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A Virtual Tutor to Enhance the Solving Skills of School Children Using Performance Evaluation and Navigation System



Shanta Sodar, Harmeet Singh, Rohan Pol, and Mohit Kale

Abstract The proposed *AI-based Performance Analysis and Navigation System (AI-PANS)* aims at the development of self-learning app for the students of Grade 1–10 students studying in the Maharashtra (India) State Board and also for the teachers. The proposed AI-PANS is designed for: – Database Generation, to ease the process of making new questions. – Recommend question paper based on the student’s current and past performance in every iteration. Modify/define the *Degree Of Difficulty (DOD)* based on the time taken and correctness of the attempted question by a large set of students. – Navigate the student across topics based on his/her performance and in turn help him/her in clearing the concepts, improve the problem-solving skills, build confidence, retain interest, and prepare him/her for competitive exams. – Handholding in the form of curated solutions in the form of text, images, audio, etc., and summary of each topic. In the proposed system, we also proposed a novel mechanism to redefine the DOD assigned to every question in the beginning.

Keywords Clustering · Database generation · Education · Performance analysis · Question recommendation · Test papers

S. Sodar (✉) · H. Singh · R. Pol · M. Kale
Vivekanand Education Society’s Institute of Technology, Mumbai, Maharashtra, India
e-mail: shanta.sodar@ves.ac.in

H. Singh
e-mail: 2018.harmeet.kathreda@ves.ac.in

R. Pol
e-mail: 2018.rohan.pol@ves.ac.in

M. Kale
e-mail: 2015.mohit.kale@ves.ac.in

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Editors

Milan Tuba
Singidunum University
Belgrade, Serbia

Shyam Akashe
ITM University
Gwalior, Madhya Pradesh, India

Amit Joshi
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Image Generation Using Sketch and Attributes



Rishika Shivnani, Kritik Taktewale, Dharkan Mohinani, and Pooja Shetty

Abstract Creating a photographic face picture from a sketch image or written description has always been a difficult problem in computer vision. Sketches normally just provide basic profile information and do not include facial detail. As a result, obtaining exact face characteristics is difficult. To address this issue, we present a photograph translation network that uses characteristics and the generative adversarial network (GAN) (Image Quality Assessment: From Error Visibility to Structural Similarity Zhou Wang, Member, IEEE, Alan C. Bovik, Fellow, IEEE Hamid R. Sheikh, Student Member, IEEE, and Eero P. Simoncelli, Senior Member, IEEE, apr 2004.). By augmenting the sketch picture with the additional facial attribute feature, it will significantly contribute to the authenticity of the created face. The generator network is made up of two networks: a feature extraction network and a down-sampling upsampling network, both of which employ skip connections to reduce the number of layers while maintaining network speed. The purpose of the human network is to check if the created faces have the necessary properties. A photographic face may be created with just a drawing and a simple language description. We have discovered via preliminary testing that sketch drawings include a lot of profile data, whereas attribute vectors provide high-level linguistics data like texture details and colors. When the two datasets are combined, the sketch gives approximately defined data while the attribute provides natural texture information, allowing you to create realistic photographic faces.

Keywords GAN · Photoreal · Sketch to image

R. Shivnani (✉) · K. Taktewale · D. Mohinani · P. Shetty
Vivekanand Education Society's Institute of Technology, Mumbai, India
e-mail: 2018.rishika.shivnani@ves.ac.in

K. Taktewale
e-mail: 2018.kritik.taktewale@ves.ac.in

D. Mohinani
e-mail: 2018.dharkan.mohinani@ves.ac.in

P. Shetty
e-mail: pooja.shetty@ves.ac.in

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Prof. Sneha Akshay Pakle
Prof. Vaibhav C. Gandhi

Effect of Digital Marketing Communication on Customer Buying Decision

Process: a Study of Indian Passenger Car Market



Prof. Sneha Akshay Pakle, Assistant Professor, vivekanand education society of technology, VESIT, Mumbai. Worked as SSIP Coordinator, Completed M.Tech in computer engineering in 2019. Writing blogs on "Digital Marketing".



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CHAPTER 1

IDEAL FRAMEWORK OF DIGITALMARKETING COMMUNICATION

The present chapter deals with the introduction of the study whereby it explains the impact of digital technologies on consumers, concept and characteristics of digital marketing communication and contemporary digital channels of communication. The chapter also gives the details of digital statistics of India and overview of Indian passenger car market covering its brief history and market share of major players. The chapter also explains the digital marketing trends in Indian passenger car market. The chapter briefly describes the purpose, significance, scope and organization of the study.

1.1 IMPACT OF DIGITAL TECHNOLOGIES

Unremitting mechanical changes are altogether modifying the way of behaving of the shoppers across the globe. Unavoidable, reasonable, viable, simple and cutting edge innovation has encouraged clients to become more astute, educated, associated, refreshed, and engaged (Miller, Michalski and Stevens, 1998; Prahalad and Ramaswamy, 2004a). Buyers have become „prosumers“ by which purchasers are in a bad way as well as getting effectively engaged with co-making, modifying and enthusiastically advancing the showcasing content in socially associated time (Bollier, 2007; Gerhardt, 2008). Advertisers have likewise perceived and valued the change brought by innovation that has been enrolling its obvious presence among the purchasers. This change is influencing the existences of both the advertisers and customers in substantial ways. The best illustration of progress is the „internet“ that has altogether adjusted the methods of correspondence, sharing and tracking down data and carrying on with work. The colossal development of the web and especially the „World Wide Web“ (WWW) made purchasers and firms taking part in a worldwide internet based commercial center which ultimately encouraged advertisers to attempt to manage the creative approaches to showcasing in PC intervened conditions (Kothari and Saxena, 2004; Ricciuti, 1995). The consistent and quick coordination of web with bunch gadgets and multiplication of computerized advances lately has further fuelled the change (Brinker, 2012). This intuitive mechanism of today has crossed the lines of an ordinary computer“s screen and has embraced numerous computerized gadgets in particular cell phones, PDAs, tablets, computerized outside and advanced TV (Dahiya, 2014). This transformation in computerized advances has asked organizations to rebuild the promoting rehearses, particularly in correspondence to connect effectively with past, present and likely

Drought Prediction and Water Quality Estimation using Satellite Images and Machine Learning

Publisher: IEEE

[Cite This](#)[PDF](#)Anurag Dash ; Sakshi Jetley ; Anushree Rege ; Shalu Chopra ; Rohini Sawant [All Authors](#)

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Document Sections

- I. Introduction
- II. Objectives
- III. Literature Survey
- IV. Dataset Description
- V. Implementation

[Show Full Outline](#)

Authors

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Citations

Keywords

Metrics

Abstract:

The earth faces various natural catastrophes such as drought. Drought impacts socio-economic development due to its timely occurrence and profound impacts. This even affects water bodies. There are various ways of predicting it like installing sensors in the soil, but this is not feasible as the entire soil cannot be entombed with sensors. Therefore, the vision is to use machine learning methodologies to predict drought and its severity by using satellite images. These data are temporal and spatial in nature. Data is acquired from Landsat 8 to assist with the drought prediction, soil moisture index is captured by Sentinel-1(SMAP). The Random Forest prediction model is used to predict drought and its severity. Furthermore, calculation of water quality using Chlorophyll-a as a primary parameter is also implemented. Drought has a severe impact on water quality as it affects the flow of nutrients in water bodies, increasing the amount of algae biomass in freshwater due to the increased temperature. Water quality uses Sentinel-2 to calculate indices contributing to water quality in the same region where severity of drought is calculated. The Random Forest drought prediction model gives high accuracy. The drought map on a region which is prone to drought was made using the prediction model which gave accurate results and the water quality estimator also showed degraded water bodies around that region. So, this model and estimator can be used to predict drought and prepare a mitigation plan not just for drought but also for the issue of water.

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I. Introduction

Drought is a major phenomenon that leads to limiting socioeconomic development due to its timely occurrence and profound impact. Therefore, it is crucial to make accurate predictions of drought for disaster mitigation along with early warnings. A study

Lecture Notes on Data Engineering
and Communications Technologies 166

Subarna Shakya
George Papakostas
Khaled A. Kamel *Editors*



Mobile Computing and Sustainable Informatics

Proceedings of ICMCSI 2023

 Springer

Editors

Subarna Shakya
Pulchowk Campus
Institute of Engineering
Tribhuvan University
Kathmandu, Nepal

George Papakonstantis
MLV Research Group
Department of Computer Science
International Hellenic University
Kavala, Greece

Khaled A. Kamel
Department of Computer Science
Texas Southern University
Houston, TX, USA

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Use of AI in Cloud-Based Certificate Authentication for Travel Concession



Dangwani Avinash, Jetawat Ashok Kumar, and Rawat Chandansingh

Abstract Certificate Authentication is a big challenging task in a socio-economic country like India. 28 states and 8 union territories with diversified cultures and languages make it a big voluminous task. There is an urgent need to automate this authentication task. This paper proposes the cloud-based certificate authentication. Google Cloud services are used to automate the authentication process. Vision API and flask framework are explored which allows developers to easily integrate vision detection features within applications including Image labeling, Face and landmark detection, Optical character recognition and Tagging of explicit contents. The proposed arrangement makes use of Cloud Vision API optical character recognition to infer the presence of required fields in scanned PDF. Recognized fields will be communicated in the output report.

Keywords Caste authentication · Google cloud vision · Open computer vision · Optical character recognition · APISetu · Google cloud vision · Application program interface · Cloud bucket

D. Avinash (✉) · J. A. Kumar
Computer Department Pacific Hills, Pratap Nagar Extension, Airport Road, Debari, Udaipur,
Rajasthan 313024, India
e-mail: avin861@gmail.com

Oil Spill Detection using Synthetic Aperture Radar

Publisher: IEEE

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PDF

M.S Sriya ; Chandan Singh Rawat All Authors

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Abstract

Document Sections

I. Introduction

II. Literature Review

III. Material and Methods

IV. Convolutional Neural Network

V. Proposed Flowchart

Show Full Outline ▾

Authors

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References

Keywords

Metrics

Abstract:

Oil spills are a global issue because they generate environmental difficulties as well as financial losses. Automatic detection is critical in making quick decisions to minimize harm. Deep learning is a strong tool in this setting, with successful applications in many fields. On a wide scale, we provide a deep learning approach for classifying oil spills in synthetic aperture radar (SAR) images as well as for detecting them. Using a properly constructed neural network model for photo segmentation trained on a large dataset, we obtain state-of-the-art performance in oil spill detection, yielding results comparable to those provided by human operators. We also provide a unique classification problem in the context of oil spill detection in SAR. Using deep learning-based CNN with LBP and GLCM model, this study suggests a novel method for detecting oil spills. Here collected SAR image dataset that is preprocessed the input images like resize, Contrast Enhancement, filtering and image conversion. After apply image segmentation, the image is segmented by means of the thresholding and Morphological algorithm. The proposed CNN with LBP + GLCM mode gets 97.56% accuracy, 97.11% sensitivity and 99.2% specificity of this model that used SAR image dataset.

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I. Introduction

As oil spills have a significant impact on the marine ecology, they are a source of political and scientific concern. Pollutant discharges as well as the impact they have on the marine ecosystem are critical factors in determining the quality of sea water.

A Review on Automated Waiters

Publisher: IEEE

[Cite This](#)[PDF](#)Rasika Naik ; Rohan Bhamre ; Vignesh Poojary ; Paarth Rane ; Niranjan Vajramushti [All Authors](#)

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Abstract

Document Sections

I. Introduction

II. History of Automated Waiters

III. Literature Review

IV. Conclusions

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Keywords

Metrics

Abstract:

The adoption of technology in the food service industry has led to the emergence of "Intelligent Restaurants," where technology is integrated at every touch-point to enhance the overall dining experience. One example of this trend is the use of smart waiters, also known as waiter bots or automated waiters, equipped with advanced hardware and software tools, including sensors, wheel encoders, wireless systems, and various path-planning algorithms. These mobile robots can serve food and drinks in various settings, such as restaurants, hotels, businesses, or even homes, and interact with customers to take orders, simplifying the dining experience for both staff and patrons. Ongoing research is continuously evaluating and improving the current advancements in technology used to build smart waiters, making them an exciting and promising development in the food service industry.

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Conference Location: Nagpur, India

► ISSN Information:

I. Introduction

Restaurants have traditionally relied on human employees to handle various tasks, such as taking orders and handling customer

Image-to-Text and Speech-based Learning Aid for Children

Publisher: IEEE

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PDF

Ameya Dikshit; Janhavi Bhutki; Ahona Chattopadhyay; Pratham Angre; Nadir Charniya [All Authors](#)

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Text Views



Abstract

Document Sections

I. Introduction

II. Working of the System

III. Component Description & Software

IV. Results

V. Conclusion

[Show Full Outline ▾](#)[Authors](#)[Figures](#)[References](#)[Keywords](#)[Metrics](#)[Footnotes](#)

Abstract:

It is well known that kids are more curious and interested to refer to picture-based books and real examples of physical objects for their study rather than traditional books that are merely textual. This is an advantage for teachers and parents and is important for developing their linguistic skills. An application of image-to-text and speech-based learning aid for young children using a deep learning approach is presented in this paper. Using an android application, the image of an object is captured and uploaded on the Firebase, which acts as the primary Cloud Service. The image is then processed and recognized using Convolutional Neural Network (CNN) which yields an accuracy of 93.29% on the test set. The text and speech corresponding to the recognized image are then outputted to the user. The application serves as a learning aid for young children, especially in pandemic-like scenarios.

