assignments and projects. The members of the educational institutions need to augment their competencies and abilities that would enable them to carry out their tasks satisfactorily. The main concepts that have been taken into account in this research paper include, significance and meaning of innovation in education, benefits of innovation and educational technologies, barriers to innovation in education, and shaping of innovation by human capital. It is necessary to promote innovation and educational technology.

Keywords—Ed-Tech, Students, Covid, Internet, Classes

I. INTRODUCTION

To be successful in our daily lives and in a global workforce, Students need pathways to acquire expertise and form meaningful connections to peers and mentors. This journey begins with a base of knowledge and abilities that can be augmented and enhanced throughout our lives. Fortunately, advances in learning sciences have provided new insights into how people learn. Technology can be a powerful tool to reimagine learning experiences on the basis of those insights. Historically, a learner's educational opportunities have been limited by the resources found within the walls of a school. Technology-enabled learning allows learners to tap resources and expertise anywhere in the world, starting with their own communities.

II. EASE OF USE

A. Impact on Student using Ed-Tech

- With high-speed internet access, a student interested in learning computer science can take the course online in a school that lacks the budget or a faculty member with the appropriate skills to teach the course.
- Learners struggling with planning for college and careers can access high-quality online mentoring and advising programs where resources or geography present challenges to obtaining sufficient face-to-face mentoring.
- With mobile data collection tools and online collaboration platforms, students in a remote geographic area studying local phenomena can collaborate with peers doing similar work anywhere in the world.
- A school with connectivity but without robust science facilities can offer its students virtual chemistry, biology, anatomy, and physics labsoffering students learning experiences that approach those of peers with better resources.
- Students engaged in creative writing, music, or media production can publish their work to a broad global audience regardless of where they go to school.
- Technology-enabled learning environments allow less experienced learners to access and participate in specialized communities of practice, graduating to more complex activities and deeper participation as they gain the experience needed to become expert members of the community..

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Introduction to Night Vision Technology

Dr. Ramesh Solanki[1], Hrishikesh Thite[2], Sagar Hatwar[3]

[1]Professor, Department of MCA, Vivekanand Education Society's Institute of Technology
[2,3]Student, Department of MCA, Vivekanand Education Society's Institute of Technology

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ABSTRACT

Night vision technology, by definition, allows people to see in the dark. Originally designed for military use, it has provided the United world with military strategic advantages, the value of which can be measured in terms of lives. Government and provincial agencies now use on-site security technology, surveillance and search and rescue. Night vision equipment has changed from large and heavy tools to lightweight mirrors with the development of image stabilization technology.

The first thing you can think of when you see the words night vision is a spy or action movie you have seen, when someone wears night goggles to find someone else in a dark building on a moonless night. And you may have wondered, "Do those things really work? Can you see in the dark?"

The answer is definitely yes. With proper night vision equipment, you can see a person standing at an altitude of more than 200 meters (183 m) on a moonless, overnight night!

Night vision is a concept which works in two very different ways, depending on the technology used.

• Image enhancement - This works by collecting small amounts of light, including the lower part of the infrared light, which are present but may not be visible to our eyes, and enlarge so that we can see the image more easily.

• Hot Photo - This technology works by capturing the upper part of infrared light spectrum, which is emitted as heat instead of simply as light. Tropical objects, such as warm bodies, emit more of this light than cool objects such as trees or buildings.

In this article, you will learn about two night vision techniques. We will also discuss the different types of night watch equipment and applications. But first, let's discuss about Infrared light.

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Virtual Machine Threat Detection

Dhanshree Gurav[1], Tejaswi Pawar[2], Indira Bhattachariya[3]

[1,2]Final year Student, Dept. of M.C.A, VESIT, Mumbai University, Mumbai, Maharashtra, India
[3]Assistant Professor, MCA Department, VESIT, Mumbai University, Mumbai, Maharashtra, India

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ABSTRACT

With the development of computer technology, the concept of virtualization has grown rapidly. However, threats like crypto mining malware inside virtual machines increased recently. Virtual Machine Threat Detection (VMTD) is used to detect threats like crypto mining malware inside virtual machine. This paper discuss about the different cloud technology models that is used to detect the crypto mining malware threats inside virtual machine. In the existing models, software agents are deployed in guest virtual machine to detect threats. To overcome the existing model, VMTD collect signals to aid in threat detection without requiring customers to run additional software. VMTD, which is made available through the Security Command Centre, that helps in finding the error or defect & susceptibility if any and makes sure to fix those by giving recommendations or suggestions.

Keywords: Google Cloud, crypto mining, Security Command centre, VMTD.

INTRODUCTION

Cryptocurrency: Currency existing digitally and accessed virtually, which is secured using cryptography for the transaction purpose. They are not organized centrally instead they have a decentralized system to record transactions and issuing of new units. Neither these are the printed bank notes but generated digitally only by the computing power.

Fig: Bitcoin crypto mining

It is one of them widely used which was developed by the Japanese in 2008, organized decentrally i.e., neither bank or any other organizations is responsible of this kind of transactions carried out digitally.

BFGMiner ,MultiMiner are some of the software used for cryptocurrency.

Two different possibilities of mining cryptocurrency are private crypto mining from home and crypto mining via the cloud.

Fig: Private Crypto Mining

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Use of Artificial Intelligence and Machine Learning in Sports

Abhishek Shukla[1], Dr Shiv kumar Goel[2]

[1,2]Vivekanand Education Society's Institute of Technology, University Of Mumbai, Mumbai, India

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ABSTRACT

The thrill of sports is never-ending. we are able to say that the utilization of AI in sports can make a big change within the viewership of the sport. AI use case like AI chatbots for live scores, computer vision for smart media archiving and systems for identifying player characteristics. Sports on wearable AI may also make a big impact on the industry, we will see tournaments on wearable AI in coming years. NFL is functioning on AI assistant coaches which is able to help in identifying players movement over the time therefore the coach can know the way to coach the athlete's to realize maximum performance. the information that we are collecting during the method is big and it must be managed well, during this case, AI also can help build smart media archives which may make smart AI workflows to trace all the information in a very single place. AI have the potential to present better control over the large data with reduced overhead costs. Key Words: Computer Vision, computing, AI workflows, smart media archiving.

INTRODUCTION

The world is making its thanks to automating everything using AI. Sports is additionally getting its hands on the implementation of AI. the employment of computer science is growing very rapidly within the sports field. Technologies like AI-augmented coaching, Player performance improvement, broadcasting and streaming, Sports reporting and also video game sports with the facility of AI. Every major player like NBA, Bundesliga, which has the world's largest media archive is now using AI to provide power to its systems.

In a survey, it had been seen that the organizations investing in AI grown from 40% in 2016 to 51% in 2017. This figure clearly shows what proportion AI has impacted our lives yet as in Sports. the very fact that 55% of the organizations have yet not achieved and solid business outcomes from AI whereas 43% of the organizations find that it's too late to mention anything. this suggests that there's plenty of potential within the marker but the very fact here is we'd like to coach them about what AI can bring around their organizations.

In 1950 the very first program for chess was written and in 1981, the globe got the primary computer to beat a chess player during a tournament and got a master rating. In 2017, the pc program AlphaZero was launched and it's been unbeatable since then. the appearance of AI in sports is huge and growing very rapidly.

In 2017, IBM used computer science to produce AI-enabled video highlights in Wimbledon. IBM used computer science capabilities. CNBC also reported this in 2017. The rest of the paper shows various use cases of AI within the sports industry. The paper also suggests the areas where the industry must improve and make a stronger base for the planet.

IMPLEMENTATION

Organizations are now using AI to create player performance improvement programs like AI-enabled coaching which helps coaches to coach the players exactly where the necessity is. With the assistance of AI, we will track every move of the sport. This not only helps in minimizing the errors but also it helps in identifying the possible errors even before it can happen.