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I. Introduction

Today, technology is increasingly being used for developing and using learning tools for helping young children in education.

Advances in Intelligent Systems and Computing 1414

Arti Noor · Kriti Saroha · Emil Pricop ·
Abhijit Sen · Gaurav Trivedi *Editors*

Proceedings of Emerging Trends and Technologies on Intelligent Systems

ETTIS 2022

 Springer

Editors

Arti Noor
Education and Training Division
CDAC
Noida, Uttar Pradesh, India

Kriti Saroha
Education and Training Division
CDAC
Noida, Uttar Pradesh, India

Emil Pricop
Department of Automatic
Control, Computers and Electronics
Petroleum-Gas University of Ploiesti
Ploiesti, Romania

Abhijit Sen
Computer Science, and Information
Technology
Kwantlen Polytechnic University
Surrey, BC, Canada

Gaurav Trivedi
Department of Electronics and Electrical
Engineering
IIT Guwahati
Guwahati, Assam, India

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M-Vahitaram: AI-Based Android Application for Automated Crowd Control Management in Bus Transport Service



Prathamesh Jadhav, Sakshee Sawant, Jayesh Shadi, Trupti Sonawane, Nadir Charniya, and Anjali Yeole

Abstract An automated crowd control system is a service that sends real-time crowd density data from inside the bus to a user's handheld device near the bus stop. It is a cohesive solution when it comes to managing crowds without human intervention. Machine learning is used in the M-Vahitaram app to predict bus crowd density, and a cloud database is used to notify commuters within 200 m of the bus. The choice of whether or not to board the approaching bus can then be made. The suggested approach forecasts crowd density with a 96 percent accuracy. Equipping the commuters or the travelers with the details regarding the present or the current crowd density on a particular bus will benefit them to make educated decisions about which bus to take or whether to seek alternative transportation. As a consequence, there is neither traffic congestion nor unequal crowd distribution among buses, ensuring the most effective use of bus transit.

Keywords Bus transport service management · Crowd density prediction · Optimization · Bus service efficiency · CNN · Machine learning · Cloud-based storage · Android application

P. Jadhav · S. Sawant (✉) · J. Shadi · T. Sonawane · N. Charniya · A. Yeole
VESIT, Mumbai University, Mumbai, India
e-mail: 2018.sakshee.sawant@ves.ac.in

P. Jadhav
e-mail: 2019.prathamesh.jadhav@ves.ac.in

J. Shadi
e-mail: 2018.jayesh.shadi@ves.ac.in

T. Sonawane
e-mail: 2019.trupti.sonawane@ves.ac.in

Design and Analysis of 8-bit Vedic Multiplier

Publisher: IEEE

[Cite This](#)[PDF](#)Saylee Gharge; Shrutika Patel; Aditi Patil; Nidhi Mundhada; Vaishnavi Shetty [All Authors](#)

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Abstract

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I. Introduction

II. Related Work

III. Design of Implemented Multipliers

IV. Hardware Implementation

V. Results

[Show Full Outline ▾](#)[Authors](#)[Figures](#)[References](#)[Keywords](#)[Metrics](#)

Abstract:

Multipliers are utilized in a wide range of DSP applications nowadays, including vector product, filtering, convolution operations, matrix multiplication, etc. The parameters which are important to consider with precision are speed of operation, chip space occupied, ease of design, power consumption, high noise immunity, and so on. In this paper comparison of the maximum combinational path latency, chip area consumption, and total on-chip power of an 8-bit Vedic multiplier using Urdhva Tiryagbhyam method, an 8-bit Wallace tree multiplier, and 8bit Array Multiplier written in Verilog has been done. For proper comparison, all multipliers are made with full adders, half adders, n-bit adders, and basic gates. Creation and the simulation of the stated multipliers using Xilinx ISE 14.7 on device 6slx9tqg144-2 and implementation of the 8-bit Vedic multiplier on EDGE Spartan 7 FPGA Board has been done to validate the same. Design of Vedic multiplier and it's comparison with above mentioned multipliers is presented in this paper.

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Publisher: IEEE

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Conference Location: Navi Mumbai, India

I. Introduction

As the number of digital devices grows, the method of processing digital data is using a Digital Signal Processing (DSP) unit. Multiplication is a critical arithmetic operation for processing digital data. In digital signal processing, multiplication is an essential

Lane Detection using Video Processing for Robot Cars

Publisher: IEEE

Cite This

PDF

Saylee Charge; Shrutika Patel; Nidhi Mundhada; Aditi Patil [All Authors](#)

35

Full

Text Views



Abstract

Document Sections

- I. Introduction
- II. Related Work
- III. Methodology
- IV. Results
- V. Conclusion

Authors

Figures

References

Keywords

Metrics

Abstract:

Road accidents are a significant cause of preventable fatalities, with a large number of accidents being attributed to human errors, such as distraction or intoxication. However, computers have the potential to significantly reduce these accidents, as they do not suffer from attention issues while driving. Autonomous systems can control the handling of vehicles effectively, detect and respond to hazardous situations on the road, and thus avoid accidents. Given the increasing need for improved safety, accessibility, and welfare, there is an urgent demand to explore and advance autonomous vehicles. This paper aims to present a Raspberry Pi-based autonomous vehicle prototype that can recognize lanes and plan its movements accordingly. The prototype applies Thresholding smoothed by Canny Edge Detection to detect lane lines, calculate the difference between the frame and lane center, and modify the motor's PWM through an Arduino UNO to change the vehicle's direction. Comprehensive testing has been conducted to verify the prototype's reliability under various lighting and environmental conditions.

Published in: 2023 International Conference on Distributed Computing and Electrical Circuits and Electronics (ICDCECE)

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Print on Demand(PoD) ISBN:979-8-3503-4746-3

Conference Location: Ballar, India

I. Introduction

According to the World Health Organization, approximately 1.35 million pedestrians, cyclists, motorcyclists, and car occupants were killed by traffic deaths in 2016. Additionally, almost 3.700 people are killed globally in crashes involving cars, buses.

Stock Analyzer and Bot using Machine Learning

Publisher: IEEE

[Cite This](#)[PDF](#)Chintan Jethva ; Saachi Dudani ; Esa Malik ; Manish Sonje ; Gaurav Tanna [All Authors](#)

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Abstract

Document Sections

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Abstract:

The purpose of Stock Market Prediction is to anticipate a company's financial stock long term value. Machine learning has lately been a prominent trend in stock market prediction technology, generating estimates depends on the principles of current stock market statistics by practicing on their previous data. Machine learning makes use of a variety of models in order to create correct estimates. This research focuses on using LSTM and ARIMA-based Machine Learning to anticipate stock prices. Open, close, low, high, and volume are all factors considered.

Published in: [2022 IEEE Region 10 Symposium \(TENSYP\)](#)

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Publisher: IEEE

Conference Location: Mumbai, India

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Electronic ISSN: 2642-6102

Print on Demand(PoD) ISSN: 2640-821X

I. Introduction

A stock market is a trading area in which you can buy and sell stock in companies that are listed on a stock exchange. The stocks represent the ownership of the firm. The st [REDACTED] between for stock traders. Stock markets are

IoT powered Smart Stroller : (A Novel Approach for infant monitoring and safety)

Publisher: IEEE

[Cite This](#)[PDF](#)Ashwini Sawant ; Nafees Akhter ; Abhishek Bhatia ; Avantika Shetty ; Shweta Bhabal [All Authors](#)

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Abstract

Document Sections

[I. Introduction](#)[II. Working Methodology](#)[III. Results and Analysis](#)[IV. Conclusion](#)[V. Future Scope](#)[Authors](#)[Figures](#)[References](#)[Keywords](#)[Metrics](#)

Abstract:

Everyone in today's society works nonstop to better their families' lives and fulfill their needs. So, keeping their child healthy and safe during this process equates to a never-ending battle. Hiring a babysitter could be one solution, but they cannot be trusted blindly, especially when the baby is taken for a walk. What if someone tries to take the baby away? Even the slightest inattention can have severe consequences on the baby's safety. According to the Women and Child Development Ministry's website, a child goes missing every 10 minutes in India. Child lifting is a major concern for these parents who both work full-time as they cannot be with their baby constantly. This system has been proposed to create a contemporary IoT-powered smart pram to provide real-time monitoring and the best security measures for the child. The system contains modules that will measure the required factors such as temperature, humidity, the baby's cry, the location of the pram, and the baby's surroundings. The Arduino NANO board is used to integrate the actuators with the sensors. The data from these sensors are regularly updated on the ThingSpeak platform. If the data deviates from the expected values, necessary actions will be taken to ensure that the baby is fine. Further, if the camera module detects unknown faces in the baby's environment, the GSM module will send an alert message to the parents. Additionally, the GPS module will monitor the pram's location and send an update via message. This will allow parents to monitor their child's health and safety from anywhere, at any time, whether at work or at home. This proposed system is a technological innovation for working parents as it will be a huge help and will relieve unnecessary stress and tension.

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I. Introduction

Due to the increasing expenses of living, it is essential to work for everyone in the modern world. Everyone, including the parents,

Algorithms for Intelligent Systems

Series Editors: Jagdish Chand Bansal · Kusum Deep · Atulya K. Nagar

Garima Mathur
Mahesh Bundele
Ashish Tripathi
Marcin Paprzycki *Editors*

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ICAIAA 2022

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Editors

Garima Mathur
Poornima College of Engineering
Jaipur, Rajasthan, India

Mahesh Bundele
Poornima College of Engineering
Jaipur, Rajasthan, India

Ashish Tripathi
Department of Computer Science
and Engineering
Malaviya National Institute of Technology
Jaipur
Jaipur, India

Marcin Paprzycki
Systems Research Institute
Polish Academy of Sciences
Warsaw, Poland

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and Ranjan Bala Jain

1 Introduction

Brain tumors are one of the significant causes of death in children and adults below 40. Over 12,000 people are diagnosed with a primary brain tumor each year, including 500 children and young people, which is around 33 people every day [1]. Brain tumors can begin in one's brain (primary brain tumors), or cancer can begin in other parts of one's body and spread to the brain as secondary (metastatic) brain tumors. Many different types of brain tumors exist. Some of them are noncancerous (benign), and some are cancerous (malignant).

Depending on how abnormal the cancer cells look under a microscope and how quickly the tumor is likely to grow and spread, brain tumors can be classified into 4 grades according to the World Health Organization (WHO) tumor grading system—grade I (lower grade), grade II, grade III, grade IV (higher grade) [2]. Grade I and II tumors rarely spread to nearby tissues. They can be cured but have a possibility of recurring. Grade III and IV tumors can quickly spread to the neighboring tissues and usually cannot be completely removed by surgery.

Doctors can detect lower grade tumors easily but identifying grade III and IV tumors and classifying them require a time-consuming proper medical procedure to confirm their type and grade. Thus, it is very important to develop and use a computer-aided system that will not only precisely detect a tumor but also will predict its type or grade accurately.

S. Telge (✉) · R. Rodricks · M. Waingankar · A. Singh · R. B. Jain
Vivekanand Education Society's Institute of Technology, Chembur, Mumbai, India
e-mail: 2018.saurav.telge@ves.ac.in

Data Leakage in Android and Anomaly Based Intrusion Detection and Prevention System

Publisher: IEEE

[Cite This](#)[PDF](#)Aditya R. Achar ; Ambesh Mishra ; Diksha Makhijani ; Dhairya Nagpal ; Mrugendra Vasmatkar [All Authors](#)

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[Text Views](#)**Abstract**

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Digital era is the new emerging world. In this hyperconnected world, billions of people share platforms on some or the other operating systems. One of them is Android. Android smartphones are the most widely used digital devices, there are over 2.5 billion of android users worldwide. It is modern, fast and reliable. The amount of data that is being generated from these devices are stored in the data storage applications which basically involves third party applications or android system database. It comes with an inbuilt SQLite database application that is responsible for storage of the user data. This information being stored consists of sensitive security credentials such as passwords and confidential information. With the rise in technology, the threat to operating systems is also increasing. Attackers constantly look for vulnerabilities in these operating systems to exploit the loopholes. Data leakage is one of the major threats that is involved in applications. To improve the security of the device an Intrusion Detection and Prevention System (IDPS) is necessary. In this work, we have presented a Machine Learning (ML) based approach to combat the threats of the intrusions and to detect the anomalies in the network, thus protecting the system. We have virtually simulated the attack scenarios and detected the attacks using Snort.