AI Chatbots for sports

An AI-enabled chatbot is capable of enhancing the viewer experience by personalizing and automation and making the viewer want he/she reprimand a true person. Chatbots are capable of operating 24/7 so a user can put queries at any given time as per the necessity. in an exceedingly survey, it absolutely was found that chatbot based push notifications have 70% read rates whereas other tools like e-mail and news feeds are little or no. This provided more confidence in using the AI chatbot.

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Robotics: Human Help or Human Hinder

Dr. (Mr.) Shivkumar Goel[1], Miss. Pranali Gupte[2]

[1]MCA Department HOD, Vivekanand Education, Society's Institute of Technology, Mumbai, India

[2]Student, MCA, Vivekanand Education Society's Institute of Technology, Mumbai, India

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ABSTRACT

'Robotics' and 'Robots' are some of the most fascinating words in IT industry. As name suggests, it is the process where we design, create and use robots to carry out different tasks. An article in Times of India states that, the numbers of robots in industries are being doubled every five years in India. As a matter of fact, Robots and the overall idea of Robotics is going to have a huge impact on the future of humans. But the question is, whether in coming years, robots would serve as Human Help or Human Hinder. With ever increasing advancement in technology, it is very necessary to take a step back and analyse the after effects, whether good or bad, to know the limits and boundaries of the use and implementation of any technique. This paper emphasizes on trying to dig into whether future of robots would help or hinder the future of human beings. The results provide a very natural inclination towards the concern of safety and security of data and humans in the robotics process.

Keywords: Robotics, Security, Evolution.

INTRODUCTION

Robotics brought in a whole new perspective of getting the work done. Robotics was all about imagination and movies and graphics, but now it is moving towards reality. But as they say, every innovation brings in some pros and cons with it. It is very important to handle and control the implementation to increase the pros and decrease the cons. It is also very important to consider the safety and security of humans around these technologies, in this case, Robots. But does handling and controlling the implementation of Robots, guarantee the safety of humans around them. Robotics is one of the most talked about technology, and a lot of buzz moves around this subject. It is a revolution in itself, and there is a lot of research and experiments going on around the world to widen its reach and scope.The purpose of this paper is to try and understand the whole scenario, the pros and cons of Robotics, and how is human's safety being considered around robots.

Background

Researchers are trying to find different techniques and algorithms to make robots more human friendly.
In [1], states the necessity of making intelligent robots to work and navigate in real world.
In [2], it proposes a holistic approach to design robots that can cooperate with humans.
Considering the severity of having robots wandering around like humans, this paper came into existence to understand and dig into merits and demerits of Robotics.

Methodology

I had used qualitative methods to gather data about the thoughts of general public and people in the IT industry on Robots and their use around humans.

These methods included surveys with questions separated for general public and industry experts.

The surveys for general public included questions on their general thoughts about:

1. The evolution of robotics as a technology
2. Would they, or would they not like to be around robots,
3. Their general opinion about the use of robots, most probably, helping them with their tasks
4. The general pros and cons that robots would carry along.

The survey for industry experts involved a mix of general and technical questions that included:

1. Their opinion on the use of robots in industrial level.
2. Their possible pros and cons they think this technology might carry along.

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Effects of Virtual-Reality on Human Life: A Review

Miss. Shreya Bhavsar[1], Miss. Mrunmayi Gahivade[2], Dr. Shivkumar Goel[3]

[1]Master of Computer Application, Department of MCA, V.E.S Institute of Technology, Maharashtra, India
[2]Master of Computer Application, Department of MCA, V.E.S Institute of Technology, Maharashtra, India
[3]HOD, Department of MCA, V.E.S Institute of Technology, Maharashtra, India

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ABSTRACT

For many years, Virtual Reality (VR) has played a very important role in human lives. Virtual Reality is a technology that allows humans to do actions in a digital world yet letting them feel as if they are in a physical one. The aim of Virtual Reality (VR) is for humans to be able to experience and control an environment that is as real as possible. The rate of growth has remained constant, but the growing number of Virtual Reality cases suggests a fundamental shift in the industry's strategy. Additionally, there are broad campaigns to encourage businesses and consumers to adopt this technology. Although no breakthrough has yet been achieved, the future seems bright as worldwide businesses embrace the VR experience.

KeyWords: Virtual Reality (VR), Computer Graphics, Head Mounted Display (HMD), simulation, 3-D graphics, Augmented Reality (AR)

I. INTRODUCTION

Even the average person also can experience the fictional world of computer graphics. This obsession with a new world frequently starts with video games and goes on forever. It enables us to see the world around us in new ways and to experience things that are not possible in real life. Furthermore, the universe of 3-D graphics has no boundaries or limitations, and it may be built and changed as we like, allowing us to expand the scope of our imagination. People want to interact with this virtual world rather than just viewing it on a display. In the present decade, Virtual Reality technology is advancing and has been accepted and adored a lot.

Virtual Reality (VR) is a human–computer interface that gives users a variety of physical experiences in order to make the virtual world more realistic. This increased realism results in a phenomena known as "presence," which refers to the user's genuine impression of being in the virtual world as a result of computer-generated visual or aural displays. Because of its ability to give us highly realistic immersive experiences, virtual reality is seen as a powerful tool that may be used to create previously imagined experiences.

II. EVOLUTION OF VIRTUAL REALITY

Ivan Sutherland proposed the concept for the first time in 1965. Since then, a great deal of study has been carried out. Let us take a quick look at Ivan Sutherland's virtual reality research and some of his highlights:

• **Sensorama** – In 1957, the Sensorama Machine was designed and patented. A prerecordedcolor and stereo film had binaural sound, scent, wind, and vibration experiences added to it.. This was the first attempt to develop a virtual reality system. Although it has all the traits of one, it was not interactive.

Fig.1. Sensorama

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The Need of Ethical Hacking in the IT Industry

Veda Pingale[1], Nishant Khalate[2], Dr. Shiv Kumar Goel[3]

[1,2]PG Students, Department of MCA, Vivekanand Education Society's Institute of Technology, (VESIT), Mumbai, Maharashtra, India
[3]Associate Professor/H.O.D Department of MCA, Vivekanand Education Society's Institute of Technology, (VESIT), Mumbai, Maharashtra, India

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ABSTRACT

Ethical Hacking is an emerging field in information technology. As the internet spreads far and wide, the threats also increase. Such threats include hacking, identity theft, cyber bullying,etc.

To know for sure that the developed project that is a website, app, or any new device is safe from these types of threats, the ethical hackers come into picture. Such ethical hackers or white hat hackers are nothing but testers who test various attacks on the developed system to find the vulnerabilities so that the developers can fix them. However, this field is an emerging one and the number of ethical hackers is very less and there is a need for more ethical hackers in the information technology world. Also, for the systems to be more secure even the users need to be aware of the threats which linger in the technological field and act on the same. This paper briefly covers the importance of ethical hacking and awareness which is needed to be spread amongst the people.

Keywords: White hat hacker, Cyber crimes, Clearing tracks, Ethical Hacking

INTRODUCTION

We live in a technologically advanced world. As there is a good side of it, there is also a bad side of the coin. People tend to share many personal things on the internet, by uploading various media on various social media sites, as well as other applications. Hence there pose a risk of compromising the personal data. When a system, application, app or an account is hacked, that can be used for selfish means or other illegal things such as child pornography and even terrorist activity.

To avoid such things from happening to their systems, companies recruit a team of ethical hackers to test the security aspects of it. These ethical hackers use various techniques to break into the system by performing various attacks on them; and then find out the vulnerabilities or shortcomings or loopholes in the system and tell it to the developers and the security team so that they can work on them and make it more secure. These Ethical hackers are a very important aspect of security testing in the software development life cycle.

However, as it is an emerging field, there are a very low number of ethical hackers which are available and hence not every IT firm can afford them. The techno giants and the bigger information technology firms hire such ethical hackers to test their systems. As more and more people have started using the internet, there is a more need for such ethical hackers into the technology picture.

To make the systems more secure, even the users need to be alert towards the various attacks which can pose a threat to their privacy. As the private information can be used for selfish means and can harm one's security, it is very essential for people to be aware of the various threats on their devices and systems.