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Date Added to IEEE Xplore: 11 October 2022

DOI: 10.1109/ASIANCON55314.2022.9909471

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Conference Location: Ravet, India

CD:978-1-8654-8849-7

Print on Demand(PoD) ISBN:978-1-8654-8852-7

I. Introduction

Digital Data is the new asset in the modern world, each day massive amounts of data is generated around, this is due to the huge boom in the digital sector in 2020's. The global world is hyper-connected. Most of the applications around us are backed up and driven by the data that is being generated by our usage. The huge amount of data generation has also led to data leakage and data insecurity. Data leakage is one of the most challenging tasks of data analysis, the prevention of data is among the

Improving the Accuracy of Object Detection in Low Light Conditions using Multiple Retinex Theory-based Image Enhancement Algorithms

Publisher: IEEE

[Cite This](#)[PDF](#)Aaryan Agrawal; Namrata Jadhav; Ayush Gaur; Shiwani Jeswani; Abhay Kshirsagar [All Authors](#)

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Cites in
Papers

379

Full
Text Views**Abstract**

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- I. Introduction
- II. Materials and methodology
- III. Results
- IV. Conclusion

[Authors](#)[Figures](#)[References](#)[Citations](#)[Keywords](#)[Metrics](#)**Abstract:**

Object Detection is a vast field that has many applications in present and upcoming technologies. However, improving the accuracy of object detection algorithms remains a persistent challenge. There are some limitations to its accuracy and many factors like image quality, noise, and the illumination of the image play a crucial role in it. It is more likely that an image would have noise if it was captured in low illumination conditions as the camera captures less light. To solve this problem and improve object detection accuracy, this study proposes to pass the low exposure image through existing Retinex theory-based low light image enhancement models and then its output to be passed into an object detection algorithm. Retinex based image enhancement models estimate the areas with low exposures and noise is reduced from the image as well with the help of neural networks. This demonstrates a positive impact on the confidence values of the object detection and more tendency for an object to be detected. Lastly, a comparison has also been performed on three existing low light image enhancement models. MIRNet, MBLEN, and TCN models have been used for comparison based on confidence values of the objects detected in various images.

Published in: 2022 Second International Conference on Advances in Electrical, Computing, Communication and Sustainable Technologies (ICAECT)

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Date Added to IEEE Xplore: 01 July 2022

DOI: 10.1109/ICAECT54875.2022.9808011

▼ **ISBN Information:**

Electronic ISBN:978-1-8654-1120-2

Publisher: IEEE

Print on Demand(PoD) ISBN:978-1-8654-1121-9

Conference Location: Bhillai, India

I. Introduction

Object detection is a computer vision task that allows us to track the objects in a particular image. Object detection draws rectangular boxes around these detected objects, which allows us to keep track of the objects in that image. With the help of

Deformation Analysis of Aluminium

Publisher: IEEE

[Cite This](#)[PDF](#)Kavita Tewari ; Mayank Bhatte ; Madhurima Tamhankar [All Authors](#)

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Abstract

Document Sections

[I. Introduction](#)[II. Methodology](#)[III. Experimental](#)[IV. Results](#)[V. Conclusion](#)[Authors](#)[Figures](#)[References](#)[Keywords](#)[Metrics](#)

Abstract:

The paper uses digital image correlation open-source software Noorr to analyse deformation in aluminium. An aluminium plate was subjected to deformation and its image was obtained. This image was compared with the original undeformed image to analyse strains. It is concluded that the strains are uniform over the entire plate except for near cracks, where they attain high values.

Published in: 2023 Third International Conference on Advances in Electrical, Computing, Communication and Sustainable Technologies (ICAECT)

Date of Conference: 05-06 January 2023

INSPEC Accession Number: 23198814

Date Added to IEEE Xplore: 15 May 2023

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Electronic ISBN: 978-1-8654-9400-7

Publisher: IEEE

Print on Demand(PoD) ISBN: 978-1-8654-9401-4

Conference Location: Bhillai, India

I. Introduction

Aluminium is a widely used metal. The metal and its alloys can only be bettered by steel. Aluminium possesses a density of 2.7 g/cm³. A significant advantage of aluminium over other materials, including steel, is its ability to resist progressive corrosion.

Human body gesture-controlled gaming application

Publisher: IEEE

[Cite This](#)[PDF](#)Shubham Metkar; Jayesh Mahajan; Jayamala Adsul; Bhairavi Chavan [All Authors](#)

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Abstract

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- I. Introduction
- II. Related Work
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Abstract:

Gaming has always held the requirement of peripheral devices such as keyboards, mouse, joystick, etc. But with computer technology evolving every single day, human-body gestures are found to be a potential replacement for the primary accessory of Human-Computer Interaction (HCI). In this paper, an idea of a human-body gesture controlled gaming desktop application has been proposed. With a simple web camera, body gestures have been detected and image processing techniques have been performed with the help of mediapipe - a prebuilt computer vision neural network, which enables a user to directly interact with the gaming console and with the use of OpenCV, a library designed to solve computer vision problems and which provides many useful programming functions used for features like face, edge, object detection, etc. So the input images can be processed and communicated with the gaming commands virtually. The activity of the said user is recorded and stored to MongoDB, an open source No-SQL document based database program. With this desktop application, a user can play any of the various games offered on the portal.

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Print on Demand(PoD) ISBN:978-1-8654-6793-3

Conference Location: Kottayam, India

I. Introduction

Gaming facilities have become part of people's lives and they now act as a source of entertainment and refreshment for individuals of all ages. Computer technology, too, over the decades, has developed immensely. As a result, people have been

Automatic Generation Control and Its Comparative Analysis for Interconnected Thermal and Hydrothermal Power System by ERWCA Optimization Technique

Publisher: IEEE

Cite This

PDF

Gauri Sahoo ; Rabindra Kumar Sahu ; Sidhartha Panda All Authors

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Abstract

Document Sections

- I. Introduction
- II. IHTPS Model
- III. The Proposed Approach
- IV. Objective Function
Modeling with Constraints
- V. Demonstration and
Disussions of Simulation
Results

Show Full Outline ▾

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Figures

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Keywords

Metrics

Abstract:

This paper investigates, Automatic Generation Control of 2-Equal Area Interconnected Hydrothermal Power System (IHTPS) with Multi Source Units Including Non-Linearity and its comparative analysis with a Thermal model in terms of its system dynamic responses when subjected to random load disturbances. Initially, five different controller structures with gain parameters tuned by ERWCA optimization technique for obtaining a minimum ITAE value are employed in this paper. ITAE values were computed using PDF, 2DOFPDF, PID, 2DOFPID, 2DOFPIDF controllers and the least ITAE was yielded by 2DOFPIDF. The robustness of the controller strategy is evaluated and efficacy of 2DOFPIDF controller demonstrated for random load disturbances. Further, when random load disturbance is applied to both models (ITPS and IHTPS) using the same 2DOFPIDF controller tuned by ERWCA technique, it is found that dynamic response of IHTPS model is showing better stability as compared to ITPS model. The environmental consequences inherent to ITPS are overcome with IHTPS model. The power system reliability is evaluated by comparing both the models.

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USB ISBN:978-1-6654-9259-1

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I. Introduction

Electrical energy is one of the most important utilities that has become integral part of modern life and plays vital roles starting from simple home appliance, electronic gadgets to manufacturing plants in all parts of day-to-day life. Due to escalation of modern technologies, automation and modernization of industries, high quality electrical power supply is essential. A good power quality is the grid's ability to supply a pure sinusoidal power flow available constantly within specified voltage and frequency

Lecture Notes in Electrical Engineering 914

Rabindra Nath Shaw
Sanjoy Das
Vincenzo Piuri
Monica Bianchini *Editors*

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Editors

Rabindra Nath Shaw
Bharath Institute of Higher Education
and Research
Chennai, Tamil Nadu, India

Sanjoy Das
Regional Campus Manipur
Indira Gandhi National Tribal University
Imphal, Manipur, India

Vincenzo Piuri
Department of Computer Science
University of Milan
Milan, Italy

Monica Bianchini
Department of Information Engineering
and Mathematics
University of Siena
Siena, Italy

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Automated Crack Severity Level Detection and Classification for Surface Crack Using Deep Convolutional Neural Networks

[Harshad B. Nehate](#), [Parth K. Kharkar](#), [Pratiksha S. Bhat](#), [Varad S. Rane](#)  & [Kavita Tewari](#)

Conference paper | [First Online: 31 August 2022](#)

719 Accesses

Part of the [Lecture Notes in Electrical Engineering](#) book series (LNEE, volume 914)

Abstract

Surface wall cracks could indicate that a building's structural integrity is compromised. The evaluation of these defects can be used to define the building's state. Currently, the inspection of surface cracks is done manually. This leads to subjective judgement on cataloguing the severity of crack which ultimately poses risk to everyone. It is critical to inspect and monitor the structure for surface cracks regularly to ensure the buildings' structural health and reliability. As a better approach to visual human inspection, use of deep learning is suggested in this research paper. Hence, a convolutional neural network is proposed based on the solution to detect surface concrete cracks. The Middle East Technical University (METU) dataset contains overall 40,000 images of crack and non-crack types. This is used to optimize and train our proposed CNN model for image classification. After classifying cracks, our model can predict the severity of the crack. A well-known pre-trained object detection model, 'YOLOv5', is also implemented for comparison study. This was trained and tested on a self-annotated dataset with labels based on severity. An android app is also developed to deploy the YOLOv5 model.

Smart Innovation, Systems and Technologies 311

Jyoti Choudrie
Parikshit Mahalle
Thinagar Perumal
Amit Joshi *Editors*



ICT with Intelligent Applications

Proceedings of ICTIS 2022, Volume 1



Editors

Jyoti Choudrie
Hertfordshire Business School
University of Hertfordshire
Hatfield, Hertfordshire, UK

Thinakaran Perumal
University Putra Malaysia
Serdang, Malaysia

Parikshit Mahalle
Vishwakarma Institute of Information
Technology
Pune, Maharashtra, India

Amit Joshi
Global Knowledge Research Foundation
Ahmedabad, India

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ICT with Intelligent Applications pp 705–718 | [Cite as](#)

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Scattering Wavelet Network-Based Iris Classification: An Approach to De-duplication

[Parmeshwar Birajadar](#) , [Meet Haria](#) & [Vikram Gadre](#)

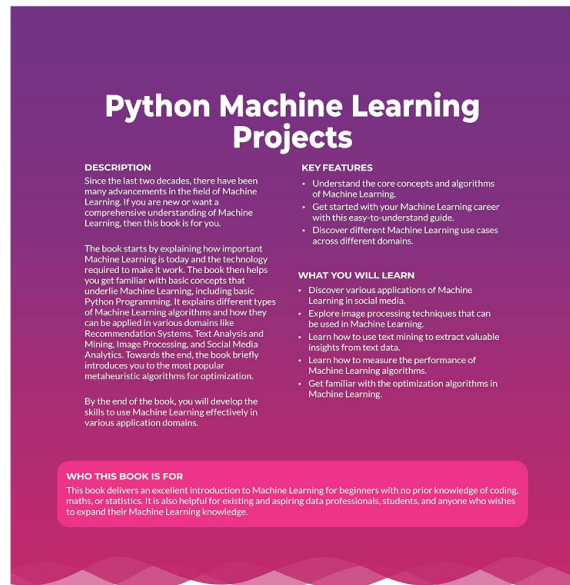
Conference paper | [First Online: 01 October 2022](#)

341 Accesses

Part of the [Smart Innovation, Systems and Technologies](#) book series (SIST, volume 311)

Abstract

In a large-scale iris-based identification system, iris classification is an important indexing task to reduce the search time in a large database for accurate matching, especially in a de-duplication application. Because of the considerable intra-class variability and small inter-class variability, iris classification is a difficult pattern recognition challenge. In this paper, we propose a novel approach to iris classification based on iris fiber structures. Translation and minor deformation invariant local iris features are extracted using a scattering wavelet network. A simple generative PCA affine classifier is used to classify the resulting invariant feature vectors. Experiments on two benchmark iris databases reveal that the proposed iris classification algorithm is successful and robust in terms of classification accuracy.



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CHAPTER 1

Introduction to ML

Introduction

The term *machine learning* was coined by *Arthur Samuel* in 1959. The basic idea behind the coined term was “Can machines do what we as humans can do?” rather than asking “Can machines think?” These questions led to the development of machine learning where, just like human beings, machines tend to learn from experience. The aim is to improve the performance with experience. This chapter introduces the related terms, such as data science, data mining, artificial intelligence, machine learning and deep learning. The major focus is to familiarize you with the methods and techniques used in machine learning. To understand the core concepts, this chapter explores the working process of any given machine learning algorithm. In the recent years, machine learning technology has improved drastically, which is elaborated through the various applications, limitations and the challenges faced while developing the machine learning algorithms.