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Security in Block Chain

Priyal Danani[1], Lakshmipriya Kolathappilly[2], Dhanamma Jagli[3]

[1,2]Student of VES Institute of Technology
[3]Professor, Dept. of MCA, VES Institute of Technology, Maharashtra, Mumbai

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ABSTRACT

Through the effective use of mobile, IoT (Internet of Things), social media, analytics, and cloud technology to generate models for better decisions, the digital world has generated efficiencies, new innovative products, and close customer relationships around the world .Bringing a new perspective to security, durability, and efficiency, blockchain has revolutionized the digital world . The blockchain is much more than just a platform for crypto currencies. It provides a secure way to exchange any kind of good, service, or transaction. Industrial growth depends on trusted partnerships; but increasing regulation, cybercrime and fraud are inhibiting expansion. To overcome these challenges, A blockchain-based value chain will improve agility, speed up product innovation, and improve customer relationships. It will also enable more integration with the Internet of Things and cloud technologies . Furthermore, Blockchain provides lower costs for trade because it relies on a trusted contract that can be monitored without any intervention from third parties. With its integrated, robust cyber security features, it facilitates smart contracts, engagements, and agreements. In this paper, we present and demonstrate the use of Blockchain technology in multiple industrial applications.These concepts can be applied to a variety of industries such as finance, government, and manufacturing where security, scalability, and efficiency must all be met.

There is no central authority in control of a blockchain, since everyone has access to it. Using this technology, individuals and companies can collaborate with trust and transparency. Blockchains are well known for their use in cryptographic currencies such as Bitcoin, but they can be used in many other ways. Information technology is expected to undergo a fundamental revolution driven by blockchain technology. Today, there are many implementations of blockchain technology, each with its own strengths.

Keywords in Blockchain Technology:

Cryptocurrency:
Cryptocurrency is a digital form of exchange that takes the place of cash or credit. Bitcoin is the best-known form of cryptocurrency because it was the first. However, many other cryptocurrencies have been developed since. Today, there are more than a thousand different kinds.

Encryption:
Encrypting information means it is hidden so that no one can view it without the right login code or password. This helps keep sensitive information safe if it's stored online.

Digital Mining:
New bitcoins hit the market through a process known as "mining." The people who make this happen are called "miners."

These miners use powerful computers to be sure that all the necessary transactions are correctly validated. Miners not only create bitcoins, but they are also paid in them.

Ethereum:
This is another decentralized online platform. In fact, Ethereum uses a blockchain of its own.
It was meant to simply be an improvement upon the technology but ended up having even bigger applications that reach far beyond the financial.

Nodes:
Blockchains are networks of computers. Those computers are known as "nodes."
Nodes have to both store and distribute the most recent copies of transactions performed on the blockchain. This information is updated in real time, or as it happens.

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Comparison between Scaling Horizontally and Scaling Vertically In Cloud Computing

Vinayak Padgaonkar[1], Rushabh Uchibagle[2], Dr. Dhanamma Jagli[3]

[1,2]Student, Vivekanand Education Society's Institute of Technology, Mumbai
[3]Deputy HOD, Dept. of MCA ,Vivekanand Education Society's Institute of Technology, Mumbai

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ABSTRACT

Cloud Computing is a logical architecture of virtualized assets, which are in fact owned and managed by a third-party provider, which are provided on the Internet to different organizations. The architecture is cloud-like.This paper looks at the scalability aspects of cloud computing. The two types of scalabilities are- Horizontal Scalability which is related with the load balancing dimension of the cloud and Vertical Scalability, though not exactly a part of cloud computing,is power of the system to scale consistently under the increasing load. Thus, in this paper, we throw the light on certain significant dimensions such as making the servers obsolete or virtualization of the servers etc., to make performance levels the same as simultaneous request increases. The aim is to discard the entire concept of "server" in virtual fragments such as pool, farm or node. Server virtualisation can be a means of separating physical hardware from the application field. Moreover, we can also keep the servers accordingly in order to avoid defects or voids.

INTRODUCTION

The scalability of an application can be measured according to the number of requests it can support at the same time. The point at which an application is no longer able to deal effectively with additional requests is the limit of its scalability. This limit is reached when a critical material resource is used up, requiring different machines or more. Scaling these resources can include any combination of adjustments to CPU and physical memory (different or more machines), hard disk (bigger hard drives, less "live" data, solid state drives), and/or the network bandwidth (multiple network interface controllers, bigger NICs, fiber, etc.). Horizontal scaling and vertical scaling are similar to the extent that they both involve adding IT resources to your infrastructure. There are distinct differences between the two as far as implementation and performance are concerned.

What's the main Difference?
Scalability feature in cloud computing
Although cloud computing has to take into account different aspects of the technological universe, the two main features, which go together with the word "cloud computing", are:

a. **Horizontal Scalability**
b. **Vertical Scalability**

Horizontal Scalability: (scaling out)
By the term Horizontal scalability, we refer to the capability to add different hardware and software entities, so that the different parts of the cloud should work as a single logical entity and the coming load should also be balanced. If one considers the case of the addition of several servers, one can use the "clustering" and "load balancing" to facilitate the increase of the speed and availability of the logic unit. A large number of computers can be "clustered "in order to bring out an assembled computing intensity which, in most of the cases, exceeds many powerful processing entities in the context of processing power.

Vertical Scalability: (scaling up)
While its other counterpart (horizontal scalability), focuses more on the concept of "working as a single logical entity", vertical scalability is a little different from its track. Vertical scalability is actually the capability to increase the efficiency of the currently employed hardware or software by adding more resources to it- for example, adding fast processors to a server for increasing its speed It signifies the addition of more hardware resources to the existing machine, achieved by employing more CPUs and memory etc. While vertical scalability does not change significantly in the current cloud architecture, horizontal scalability surely has consequences for it.

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User Retention

Avinash Mahender Kalani[1], Shrestha R. Upadhyay[2], Dr. Dhanamma Jagli[3]

[1,2]Research Scholar, MCA, Vivekanand Education Society's Institute of Technology, Mumbai, India
[3]Deputy HOD, Vivekanand Education Society's Institute of Technology, Mumbai, India

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ABSTRACT

Purpose– user retention has been a big topic since the mid-1990s, however very little analysis has been conducted into management processes that square measure related to wonderful user retention performance. This analysis investigates the associations between user retention outcomes and a number of management processes as well as user retention coming up with, budgeting and accountability and also the presence of a documented complaints-handling method.

Design/methodology/approach– this can be dispensed employing a quantitative survey of one hundred seventy firms in Australia. Participants diagrammatical all major normal industrial classification (SIC) codes.

Findings– it had been found that excellence at user retention is completely and considerably
associated with the presence of documented complaints-handling processes. None of the other variables are considerably related to the variable quantity.

Research limitations/implications– This analysis has restricted generalizability to alternative regions and the self-report nature of the info isn't severally substantiated.

Practical implications– The analysis emphasizes the importance of developing and implementing documented complaints-handling processes. Future analysis ought to examine whether or not standardized processes like those embodied in ISO 10002 square measure more practical than unplanned processes.

Originality/value– the key contribution of this paper is that the clear link that it establishes between user retention performance and also the presence of a documented complaints-handling method.

INTRODUCTION

The sole purpose of a business Peter Drucker (1973) once splendidly claimed was "to create a user". However, keeping the user has become considered equally, if not more vital, since Dawkins and Reichheld (1990) reportable that a five per cent increase in user retention generated a rise in user internet present price of between twenty-five per cent and ninety-five per cent across a large vary of business environments. This finding generated a large quantity of interest and activity in educational and business communities, as researchers and consultants tried to look at and verify these claims. There was a growing recognition that users, like product, have a life-cycle that corporations will commit to manage. Users square measure nonheritable, preserved and can be adult in price over time. They climb a price stairway (Gordon, 1998) or price ladder (Christopher et al., 1991) from suspect, prospect and first-time user, to majority user and ultimately to partner or advocate standing.