Structure

In this chapter, we will discuss the following topics:

- Introduction to Machine Learning
- Models of Machine Learning
 - Supervised machine learning model through training
 - Unsupervised machine learning model
 - Semi - structured machine learning model
 - Reinforcement machine learning model
- Working of Machine Learning algorithm
- Challenges for Machine Learning Projects
- Limitations of Machine Learning

Detection of Lung Carcinoma using Volumetric Convolution (V-Net)

Publisher: IEEE

Cite This

PDF

Gresha Bhatia ; Shreeja Nanda ; Shreyas Udupa ; Manoj Ayyappan ; Riteshsingh Kadakoti [All Authors](#)

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Full

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Abstract

Document Sections

- I. Introduction
- II. Literature Survey
- III. Methodology
- IV. Conclusion

Authors

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Keywords

Metrics

Abstract:

Lung cancer is one of the leading causes of cancer-related deaths due to its aggressive nature and late detection at advanced stages. Timely detection of lung cancer is critical for a patient's life and is a significant challenge. In general, chest radiography (X-rays) and Computed Tomography (CT) scans are utilized to diagnose malignant nodules; however, the presence of benign nodules leads to inaccurate choices. In the early stages, benign and malignant nodules seem strikingly similar. This research presents an innovative deep learning-based model with multiple approaches for the accurate diagnosis of malignant nodules. We discussed the Volumetric Convolution (V-Net) architecture for lung nodule detection and classification using the Lung Nodule Analysis (LUNA-16) dataset in this study.

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I. Introduction

Cancer is an illness in which some of the body's cells grow uncontrollably and spread to other parts of the body. Lung cancer is the deadliest cancer globally — about 75% of those who have it die within five years of diagnosis. Various factors can result in lung cancer, and smoking is the foremost cause [1]. Cigarettes used for smoking contain over 500 chemicals, of which 70 have been proved to cause cancer. The chemicals that cause cancer are termed carcinogens, and the carcinogens present in cigarette smoke line up on the walls of the lungs. The shocking part is that the damage in the lining of the lungs starts almost

Smart Innovation, Systems and Technologies 312

Jyoti Choudrie
Parikshit Mahalle
Thinagaran Perumal
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IOT with Smart Systems

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Automated System for Management of Hardware Equipment in Colleges



Vaidehi Bhagwat, Aishwarya Krishnamurthy, Himanshu Behra, Ikjot Khurana, and Gresha Bhatia

Abstract The management and proper allocation of hardware inventory are of paramount importance in every educational institution. In fact, in certain nations, teaching is done purely by the means of virtual technology such as projectors and laptops. So, inventory management of all these hardware assets becomes a huge task. A few schools do it manually with the assistance of the functioning staff of schools, yet that cycle is frequently prone to error. Moreover, there are high possibilities of the inventory getting misplaced. Sometimes, it fails to reach the Faculty at the right time, which delays the teaching process for the students. To keep away from this large number of mistakes, we made an application that will help all the working staff(peons) to deal with all the inventory appropriately and without any problem. It will likewise help the faculty(teachers) to book their teaching equipment(laptops) according to their convenient time slots. Our application is specifically designed for the monitoring and allocation of laptops used by the faculty in each classroom. The application is a way for teachers to communicate with the working staff. Similarly, it is also a way for the working staff to manage and keep track of all the laptops. This paper presents a review of how the app is fabricated with Flutter and how it will benefit all educational institutes in overseeing the inventory of the teaching equipment.

Keywords Education · Application · Inventory · Management · Flutter

V. Bhagwat (✉) · A. Krishnamurthy · H. Behra · I. Khurana · G. Bhatia
Vivekanand Education Society's Institute of Technology, Mumbai, Maharashtra, India
e-mail: 2019vaidehi.bhagwat@ves.ac.in

A. Krishnamurthy
e-mail: 2019aishwarya.krishnamurthy@ves.ac.in

H. Behra
e-mail: 2019himanshu.behra@ves.ac.in

I. Khurana
e-mail: 2019ikjot.khurana@ves.ac.in

G. Bhatia
e-mail: gresha.bhatia@ves.ac.in

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Advanced Data Structures and Algorithms

Learn how to enhance data processing with more complex and advanced data structures



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Advanced Data Structures and Algorithms

DESCRIPTION

"Advanced Data Structures and Algorithms" is an important subject area in Computer Science that covers more complex and advanced topics related to data structures and algorithms.

This book will teach you how to analyze algorithms to handle the difficulties of sophisticated programming. It will then help you understand how advanced data structures are used to store and manage data efficiently. Moving on, it will help you explore and work with Divide and Conquer techniques, Dynamic programming, and Greedy algorithms. Lastly, the book will focus on various String Matching Algorithms such as naive string matching algorithms, Knuth-Morris-Pratt(KMP) Algorithm, and Rabin-Karp Algorithm.

By the end of the book, you will be able to analyze various algorithms with time and space complexity to choose the best suitable algorithms for a given problem.

KEY FEATURES

- Get familiar with various concepts and techniques of advanced data structures to solve real-world problems.
- Learn how to evaluate the efficiency and performance of an algorithm in terms of time and space complexity.
- A practical guide for students and faculty members who are interested in this important subject area of Computer Science.

WHAT YOU WILL LEARN

- Understand how to examine an algorithm's time and space complexity.
- Explore complex data structures like AVL tree, Huffman coding, and many more.
- Learn how to solve larger problems using Divide and Conquer techniques.
- Identify the most optimal solution using Greedy and Dynamic Programming.
- Learn how to deal with real-world problems using various approaches of the String Matching algorithms.

WHO THIS BOOK IS FOR

This book is aligned with the curriculum of the Computer Engineering program offered by Mumbai University. The book is designed not only for Computer Engineering and Information Technology program students but also for anyone who wants to learn about advanced data structures and analysis of algorithms.



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CHAPTER 1

Analysis of Algorithm

Introduction

The chapter emphasizes the basics of algorithmic analysis. *Donald Knuth* defines the term “analysis of algorithms” as the common technique for theoretical estimation of required resources, that is used to provide a solution to any specific computational problem. It will discuss the need for analysis of algorithms and help us choose a more suitable algorithm for a given problem statement. In algorithmic design, complexity of an algorithm plays an important aspect in justifying the design decisions. Accordingly, algorithm efficiency is measured in two perspectives, such as time and space complexity. Hence, the major focus of this chapter is on various types of asymptotic notations used for the estimation of time complexity of an algorithm and is discussed with examples.

Structure

In this chapter, we will discuss the following topics:

- Analysis of algorithm
- Asymptotic Notations
- Time Complexity
- General Rules for time complexity calculation
- Recurrences

Objectives

This chapter discusses the basics of analysis of algorithm, the need for analysis of algorithms as well as the various notations, with examples. Apart from these, time complexity calculation is the major content focused on, in the chapter.


Analysis of algorithm

Lecture Notes in Networks and Systems 383

G. Ranganathan
Xavier Fernando
Álvaro Rocha *Editors*

Inventive Communication and Computational Technologies

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 Springer

Editors

G. Ranganathan
Department of Electronics
and Communication Engineering
Gnanamani College of Technology
Namakkal, Tamil Nadu, India

Xavier Fernando
Ryerson Communications Lab
Department of Electrical and Computer
Engineering
Ryerson University
Toronto, ON, Canada

Álvaro Rocha
ISEG, University of Lisbon
Lisboa, Portugal

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Multimodal Detection and Analysis of Parkinson’s Disease

[Nupur Giri](#), [Advait Naik](#) , [Krish Amesur](#), [Aditya Gurnani](#) & [Omkar Mane](#)

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Abstract

Parkinson’s disease (PD) is a central nervous system neurodegenerative condition that causes temporary or permanent loss of motor movements, speech, and mental processes. Parkinson’s disease (PD) is distinguished and characterized by a wide spectrum of movement and non-movement symptoms that can affect function to varying degrees. Unfortunately, PD is difficult to diagnose because there are no conventional diagnostic tests or systems that can be relied upon for accurate results. While the Unified Parkinson’s Disease Rating Scale (UPDRS) is recommended as a first line for monitoring Parkinson’s disease progression, it must be administered by a neurologist, therefore, it is not a good tool for evaluating short-term variations in the disease state. For this reason, neurologists need to use automated diagnostic technologies to aid them. The study focuses on the development of a system for estimating the prevalence of a person’s Parkinson’s disease (PD) symptoms by remotely monitoring numerical interpretations of their regular motor movements as movement disorders escalate. The research has also focused on the identification of the vocal impairments in Parkinson’s

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Siddhartha Bhattacharyya
Mario Koeppen
Debashis De
Vincenzo Piuri *Editors*

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Editors

Siddhartha Bhattacharyya
Algebra University College
Zagreb, Croatia

Rajnaraj Mahavidyalaya
Birbhum, West Bengal, India

Debashis De 
Maulana Abul Kalam Azad University
of Technology
Kolkata, West Bengal, India

Mario Koeppen
Kyushu Institute of Technology
Kitakyushu, Fukuoka, Japan

Vincenzo Piuri
University of Milan
Milan, Italy

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Nirbhaya Naari: An Artificial Intelligence Tool for Detection of Crime Against Women



Sakshee Sawant , Divya Raisinghani , Srishti Vazirani ,
Khushi Zawar , and Nupur Giri 

Abstract Dowry abuse, rape, domestic violence, forced marriage, witchcraft-related abuse, honor killings are just a few of the myriad atrocities women encounter and fight against worldwide. The psychological impacts of abuse on the victim can lead to depression, PTSD, eating disorders, withdrawal from the outside world and society, and low self-esteem to name a few. The physical implications could result in an inability to get to work, wage loss, dearth of involvement in routine activities, not being able to take care of themselves and their families. Our initiative is dedicated to curbing violence against women by providing a forum for women to speak about violence as well as passing a signal about it through a dedicated hand gesture. Our designed solution has three modules namely: Violence/Crime Scene Detection against women using audio and video, help hand signal detection, and multi-label story classification. Our approach uses Convolutional Neural Networks (CNN), Long Short-Term Memory (LSTM) for video classification along with Support Vector Machine (SVM), and Random forest for audio classification.

Keywords Violence detection · Abuse · Harassment · Hand gestures · Crime · Residual networks (ResNets) · Convolutional neural network (CNN) · Deep learning · Word embeddings

S. Sawant (✉) · D. Raisinghani · S. Vazirani · K. Zawar · N. Giri
Department of Computer Engineering, Vivekanand Education Society's Institute of Technology,
Mumbai 400074, India
e-mail: 2018.sakshee.sawant@ves.ac.in

D. Raisinghani
e-mail: 2018.divya.raisinghani@ves.ac.in

S. Vazirani
e-mail: 2018.srishti.vazirani@ves.ac.in

K. Zawar
e-mail: 2018.khushi.zawar@ves.ac.in

N. Giri
e-mail: nupur.giri@ves.ac.in

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Tomonobu Senjyu
Chakchai So-In
Amit Joshi *Editors*

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Editors

Tomonobu Senjyu
University of the Ryukyus
Nishihara, Japan

Chakchai So-In
Khon Kaen University
Khon Kaen, Thailand

Amit Joshi
Global Knowledge Research Foundation
Ahmedabad, India

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Classification of ISL Using Pose and Object Detection-Based Techniques

[Vishesh Mittal](#) , [Paras Patil](#), [Akshita Upadhyay](#), [Kapish Madhwani](#) & [Nupur Giri](#)

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Abstract

Hearing-impaired individuals are forced to face numerous obstacles in several challenges in different facets of life. The unemployment rate among the deaf is staggering. The COVID-19 pandemic has introduced a new degree of hardship, particularly because the work environment has been completely switched to online platforms because several companies aren't prepared with the necessary tools to involve the hearing impaired in this change. Societal inclusion and acceptance of differently-abled people are dependent on the ecosystem that has been created for them, which involves training and skilling them as well as understanding and seamlessly interacting with them, hence increasing employability. With the aid of this project, we want to bridge the communication gap for the hearing impaired and thereby contribute to the development of suitable habitats for them. In this paper, we present two approaches for the classification of Indian Sign Language: (a) the object detection-based approach utilizes a model built on Scaled-YOLOv4 architecture which performs a frame-by-frame inference and (b) the Pose-based approach utilizes an LSTM model which takes the skeletal pose landmarks from Mediapipe for a sequence of frames as an input to infer and predict the action.