A number of scholars have begun to explore the link between the practices of user management and investor price (Doyle, 2000; Payne et al., 2001; Gupta et al., 2004). specifically, the connections between user retention and investor value are subject to scrutiny. Gupta et al. (2004), for instance, found that a one per cent increase in user retention had virtually 5 times additional impact on firm price than a one per cent amendment in discount rate or value of capital. As a result of this analysis, the business case for marketers to specialize in the management of user retention is becoming additional clearly established. However, the thought selling literature offers very little steerage on specific social control practices that square measure related to high levels of user retention (DeSouza, 1992). This gap is the focus of our analysis.

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Brain Chip: Controlling the Human Body with A Nano Chip

Dr. Dhannama Jagli[1], Asmeeta Panchal[2], Nishant Bhandary[3]

[1]Deputy H.O.D (M.C.A.) , VESIT , Mumbai University, Mumbai, Maharashtra, India
[2]M.C.A.Final Year Student. , VESIT, Mumbai University, Mumbai, Maharashtra, India
[3]M.C.A. Final Year Student. , VESIT, Mumbai University, Mumbai, Maharashtra, India

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ABSTRACT

In this era of modern science, the evolving technology has proven itself efficient in tackling the day-to-day problems. The continuous technological upgrades help man solve issue and problems. The biggest challenge faced by humans is the incurable deceases and disabilities. Information is the key to solve any problem. Over the period man has gathered a lot of information which is impossible for him to study and store everything in the brain. Not only every hour but every minute a large chunk of data is being generated. Improving technology requires and produces a large amount of statistical data. The quantity of statistics that is produced can be produced in minutes today which is not enough. In the next 10 years it can be generated in seconds or less. The time required will definitely reduce for each upcoming era. A man cannot study and digest all the produced facts and information for which an additional help would be need in the form of a device or a technology. This void will be filled by the brain chips which will be micro brain itself with the abilities of a computer. It will basically collect the virtual statistics and remodel them into useful records, as human brain functions. Human need good enough Brain Chips are going to be extremely important as everything is becoming digital. As the world nowadays is progressing closer to this used information is a result of the quick progression in the direction of digital practices of the world, inclusive of on-line transaction, social media and having access to internet, downloading facts, importing facts. The attitude of digitizing everything has catalyzed the urge for man to process a large chunk information, data and facts in him. This kind of motivation has led us into the hunt of a perfect system that can analyze anything and provide information and solution instantly with utmost accuracy. This hunt has brought us to the brain chip interface with the intention to enhance the cognitive potential and ability of brain to store data. Brain chips can used in treating biological and physical issues caused by neurological illnesses like paralysis, stroke, epilepsy, etc. Brain chips will can be used as an aid to the prosthetic limbs which will ease the patient's life by helping him to conduct day to day activities It's also useful for in army to counter terrorism. Innovation of this advanced technology has unfolded opportunities for man to achieve higher goals and reach new heights.

Key Words:**Brain Chips, Neurological, Prosthetic, Neural Network.**

INTRODUCTION

The pace of generation and transmission of statistical data has improved by means of multiples of tens of millions. The time required for making the right decision for a given situation is reducing which in turn is resulting in making the decisions without any technological support difficult. As human beings are advancing in time, they need technological revolution. It's time to discover new mankind's revolutionary desires in inner most social transformation. Wasting assets and time on solving non-permanent problems is less efficient. Instead putting major efforts, assets and time on technology will lead mankind to a better future full of energy, health and development. This can be achieved by enhancing man's cognitive capacity with chips implants in the brain. Brain chips interface is a large set of interconnections in which the chip and the nerve cells of our brain interact with each other to switch electrical signals from brain to computer or vice versa through a small chip. In simple terms the computer would be able understand what the brain cells want to say by using a chip. As it is supposed to be a two-way communique, the brain would also be able to understand what the computer is saying. We would be able to instruct the brain to carry out tasks where as we would be able to access the computer without having a physical machine. Machines that act like human brain seems like technology fiction. It's more like fusion of neuroscience and engineering. Brain chips are built by using the nano technology concept which ambitions at changing an individual into superhuman with mutated abilities. It has excellent packages in the discipline of neuro technological know-how engineering and pace reputation. It is one of the greatest innovations of mankind. The more the studies, the more will be the upgrades. Now a days a lot of people suffer from neurological disorders which can prove to be lethal for the victim. Billions of people are afflicted by neurological issues all over the world which results in millions of deaths each year. After so many years of research and analysis many