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Simon Fong
Nilanjan Dey
Amit Joshi *Editors*

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Editors

Simon Fong
University of Macau
Macau, Macao

Nilanjan Dey
JIS University
Kolkata, India

Amit Joshi
Global Knowledge Research Foundation
Ahmedabad, India

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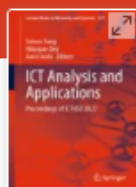
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UpAsthiti: A Touchless Attendance System

[Dimple Nachnani](#) , [Salonee Velonde](#), [Sejal Kriplani](#), [Mayur Pawar](#), [Shashikant Dugad](#), [Gresha Bhatia](#) & [Abha Tewari](#)

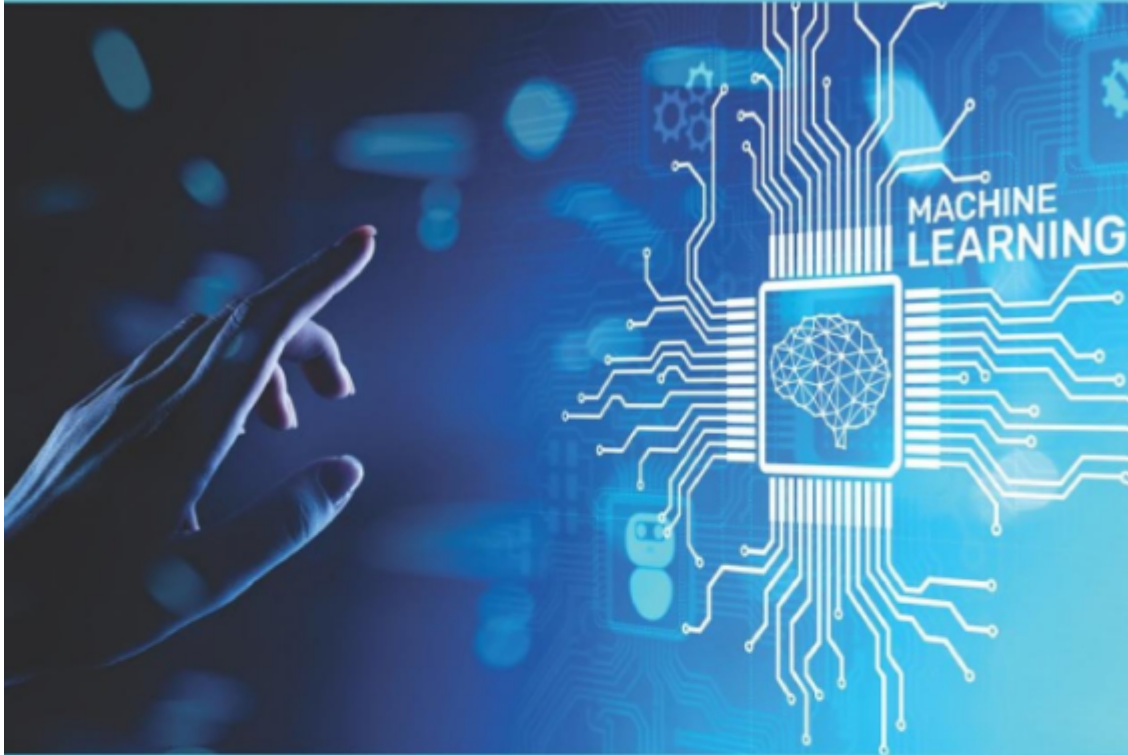
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Abstract

Managing attendance is a vital task for every institution. Considering the COVID pandemic where many organizations have resorted to online mode of working, it has become imperative to maintain social distancing and digitize various processes. Thus, for maintaining attendance of the students of schools/colleges or employees of a company, a touchless attendance system is required that records the attendance by capturing faces and does not waste time. This one-of-a-kind application uses a client–server model and captures the faces of students/employees through video feeds from mobile phone cameras, and the images are sent to a server, where image processing is used to process the faces. Further, with the help of dlib and the face recognition library, it identifies the faces and records the attendance in the software itself. The processed image is again sent back to the client android application, and the user gets notified about their attendance. Additional functionalities for data analysis and updating data have also been added to the system. Thus, the whole attendance system is an effort to make the attendance activity easy and efficient.



Handbook of Research on Machine Learning

Foundations and Applications

Monika Mangla | Subhash K. Shinde | Vaishali Mehta
Nonita Sharma | Sachi Nandan Mohanty
Editors

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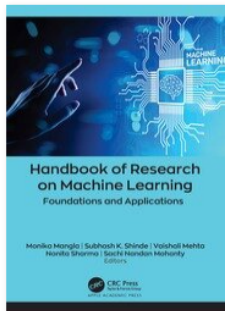
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Medical Review Analytics Using Social Media

By Dipen Chawla, Sujay Varma, Sujata Khedkar

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Garima Mathur
Mahesh Bundele
Ashish Tripathi
Marcin Paprzycki *Editors*

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Editors

Garima Mathur
Poornima College of Engineering
Jaipur, Rajasthan, India

Mahesh Bundele
Poornima College of Engineering
Jaipur, Rajasthan, India

Ashish Tripathi
Department of Computer Science
and Engineering
Malaviya National Institute of Technology
Jaipur
Jaipur, India

Marcin Paprzycki
Systems Research Institute
Polish Academy of Sciences
Warsaw, Poland

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Emotional AI-enabled Interview Aid

[Tejas Dhopavkar](#) , [Omkar Ghagare](#), [Onkar Bhatlawande](#) & [Sujata Khedkar](#)Conference paper | [First Online: 15 April 2023](#)**130** AccessesPart of the [Algorithms for Intelligent Systems](#) book series (AIS)

Abstract

Emotions help in providing additional meaning to the text written or words spoken by a person. They play an important role in several sectors such as maintaining a good relationship with customers by analyzing their feedback, analyzing the candidate's speech and text to know their emotions and interest in the company, and so on. In this paper, we focus on extracting the emotions of interview candidates and analyzing their text and speech so that a company can find a better fit for the company as well as the candidate can know what meaning or emotion his/her speech or text conveys. Audio and text datasets are used which are preprocessed and fed to the Machine Learning models which help in classifying the emotion and analyzing them to provide analysis of the input given. Using this application, companies and candidates can get a good overview and brief analysis of the speech/text.

Engineering Cyber-Physical Systems
and Critical Infrastructures 3

Jude Hemanth · Danilo Pelusi ·
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Intelligent Cyber Physical Systems and Internet of Things

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Editors

Jude Hemanth
Department of Electronics
and Communication Engineering
Karunya Institute of Technology
and Sciences
Coimbatore, Tamil Nadu, India

Danilo Pelusi
Faculty of Communication Sciences
University of Teramo
Teramo, Italy

Joy Iong-Zong Chen
Department of Electrical Engineering
Da-Yeh University
Dacun, Changhua, Taiwan

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Aatmanirbhar Sanchar: Self-Sufficient Communications

[Jay Jhaveri](#) , [Abhay Gupta](#), [Prem Chhabria](#), [Neeraj Ochani](#), [Sharmila Sengupta](#), [Sunita Suralkar](#) & [Shashi Dugad](#)

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Abstract


In the light of recent war crimes and data piracy conspiracies, privacy is of utmost importance to an organization and even to an individual. The majority of the population is dependent on third-party services for their daily communication. Albeit these major corporations advertise “secure” means of chat transfer, they install various kinds of backdoors to sell the user’s data to advertisers. Under the notion of going “Aatmanirbhar” i.e., Make in India, we have developed an indie solution without incorporating any third-party services or APIs. “Aatmanirbhar Sanchar” aims at providing users with a real-time off-the-grid, secure, and anonymous messaging service. It features an End-to-End encrypted transmission of messages and data files likewise. This is achieved by combining the open-source AES algorithm with a self-developed XOR encryption process.

Lecture Notes in Networks and Systems 615

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Editors

M. Shamim Kaiser
Jahangirnagar University
Dhaka, Bangladesh

Juanying Xie
School of Computer Science
Shaanxi Normal University
Xi'an, China

Vijay Singh Rathore
Jaipur Engineering College and Research
Centre
Jaipur, India

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Quantitative Assessment and Prediction of Ocean Plastic Motivating Actions to Mitigation



Sharmila Sengupta, Manasvi Patwa, Varnit Batheja, Bhavika Chattani, and Sahil Deshmukh

Abstract Plastic debris has been piling up on dumpsites and is finding its way into the oceans as a result of widespread usage of plastics and inadequate waste management procedures, therefore adding to the global problem of ocean plastic pollution. There has not been a comprehensive assessment of the amount of plastic that enters the ocean through the Indian riverine system. Evaluation of natural elements such as river flow, rainfall, and a variety of other factors like population, harbor activities, climate change, wind speed, amount of fishing, etc., have made quantitative measurements of river plastic difficult and cumbersome. In this paper, we aim to attain a sustainable development goal (SDG13) on climate action through the “Microsoft AI for Earth” grant under project id AI4E-2245-K6x8-21,100,305. Plastic waste generated by the major rivers of India is calculated for the past 10 years to develop a machine learning model for the prediction of the amount of plastic waste contributed by the Indian rivers to the ocean over the next five years.

Keywords SDG · MSW · Ocean plastic · Microplastic · Fishing

S. Sengupta (✉) · M. Patwa · V. Batheja · B. Chattani · S. Deshmukh
Vivekanand Education Society's Institute of Technology, Mumbai, India
e-mail: sharmila.sengupta@ves.ac.in

M. Patwa
e-mail: 2019manasvi.patwa@ves.ac.in

V. Batheja
e-mail: 2019varnit.batheja@ves.ac.in

B. Chattani
e-mail: 2019bhavika.chattani@ves.ac.in

S. Deshmukh
e-mail: 2019sahil.deshmikh@ves.ac.in

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Smart Innovation, Systems and Technologies 324

Chakchai So-In
Narendra D. Londhe
Nityesh Bhatt
Meelis Kitsing *Editors*



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Editors

Chakchai So-In
Khon Kaen University
Khon Kaen, Thailand

Nityesh Bhatt
Nirma University
Ahmedabad, Gujarat, India

Narendra D. Londhe
National Institute of Technology
Raipur, Chhattisgarh, India

Meelis Kitsing
Estonian Business School
Tallinn, Estonia

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Chapter 8

Form Scanner & Decoder



Sharmila Sengupta, Harish Kumar, Anshal Prasad,
Ninad Rane, and Nilay Tamane

Abstract In India, most of the people use a pen & paper for filling various application forms. Also, they are not comfortable with the English language. This project aims to automatically convert applications written in Hindi to English and therefore assists mainly the rural people who have the inhibition of first filling a form and that too in English. Technology may be all around us, but people are still congenial with the pen and paper. So, this project is based on the recognition of different handwritten characters written in Hindi language and converting them to English. It tries to develop a word recognition system to separate several Hindi words from handwritten forms using image segmentation techniques. Nowadays, all form reading processes are done digitally. This system will facilitate such processes in banking, agriculture, education, etc.

8.1 Introduction

Handwriting identification is a difficult sector in researching when discussing fields of character recognition and image processing. Since many years, quite a few researchers have worked on methods that make the processing time faster for identifying and extracting handwritten text whilst having a high accuracy, but all of

S. Sengupta · H. Kumar (✉) · A. Prasad · N. Rane · N. Tamane
Computer Engineering, Vivekanand Education Society's Institute of Technology,
Mumbai, India
e-mail: 2018.harish.kumar@ves.ac.in

S. Sengupta
e-mail: sharmila.sengupta@ves.ac.in

A. Prasad
e-mail: 2018.anshal.prasad@ves.ac.in

N. Rane
e-mail: 2018.ninad.rane@ves.ac.in

N. Tamane
e-mail: 2018.nilay.tamane@ves.ac.in

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AgriCare: An Android Application for Detection of Paddy Diseases

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Full

[Text Views](#)

Abstract

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[I. INTRODUCTION](#)[II. LITERATURE SURVEY](#)[III. PROPOSED
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RESULTS](#)[V. CONCLUSION](#)[Authors](#)[Figures](#)[References](#)[Keywords](#)[Metrics](#)

Abstract:

Agriculture is a significant part of India's economy being one of the main sources of living. Paddy plant is one of the most important food crops of India covering about one-fourth of the total cropped area. Although having the potential in the market, India's lower paddy crop productivity/hectar and higher cost of production is a major concern for farmers. The low yield can be addressed by designing a system that helps farmers identify and predict diseases in the paddy crops. There are so many types of paddy diseases. It is very difficult to manually identify appropriate properties for distinguishing different types of crop diseases. So an android app will help farmers to identify and detect a paddy plant disease using images of the disease-infected paddy crop based on machine learning image processing techniques.

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I. INTRODUCTION

The project involves a developed machine learning-based automated system as it is highly required in India's agricultural sector that produces great amounts of rice that identifies the diseases as soon as initial symptoms of the diseases appear on the paddy

Algorithms for Intelligent Systems

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Garima Mathur
Poornima College of Engineering
Jaipur, Rajasthan, India

Mahesh Bundele
Poornima College of Engineering
Jaipur, Rajasthan, India

Ashish Tripathi
Department of Computer Science
and Engineering
Malaviya National Institute of Technology
Jaipur
Jaipur, India

Marcin Paprzycki
Systems Research Institute
Polish Academy of Sciences
Warsaw, Poland

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Recognition of Indian Sign Language Characters Using Convolutional Neural Network

[Siddhesh Gadge](#), [Kedar Kharde](#), [Rohit Jadhav](#), [Siddhesh Bhare](#) & [Indu Dokare](#) 

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Abstract


India is home to approximately 63 million people of the Deaf and Hard of Hearing community (DHH). Indian Sign Language (ISL) is used in the deaf community all over India. So there is a need for proper learning aids which require recognition models with high performance. This work aims to recognize Indian Sign Language using a Convolutional Neural Network. A custom dataset that was self-compiled by four different persons was utilized for this study. Image preprocessing is done to get two types of datasets, one with the grayscale format and the other with canny edge detection. Custom CNN model is used. Results indicate that CNN gives 99.87% accuracy for grayscale numerals and 99.76% accuracy for grayscale alphabets. In the case of canny edges, the given architecture gives an accuracy of 99.82% and 99.82% for numerals and alphabets respectively.

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Editors

K. Geetha
JCT College of Engineering
and Technology
Coimbatore, India

Francisco M. Gonzalez-Longatt
Department of Electrical Power
Engineering
University of South-Eastern Norway
Notodden, Norway

Hui-Ming Wee
Department of Industrial and Systems
Engineering
Chung Yuan Christian University (CYCU)
Taoyuan City, Taiwan

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Angle Detection of Steering in a Self-Driving Car



Vipul Devnani, Chandan Panjwani, Navin Kachhela, Abha Tewari,
and Neeraj Gwalani

Abstract An exciting new era that has come into focus is the age of self-learning and automation, where one of its application is the self-driven vehicles. In present era, humans have to no longer care about the obstacles in the driving paths or the stressful rush hour traffics, since the automated vehicles can help reach the destination fast and efficiently. Udacity has provided a dataset containing a set of images with steering wheel angle recorded during driving. With the help of the dataset provided, prediction of the steering wheel rotation angle can be done. In order to predict the angle, computer vision is used. It is the main technology facilitating self-driven vehicles. In this project, a system is created to drive a vehicle automatically without any human input requirement. ML models like CNN and OpenCV are used for certain application to detect an object, vehicle, traffic sign, etc. The project is deployed as a simulation software that provides the output in a frame. There are two frames: one that consists the steering wheel and other that consists the road.

Keywords Autonomous cars · CNN · Machine learning · Computer vision

V. Devnani (✉) · C. Panjwani · N. Kachhela · A. Tewari · N. Gwalani
Computer Science and Engineering, Vivekanand Education Society's Institute of Technology,
Mumbai, India
e-mail: 2018vipul.devnani@ves.ac.in

C. Panjwani
e-mail: 2018chandan.panjwani@ves.ac.in

N. Kachhela
e-mail: 2018navin.kachhela@ves.ac.in

A. Tewari
e-mail: abha.tewari@ves.ac.in

N. Gwalani
e-mail: 2018neeraj.gwalani@ves.ac.in

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Editors

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and Engineering
GITAM University
Bengaluru, Karnataka, India

Selvanayagi Kolandapalayam Shanmugam
Department of Mathematics and Computer
Science
Ashland University
Ashland, OH, USA

Ivan Izonin
Department of Artificial Intelligence
Lviv Polytechnic National University
Lviv, Ukraine

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DermaCare.AI: A Skin Lesion Detection System Using Deep Learning Concepts



Adarsh Singh, Sourabh Bera, Pranav Chaturvedi, Pranav Gadhave,
and C. S. Lifna

1 Introduction

Melanoma is the most threatening type of lesion. Melanoma is the least common skin cancer, still it is the cause of 75% of deaths due to skin lesions. As with other cancers, early and correct detection potentially aided by means of statistics and science can make cure extra effective. Currently, computer-aided diagnosis (CAD) has become a necessity for various skin diseases as the difference between the number of patients and doctors is quite high. Also, the cost to test and the time taken to determine the skin lesion is way too high compared to CAD. Deep learning algorithms, powered by advances in computing and very large data sets, have recently outpaced human performance in games such as chess and GO. The paper proposes a deep learning model which gives output way earlier and even cheaper than manual diagnosis. Further work on this model can even match the level of medical diagnosis. In this paper, the authors demonstrate a web application which determines whether a dermoscopic image is benign or malignant with the help of a robust predictive model. It also predicts the severity of the lesion at the current stage.

A. Singh · S. Bera (✉) · P. Chaturvedi · P. Gadhave · C. S. Lifna
Vivekanand Education Society's Institute of Technology, Chembur, Mumbai, India
e-mail: 2019sourabh.bera@ves.ac.in

A. Singh
e-mail: 2019adarsh.singh@ves.ac.in

P. Chaturvedi
e-mail: 2019pranav.chaturvedi@ves.ac.in

P. Gadhave
e-mail: 2019pranav.gadhav@ves.ac.in

C. S. Lifna
e-mail: lifna.cs@ves.ac.in

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Engineering Cyber-Physical Systems
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Editors

Jude Hemanth
Department of Electronics
and Communication Engineering
Karunya Institute of Technology
and Sciences
Coimbatore, Tamil Nadu, India

Danilo Pelusi
Faculty of Communication Sciences
University of Teramo
Teramo, Italy

Joy Iong-Zong Chen
Department of Electrical Engineering
Da-Yeh University
Dacun, Changhua, Taiwan

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Chatbots: A Survey of the Technology

[Hrithika Singh](#) , [Asmita Bhangare](#), [Rashmi Singh](#), [Shubhangi Zope](#) & [Pallavi Saindane](#)

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Abstract


In recent years, chatbots have become more widely used in a variety of fields, including marketing, customer service, support systems, education, healthcare, cultural heritage, and entertainment. Live chat interfaces have gained popularity as a way to engage clients in real-time customer care in many e-commerce contexts. Artificial intelligence-based chatbots, commonly referred to as conversational software agents, are created to have natural language conversations with human users. They are progressively taking the place of human chat operators (AI). In this study, we've covered a chatbot's fundamental definition as well as its numerous sorts and qualities. In this study, various methods for creating chatbots are also mentioned and described.

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Editors

Amit Joshi
Global Knowledge Research Foundation
Ahmedabad, Gujarat, India

Mufti Mahmud
Nottingham Trent University
Nottingham, UK

Roshan G. Ragel
University of Peradeniya
Kandy, Sri Lanka

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Down Syndrome Detection using DCNN



Sadhvi Ganuwala, Paridhi Harpalani, Hitika Hemnani, Arya Telavane,
and Pallavi Saindane

Abstract Down syndrome is a hereditary disorder in which a person has an extra chromosome and is also referred to as 'Trisomy 21'. Down syndrome often accompanies with distinct facial appearances. These common facial traits facilitate a way in automatic identification of Down syndrome. Recent studies have shown that facial recognition and classification techniques can identify hereditary disorders without any human intervention. One of the challenges in the field of Down syndrome facial recognition is the accurate detection of symmetrical structure of face and distinction between them. Early detection is beneficial to the development of children with this disability, but it requires advanced medical examinations that are not universally available. In developed countries, Down syndrome is often found during prenatal screening. However, in developing countries, these tests are often not available. Here, we develop a method of identifying Down syndrome using facial images and deep convolutional neural networks. In obvious cases, this can easily be seen from the newborn. But in subtle cases, this is very difficult, even for geneticists and experienced morphologists. To assist in the diagnosis of these cases, we are developing a computer program to detect Down syndrome shortly after birth.

Keywords Deep convolutional neural network · Down syndrome detection · Facial recognition · Deep learning

S. Ganuwala (✉) · P. Harpalani · H. Hemnani · A. Telavane · P. Saindane
Vivekanand Education Society's Institute of Technology, Mumbai, India
e-mail: 2018.sadhvi.ganuwala@ves.ac.in

P. Harpalani
e-mail: 2018.paridhi.harpalani@ves.ac.in

H. Hemnani
e-mail: 2018.hitika.hemnani@ves.ac.in

A. Telavane
e-mail: 2018.arya.telavane@ves.ac.in

P. Saindane
e-mail: pallavi.saindane@ves.ac.in

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Optimum Proximal Fuel Station Indicator

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Full

Text Views



Abstract

Document Sections

- I. Introduction
- II. Related Work
- III. Methodology
- IV. Evaluation and Results
- V. Conclusion and Future Work

Authors

Figures

References

Keywords

Metrics

Abstract:

The paper tries to identify the nearest fuel stations in the user's vicinity and subsequently group them by proximity and arrange them in ascending order of vehicular density to solve large waiting time inconveniences and avoid congestion. A list of the services and the list of fuels available at the respective stations is also displayed. Calculation of vehicular density is done on the YOLO (You Only Look Once) Algorithm. Region of interest is cropped from the live video feed from the station. The number of vehicles at the gas station is updated on the real-time database. The user can make use of the model through the convenience of a mobile app which is in sync with the real time database and a filtered list is then analyzed for facilities available and displayed to the user to calculate the optimal proximal gas station and thereby, avoiding the hassles involved in queues.

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I. Introduction

India has approximately 61,000 petrol stations that cater to the needs of approximately 300 million vehicles [1]. For every 5000 vehicles, there is only 1 fuel station available. This leads to a great increase in waiting time to utilize the resources. A driver could navigate his way to the least congested fuel station and save time. Every day, dozens of cars line up in the long queue to take

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Full

Text Views



Abstract

Document Sections

- I. Introduction
- II. Overview
- III. Literature Survey
- IV. Proposed Design
- V. Results and Evaluations

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Metrics

Abstract:

As solar energy has been recognized as an inexhaustible source of energy, the solar photovoltaic installation business has taken the lead in today's market. Nowadays, people are investing more in green energy due to its harmless and everlasting supply of energy and also its boundless applications. With the adaptation of solar panels on the building rooftops, people often fail to think of the total energy that will be generated from the solar panel and if the generated power is sufficient enough to fulfill the power requirements of the whole building. Different climate zones receive different amounts of sunlight and thus, solar energy generation varies in all regions. Artificial Intelligence has evolved to bring significant development in this field as it helps in detecting rooftops that have a potential for solar photovoltaic systems and also helps to efficiently detect how much energy can be generated using the solar panels. Latest Deep Learning models like YOLO, EfficientNet, VGG ResNet etc are able to detect rooftops using geospatial images of zones and models like U-Net, SegNet etc are used to configure the solar photovoltaic system for the consumer. An additional model for the calculation of power generated considering different parameters like climate, topography will be built using advanced AI techniques. The best performing models will be finetuned and integrated with the front end to act as a one stop destination for the end user.

Published in: 2023 3rd International Conference on Smart Data Intelligence (ICSMDI)

Date of Conference: 30-31 March 2023

INSPEC Accession Number: 23200916

Date Added to IEEE Xplore: 26 May 2023

DOI: 10.1109/ICSMDI57622.2023.00108

▼ ISBN Information:

Electronic ISBN:978-1-6654-6487-1

Print on Demand(PoD) ISBN:978-1-6654-6488-8

Publisher: IEEE

Conference Location: Trichy, India

I. Introduction

Considering conventional energy is limited and the environment conditions are deteriorating, the development and use of renewable energy has become unavoidable in order to tackle the present energy crisis.[1] The critical factor that hinders the widespread use of solar PV cell arrays by individual house owners is the lack of awareness and unavailability of information at

Sensitivity Support in Data Privacy Algorithms

Publisher: IEEE

[Cite This](#)[PDF](#)Geocey Shejy ; Pallavi Chavan [All Authors](#)

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Abstract

Document Sections

- I. Introduction
- II. Scope of work
- III. Literature Survey
- IV. Local Differential Privacy and Centralized Differential Privacy
- V. Conclusion

Authors

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Abstract:

Personal data privacy is a great concern by governments across the world as citizens generate huge amount of data continuously and industries using this for betterment of user centric services. There must be a reasonable balance between data privacy and utility of data. Differential privacy is a promise by data collector to the customer's personal privacy. Centralised Differential Privacy (CDP) is performing output perturbation of user's data by applying required privacy budget. This promises the inclusion or exclusion of individual's data in data set not going to create significant change for a statistical query output and it offers -Differential privacy guarantee. CDP is holding a strong belief on trusted data collector and applying global sensitivity of the data. Local Differential Privacy (LDP) helps user to locally perturb his data and there by guaranteeing privacy even with untrusted data collector. Many differential privacy algorithms handles parameters like privacy budget, sensitivity and data utility in different ways and mostly trying to keep trade-off between privacy and utility of data. This paper evaluates differential privacy algorithms in regard to the privacy support it offers according to the sensitivity of the data. Generalized application of privacy budget is found ineffective in comparison to the sensitivity based usage of privacy budget.