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Ad hoc network in road safety and traffic management

Dhanamma Jagli[1], Aishwarya Admuthe[2], Mayur Nagraj[3]

[1] Assistant Professor, VESIT, Mumbai University, Mumbai, India
[2, 3]MCA Final Year Students, VESIT, Mumbai University, Mumbai, India

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INTRODUCTION

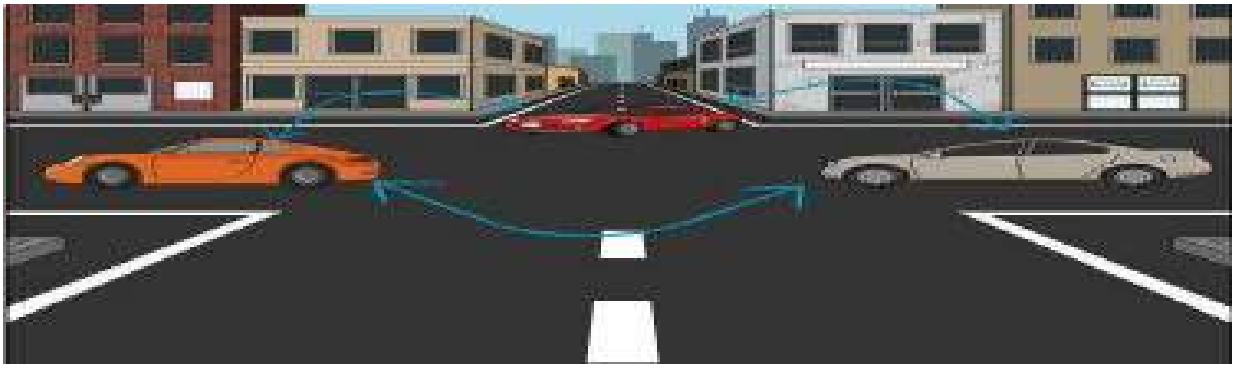
Vehicles have become an integral part of our lives, whether it is for transportation of goods or people especially on land such as cars and lorries. With increased use of vehicles there comes a certain risk of accidents which can lead to loss of life. To avoid the risk of accidents there was a need to develop a system which can help in avoiding such scenarios.

The **system** allows for vehicles to communicate with each other, exchanging information in real time. The information such as the direction of the vehicle, the speed and its location can be broadcasted over a wireless network using dedicated short range communication technology for a radius of 300 meters or more. This technology creates a network where each node of the network can communicate with each other. While this can also help in avoiding traffic jams, the main focus of the system is to avoid crashes. This technology can help drivers avoid accidents altogether.

The **system** can certainly impact the safety system, saving many lives. This technology can be implemented to cars, buses, motorcycles and can even help cyclists in avoiding an impact with another vehicle.

Existing System
In Existing system like Maruti 800 car which had brake system, engines an steering etc. which was un-automatic and operated by the man(driver). There was no automatic system added to it to avoid road accidents, to avoid traffic also it didn't have any automatic feature to detect the positioning of car or may say it could not detect the distances of the car from one another to avoid collision, it didn't have any GPS tracker. It didn't have any in-built smart features included.

How is it different from automated or smart cars in the market?
The existing smart cars rely on sensors such as camera, Lidar, ultrasonic sensors. which can easily detect the objects or persons surrounding it but are ineffective against the cases where the vehicle is not in the field of view. The **system** can be implemented into the existing system of smart cars to make it more robust in determining the crash and avoiding them.



Information related to accidents. Numbers can be reduced with the implementation of ad hoc network.

Road accidents, fatalities and injuries in million plus cities by type of traffic rules violation during 2019 in India

Traffic rules violation	Number of accidents
Over-speeding	53,366
Jumping red light	2,151
Use of mobile phone	1,938