Published in: 2022 2nd Asian Conference on Innovation in Technology (ASIANCON)

Date of Conference: 26-28 August 2022

INSPEC Accession Number: 22482439

Date Added to IEEE Xplore: 11 October 2022

DOI: 10.1109/ASIANCON55314.2022.9909096

▼ ISBN Information:

Electronic ISBN:978-1-6654-6851-0

Publisher: IEEE

CD:978-1-6654-6849-7

Conference Location: Ravet, India

Print on Demand(PoD) ISBN:978-1-6654-6852-7

I. Introduction

Personal data has two views. The first view is the privacy related to the data and second one is the utility of this data for business service enhancements. Personal data and its associated sensitivity is a great concern by governments and data privacy researchers across the world. Most of the countries have data protection acts implemented. These laws are trying to keep a balanced co-existence between data owners and data collectors. There must be a reasonable balance between data privacy and utility of data. Data privacy tasks should not happen at data collection, storage, analysis and publishing of the data. To ensure

sha-Early Intervention for children at risk of ASD

Publisher: IEEE

[Cite This](#)[PDF](#)Tanvi Shetty ; Vidya Zope ; Maitrayi Dandekar ; Anmol Devnani ; Puneet Meghrajani [All Authors](#)

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Abstract:

Autism Spectrum Disorder (ASD) is a developmental disorder that impairs a child's cognition and communication. Early intervention treatments have proven to be helpful in the child's development but as no specific medical test exists it proves challenging to do so. Our system aims to bridge this gap. Our proposed system performs a dual-factor screening-questionnaire and image-based screening, giving a tentative prognosis to help the child and family seek the special care and treatment it needs. We have implemented the questionnaire screening test using the Random Forest Classifier and obtained an accuracy of 99.6% and for the image-based screening Keras Sequential Model was used which gave an accuracy of 91.25%. This system also assists the child to better understand social cues with its emotion recognition module. The educational development module of our proposed system helps evolve the cognitive skills which are impaired in a child with ASD. Over the course of time, a child can learn and reinforce its skills by playing games, the built-in games in the system, while we keep track of the progress the child has made. We intend our proposed system to be the first step towards overcoming the hesitancy related to ASD and providing the tools to help overcome the impairments that one faces with an autism Spectrum Disorder.

Published in: 2022 International Conference on Industry 4.0 Technology (I4Tech)

Date of Conference: 23-24 September 2022

INSPEC Accession Number: 22330449

Date Added to IEEE Xplore: 24 November 2022

DOI: 10.1109/I4Tech55392.2022.9952803

▼ ISBN Information:

Electronic ISBN:978-1-6654-7196-1

Publisher: IEEE

DVD ISBN:978-1-6654-7195-4

Conference Location: Pune, India

Print on Demand(PoD) ISBN:978-1-6654-5118-5

I. Introduction

Autism spectrum disorder (ASD) is a developmental disability where children suffer from significant social, communication and

MedEstimate: Patient Treatment Recommendation Model

Publisher: IEEE

[Cite This](#)[PDF](#)Radhika Katiyara ; Drishti Katiyara ; Nikhita Iyer ; Maitryee Choudhary ; R L Priya [All Authors](#)

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Abstract

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- I. Introduction
- II. Problem Statement
- III. Literature Survey
- IV. Methodology
- V. Conclusion

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Abstract:

The quantity of digital data that may be used to successfully propose treatments has significantly expanded as a result of the extensive amounts of clinical data indicating patients' health states that have previously been gathered. The treatment recommender system is quickly becoming a vital platform for healthcare services. The system treatment recommendation model would predict the disease based upon the symptoms the user has entered and will predict the disease and recommends first-aid and medications based on the disease predicted. Without the correct first aid, a small injury or ailment might become more serious, and in certain situations, deaths can happen for a lack of prompt medical attention. First Aid not only facilitates a speedier recovery but also contributes to lifesaving. As a result, a Treatment Recommendation System is required to utilize the huge medical expertise of skilled physicians as well as cutting-edge medical technologies in modern facilities to the fullest.

Published in: [2022 5th International Conference on Advances in Science and Technology \(ICAST\)](#)

Date of Conference: 02-03 December 2022

INSPEC Accession Number: 22627200

Date Added to IEEE Xplore: 13 February 2023

DOI: [10.1109/ICAST55766.2022.10039522](#)

▼ ISBN Information:

Electronic ISBN:978-1-6654-9263-8

Publisher: IEEE

Print on Demand(PoD) ISBN:978-1-6654-9264-5

Conference Location: Mumbai, India

I. Introduction

In today's digital age, technology has proven to be a boon to people from all walks of life. The healthcare industry is not far behind. Advances in health technology have made health services better and more accessible to all. However, people tend to

Sign Detect: An app to detect sign language

Publisher: IEEE

[Cite This](#)[PDF](#)Dhruvisha Mondhe ; Rutuja Patil ; Vaishnavi Jadhav ; Priyal Agarwal ; Lifna Cs [All Authors](#)

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- I. Introduction
- II. Literature Survey
- III. Methodology
- IV. Results Obtained
- V. Future Scope and Conclusion

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Abstract:

The fast-growing world of today is advancing in every single domain. But, the deaf and dumb community—is quite far behind due to the vast communication gap in comparison to the rest of the population. To reduce this communication gap, Sign Language is being widely used and research is in progress to narrow down this gap. Even though there exist many state-of-art techniques, during the literature survey it was clear that these techniques failed to address the portability issue which reduced their acceptance by the community. Also, there doesn't exist a full-proof comprehensive system for recognizing Alphabets, Numbers and Words. The objective of this paper is to create one such system named, SignDetect which is a Mobile Application which efficiently (1) recognizes the Sign Language; (2) quickly translates it to English and (3) then generates text and audio formats of the same. The system was tested for its accuracy with end users. Also, their User Experience (UX) was remarkable compared to the state-of-art systems used by them. As the system developed is a mobile application, it easily addressed the portability issue. And for wide acceptance, the application was developed in Flutter so that it can be easily installed on Android and iOS phones. Through this work, the authors hope to bridge the vast communication gap that is prevalent in today's world and take a step forward in this direction.

Published in: 2022 IEEE International Conference on Metrology for Extended Reality, Artificial Intelligence and Neural Engineering (MetroXRaine)

Date of Conference: 26-28 October 2022

INSPEC Accession Number: 22361110

Date Added to IEEE Xplore: 05 December 2022

DOI: 10.1109/MetroXRaine54828.2022.9967529

▼ ISBN Information:

Electronic ISBN:978-1-6654-8574-6

USB ISBN:978-1-6654-8573-9

Print on Demand(PoD) ISBN:978-1-6654-8575-3

Publisher: IEEE

Conference Location: Rome, Italy

I. Introduction

Sign Language is a medium for hearing impaired people to communicate with one another using hand gestures, facial

Non-Invasive Mental Health Prediction using Machine Learning: An Exploration of Algorithms and Accuracy

Publisher: IEEE

[Cite This](#)[PDF](#)Vanshika Bajaj; Rishabh Bathija; Chandni Megnani; Jasmine Sawara; Nusrat Ansari [All Authors](#)

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Abstract

Document Sections

- I. Introduction
- II. Literature Survey
- III. Motivation of Project
- IV. Proposed Idea
- » Evaluation and Results

[Show Full Outline ▾](#)[Authors](#)[Figures](#)[References](#)[Keywords](#)[Metrics](#)

Abstract:

The potential of the machine learning in predicting mental health outcomes is investigated in this study. Two datasets were gathered: one of mental health patient questionnaires and the other of information from MRI scans of Alzheimer's patients. The datasets were pre-processed using techniques such as stop word removal and lemmatization, and the processed data was encoded for increased prediction accuracy. To find the highest performing model, various algorithms such as Logistic Regression, Decision Tree, KNN (K-Nearest Neighbors), Adaboost, Random Forest, and Logistic Regression are examined. The findings indicated that machine learning algorithms can predict mental health outcomes with high accuracy, and that adding demographic, behavioural, and psychological factors can improve prediction accuracy even more. The study emphasizes the significance of creating accessible and accurate mental health prediction tools, as well as the promise of the machine learning in mental health evaluation.

Published in: 2023 7th International Conference on Intelligent Computing and Control Systems (ICICCS)

Date of Conference: 17-19 May 2023

INSPEC Accession Number: 23243809

Date Added to IEEE Xplore: 08 June 2023

DOI: 10.1109/ICICCS56967.2023.10142504

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DVD ISBN:979-8-3503-9724-6

Print on Demand(PoD) ISBN:979-8-3503-9726-0

Publisher: IEEE

Conference Location: Madurai, India

▼ ISSN Information:

Electronic ISSN: 2768-5330

Print on Demand(PoD) ISSN: 2768-5322

I. Introduction

Machine learning is a powerful approach that utilizes statistical and probabilistic techniques to build systems that can learn and develop over time. It has significant potential for mental health prediction, personalized encounters, and the development of automated intelligent systems. Logistic regression, random forests, decision trees, and AdaBoost are popular machine learning

SwasthPhasal: An E-farming Web Portal

Publisher: IEEE

[Cite This](#)[PDF](#)Pallavi Saindane ; Siddarth Bugtani ; Yashvi Hiranandani ; Vishwesh Jagtap ; Kabir Rajpal [All Authors](#)

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Abstract

Document Sections

- I. Introduction
- II. Related Work
- III. Proposed System
- IV. Materials Used
- V. Methodology

[Show Full Outline ▾](#)[Authors](#)[Figures](#)[References](#)[Keywords](#)[Metrics](#)

Abstract:

Agriculture has been India's main profession for centuries. According to the Indian Agricultural Research Institute, the need for edible grains will increase to 345 million tones in the next decade, however its role in India's GDP has recently declined. The current situation of farmers is disappointing as most of them live in severe poverty. They have to take loans to make ends meet and at times it becomes difficult to repay the loan. Our portal aims at providing crop seeds and fertilizers at cheap prices. The option of renting farming equipment would also be available. The cutting-edge technology which has been used over the past few years, has been lagging when it comes to farming. The main reason for this is both the disregard of these technologies and also the inaccessibility. Though farmers strive hard, even in this 21st century, they are bamboozled by third party retailers, which increases their poverty. In this covid pandemic, there was a huge demand for the agricultural products but it was difficult to get all the materials as well as information online. The solution to all the problems is Agro marketing which would make everything easy and secure. E-Farming provides a way for farmers to buy produce with only a basic knowledge of how to use the internet. This website is a centralized approach to guide farmers in all aspects and display current market prices of various products without brokers' cost. It will also include various government agricultural programs and access to new cultivation techniques. [2] The farmer will also be helped in the harvesting process by giving them a 6-day weather forecast and a schedule via SMS provided by the system. Along with this, they will be able to connect with agro health advisors to raise their queries regarding crop health and efficient farming techniques.

Published in: 2022 Second International Conference on Advanced Technologies in Intelligent Control, Environment, Computing & Communication Engineering (ICATIECE)

Date of Conference: 16-17 December 2022

INSPEC Accession Number: 22683804

Date Added to IEEE Xplore: 24 February 2023

DOI: 10.1109/ICATIECE56365.2022.10046925

▼ ISBN Information:

Electronic ISBN: 978-1-6654-9396-3

Publisher: IEEE

Print on Demand(PoD) ISBN: 978-1-6654-9397-0

Conference Location: Bangalore, India

I. Introduction

For over 15000 years, Indians practiced agriculture as their main profession. Approximately 70% of Indians residing in rural

Carbon Footprint: Causes, Impacts and Sector-Wise Survey

Publisher: IEEE

[Cite This](#)[PDF](#)Parth Wadke ; Vivek Gonal ; Divesh Watwani ; Prithviraj Chavan ; Sunita Sahu [All Authors](#)

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Abstract

Document Sections

- I. Introduction
- II. The Impact of carbon footprint
- III. Literature survey
- IV. Carbon net neutrality
- V. Conclusion

Authors

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Keywords

Metrics

Abstract:

As technology grows and urbanization continues, life gets better for everyone with a better quality of life. But this ever increasing growth in all aspects of society has had an unfavorable effect on environmental issues in hand. Technological advancements have led to an enormous rise in carbon emission levels since the last two decades, recording the highest amount in the year of 2021. Energy production, transportation, industries and manufacturing are the major sectors contributing heavily to the global carbon footprint. This ultimately boils down to the excessive use of nonrenewable energy resources and how in turn it is disturbing the ecological balance of our planet. If this goes on as things stand, our future generations will suffer to fulfill their basic needs. Environmental friendly sustainable development technologies should be adopted in order to limit our carbon emission levels. Authorities and policy makers should focus on bringing in these large scale development changes in the most effective and efficient manner. This is only possible if there is absolute clarity on which sectors contribute the most to global carbon footprint. Thus, in this paper we have studied various sectors contributing to carbon emission and have summarised on new technologies and ideas which could positively impact the current environmental issues.

Published in: [2023 5th Biennial International Conference on Nascent Technologies in Engineering \(ICNTE\)](#)

Date of Conference: 20-21 January 2023

INSPEC Accession Number: 23280341

Date Added to IEEE Xplore: 12 June 2023

DOI: 10.1109/ICNTE56631.2023.10146684

▼ ISBN Information:

Electronic ISBN:978-1-6654-6504-5

Publisher: IEEE

Print on Demand(PoD) ISBN:978-1-6654-6505-2

Conference Location: Navi Mumbai, India

I. Introduction

The major environmental problems like global warming, acid rain, melting of glaciers are the issues which are often overlooked in

Disease Prediction System using Machine Learning

Publisher: IEEE

[Cite This](#)[PDF](#)Yugchhaya Galphat ; Chirag Dayaramani ; Disha Raghani ; Laveena Kithani ; Yash Kriplani [All Authors](#)

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Abstract

Document Sections

- I. Introduction
- II. Related Work
- III. Proposed Solution
- IV. Result Analysis
- V. Conclusion

[Show Full Outline ▾](#)[Authors](#)[Figures](#)[References](#)[Keywords](#)[Metrics](#)

Abstract:

Staying healthy is directly proportional to productive and energetic life. A system can be modeled to maintain the health track of a person and to avoid further health issues. Incorporating machine learning and artificial intelligence techniques in the medical sector can be of great benefit to healing millions of patient's diseases and predicting disease at an early stage to decrease the mortality statistics which are rapidly increasing. This paper provides a survey and analysis of the various disease diagnostic systems proposed previously by various authors. In addition, it also proposes an application that predicts the vulnerability of the disease by giving primary symptoms and other clinical data of a person as parameters. Two algorithms Random Forest Classifier and K Nearest Neighbour Classifier are studied and explored for symptom analysis and disease prediction.

Published in: 2023 2nd Edition of IEEE Delhi Section Flagship Conference (DELCON)

Date of Conference: 24-26 February 2023

INSPEC Accession Number: 23200344

Date Added to IEEE Xplore: 23 May 2023

DOI: 10.1109/DELCON57910.2023.10127575

▼ ISBN Information:

Electronic ISBN:979-8-3503-2206-4

Publisher: IEEE

Print on Demand(PoD) ISBN:979-8-3503-2207-1

Conference Location: Rajpura, India

I. Introduction

In this unpredictable world, no one can predict what is going to happen tomorrow. From the prediction of climate to any scary pandemic like Coronavirus Disease (COVID-19) that quarantined the whole world and forced everything to come to a stand-still. People today suffer from various health issues due to inappropriate health tracking, ignorance of the symptoms, hectic day-to-day schedules, lack of proper medical knowledge, laziness, and fear of seeing a doctor. According to the statistics drafted by the World Health Organization (WHO), the global common occurrence of anxiety and depression has increased by 25%. In this fast-moving world, people hardly have time to see a doctor regularly and maintain a regular health track. Clinically significant

CrimeVerse: Exploring Crime Scene through Virtual Reality

Publisher: IEEE

[Cite This](#)

[PDF](#)

Jay Deshmukh ; Srishti Shetty ; Mrunmayee Waingankar ; Gauri Mahajan ; Richard Joseph [All Authors](#)

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Abstract

Document Sections

- I. Introduction
- II. Related Work
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- IV. Results
- V. Conclusion

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Metrics

Abstract:

Modern technologies are applied in order to enhance the caliber of crime investigations. The documentation of crime scenes plays a crucial role in the investigation and prosecution of criminal cases. The challenges faced by traditional methods of crime scene documentation such as photographs, sketches, and written notes have their limitations in terms of accuracy, completeness, limited accessibility, and the risk of losing crucial evidence. The precise scene recording offered by 3D data capture techniques is free from the spatial distortion effects present in 2D photographic recordings. This research study explores the use of LIDAR scanning and virtual reality in enhancing crime scene documentation. The paper focuses on evaluating the effectiveness of LIDAR scanning and VR walkthroughs and also focuses on evidence tagging for enhancing crime scene documentation. It also helps in investigating the usability of the VR system for law enforcement professionals. The proposed model faces several challenges during its development, including the high cost and technical complexity of LIDAR scanning, the need for efficient data processing and visualization, and the limited accessibility of the VR system due to hardware and software requirements. Through user testing and analysis, the project demonstrated significant improvements in the accuracy and completeness of crime scene documentation, providing a more detailed and immersive experience for investigators. The VR system was found to be user-friendly and effective in aiding decision-making and communication among law enforcement professionals. Overall, the project provides valuable insights which let you see through the eyes of a witness by documenting their perspective, which aids in the investigation and comprehension of the incident. They can also be used as proof in court.

Published in: [2023 International Conference on Inventive Computation Technologies \(ICICT\)](#)

Date of Conference: 26-28 April 2023

INSPEC Accession Number: 23204147

Date Added to IEEE Xplore: 01 June 2023

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▼ ISBN Information:

Electronic ISBN:979-8-3503-9849-6

Print on Demand(PoD) ISBN:979-8-3503-9850-2

Publisher: IEEE

Conference Location: Lalitpur, Nepal

▼ ISSN Information:

Electronic ISSN: 2767-7788

Print on Demand(PoD) ISSN: 2767-777X

I. Introduction

Criminal Investigation has advanced with technology on many levels in recent times. With the term "forensics", one may

Advances in Intelligent Systems and Computing 1432

Subarna Shakya
Ke-Lin Du
Klimis Ntalianis *Editors*

Sentiment Analysis and Deep Learning

Proceedings of ICSADL 2022

 Springer

Editors

Subarna Shakya
Department of Electronics and
Computer Engineering
Pulchowk Campus, Institute
of Engineering, Tribhuvan University
Lalitpur, Nepal

Ke-Lin Du
Department of Electrical and
Computer Engineering
Concordia University
Montreal, QC, Canada

Klimis Ntalianis
University of West Attica
Aigaleo, Greece

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Deep Learning-Based Quality Assurance of Silicon Detectors in Compact Muon Solenoid Experiment



Richard Joseph, Shashi Dugad, Ajay Singh Khalsa, Swarangi Dali, and Vaishnavi Ainapure

Abstract For the CMS experiment at CERN, Geneva, a substantial number of HGCALE sensor modules are manufactured at advanced laboratories across the globe. Each sensor module comprises around 675 checkpoints for visual inspection, making manual inspection practically unfeasible. In the industrial environment of manufacturing these sensor modules, this work is extremely challenging due to the various defect appearances, nonuniform, and ambiguous wire bond arrangements. Due to recent technological advances, there has been a rise in automated visual inspections and intelligent quality assurance systems in manufacturing. In order to simplify this, we propose a deep learning-based automated visual approach that processes and analyzes huge number of images for quality control and subsequent testing.

Keywords Compact muon solenoid · Object detection · Visual inspection · Scaled YOLOv4 · YOLOv4-tiny

1 Introduction

The Large Hadron Collider (LHC) is the world's most powerful and largest particle accelerator. The LHC is mainly composed of a 27-km ring of superconducting

R. Joseph · A. S. Khalsa (✉) · S. Dali · V. Ainapure
Vivekanand Institute of Technology, Mumbai, Maharashtra 400074, India
e-mail: 2018.ajay.khalsa@ves.ac.in

R. Joseph
e-mail: richard.joseph@ves.ac.in

S. Dali
e-mail: 2018.swarangi.dali@ves.ac.in

V. Ainapure
e-mail: 2018.vaishnavi.ainapure@ves.ac.in

S. Dugad
Tata Institute of Fundamental Research, Mumbai, Maharashtra 400005, India
e-mail: shashi@tifr.res.in

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Lecture Notes on Data Engineering
and Communications Technologies 142

Rajkumar Buyya
Susanna Munoz Hernandez
Ram Mohan Rao Kovvur
T. Hitendra Sarma *Editors*

Computational Intelligence and Data Analytics

Proceedings of ICCIDA 2022

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Editors

Rajkumar Buyya
Cloud Computing and Distributed Systems
(CLOUDS) Laboratory
University of Melbourne
Melbourne, VIC, Australia

Ram Mohan Rao Kovvur
Department of Information Technology
Vasavi College of Engineering
Hyderabad, India

Susanna Munoz Hernandez
Computer Science School (FI)
Technical University of Madrid
Madrid, Spain

T. Hitendra Sarma
Department of Information Technology
Vasavi College of Engineering
Hyderabad, India

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Application of Machine Learning Algorithm in Identification of Anaemia Diseases



Lata Upadhye and Sangeetha Prasanna Ram

Abstract Anaemia is the reason for lot of serious health-related issues, and if it is detected at an early stage accurately, it can help to avoid problems like fatigue, pregnancy complications, heart problems, and life-threatening complications. In this study, five supervised machine learning (ML) algorithms for detecting anaemia based on red blood cell (RBC) parameters such as haemoglobin, haematocrit or packed cell volume (PCV), RBC count, mean corpuscular volume (MCV), mean corpuscular haemoglobin (MCH) and mean corpuscular haemoglobin concentration (MCHC) were developed. The ML algorithms were applied on actual patient anaemia data, collected from a clinical laboratory, of a sample size of 2000 data samples. Multiclass classification of these data into five different conditions of anaemia, namely beta thalassemia trait (BTT), dimorphic anaemia (DA), and macrocytic blood picture (MBP), microcytic hypochromic anaemia (MHA), including normocytic normochromic blood picture (NNBP) indicating no anaemia, was performed by the five ML algorithms, and the best algorithm for accurately detecting anaemia was identified. The result indicated that the decision tree and random forest algorithms were superior to other algorithms in terms of accuracy, sensitivity, and specificity of the identification process.

Keywords Anaemia · Machine learning algorithms · RBC parameters · MHA · MBP · DA and BTT

L. Upadhye (✉) · S. P. Ram
Department of Instrumentation, V. E. S. I.T, Mumbai, India
e-mail: lata.upadhye@ves.ac.in

S. P. Ram
e-mail: sangeeta.prasannaram@ves.ac.in

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S. Smys
João Manuel R. S. Tavares
Fuqian Shi *Editors*


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Editors

S. Smys
Department of Electronics
and Communication Engineering
RVS Technical Campus
Coimbatore, India

João Manuel R. S. Tavares 
Departamento de Engenharia Mecânica
Universidade do Porto
Porto, Portugal

Fuqian Shi
Rutgers Cancer Institute of New Jersey
New Brunswick, NJ, USA

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Random Matrix Theory Application for Denoising Gene Co-expression Data



Akshay Desurkar, Jayalekshmi Nair, and Madhumati Khuspe

Abstract Biological data such as the gene co-expression networks contain a lot of spurious, wrong or false correlations among them. Various studies have shown that Random Matrix Theory (RMT) approach is a very effective method to process this data. This paper shows that the spectral fluctuations of the correlation matrices of Breast cancer, Colon-cancer and Lymphoma gene expression data adheres to the laws of Gaussian orthogonal ensemble (GOE) as predicted by RMT giving the density of the eigenvalues in the form of Wigner's semicircle and spacing of the eigenvalues is in the form of Wigner-surmise distribution, thereby indicating strong as well as weak or noisy correlations. Furthermore, after applying the RMT algorithm, the weak or noisy or spurious correlations are eliminated and only strongly correlated elements are retained and the network transitions to a system of highly correlated genes as described by the Poisson statistics of RMT which can be used for further analysis.

Keywords Random matrix theory · Gaussian orthogonal ensemble · Wigner's semicircle · Wigner surmise · Poisson statistics · Threshold · Correlation matrix · Breast cancer · Colon-cancer · Lymphoma

1 Introduction

The human body is a very complex system which contains cells, tissues and various organs working together in concert to keep us alive. Out of all this, the cell is the most basic and important component which contains a lot of functional diverse elements like DNA, RNA, genes and other micro molecules. Understanding the basic fundamental principles and behavioural properties of cells and gene expression networks has become an important activity in the modern medical era [1]. Currently, the information we get from the gene expression networks from the microarray data is difficult due to the large dimensions of the datasets and methods which are in use today are not that robust as well as compatible with different datasets. This causes

A. Desurkar (✉) · J. Nair · M. Khuspe
Vivekanand Education's Society Institute of Technology, Chembur, Mumbai 400074, India
e-mail: akshaydesurkar@gmail.com

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SIGN SCHOOL-An interactive website to promote Indian Sign Language

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Full

Text Views



Abstract

Document Sections

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Abstract:

Hand gestures are one of the nonverbal communication modalities used in sign language. It is most typically used by deaf and dumb persons who have hearing or speech issues to communicate with each other or with non-deaf people. Dumb people are frequently denied regular communication with other members of society, and normal people often struggle to understand and communicate with them. These individuals must rely on an interpreter or some form of visual communication to communicate. It is unlikely that an interpreter will be available at all times, and visual communication is often difficult to comprehend. In this paper, we are proposing a solution by which people can learn and practice the Indian sign language easily. We are proposing a YOLOv5 model which is lightweight, fast and is more accurate than other technologies used. We have achieved around 99.8 percent accuracy which is high enough to detect several gestures in the Indian sign Language. This paper also proposes a creation of an interactive website which will allow the users to easily navigate them through their journey to learn the Indian Sign Language.

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I. Introduction