3rd International Conference on "Innovations and Recent Trends in Computer Science"

St. MARTIN'S Engineering College

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Department of ***Computer Science and Engineering*** Presents

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on 15th & 16th December 2023

(ICIRTCS-2023) ***PROCEEDINGS***

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Department of Computer Science and Engineering

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(ICIRTCS-23)

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Sri. M. LAXMAN REDDY
CHAIRMAN

MESSAGE

I am extremely pleased to know that the Department of Computer Science and Engineering of SMEC is organizing 3rd **"International Conference on Innovations and Recent Trends in Computer Science"** (ICIRTCS – 23) on 15th and 16th of December 2023. I understand that the large number of researchers has submitted their research papers for presentation in the conference and for publication. The response to this conference from all over India and Foreign countries is most encouraging. I am sure all the participants will be benefitted by their interaction with their fellow researchers and engineers which will help for their research work and subsequently to the society at large.

I wish the conference meets its objective and confident that it will be a grand success.

M. Laxman Reddy

M.LAXMANREDDY
Chairman

Sri. G. CHANDRASEKHAR YADAV
EXECUTIVE DIRECTOR

MESSAGE

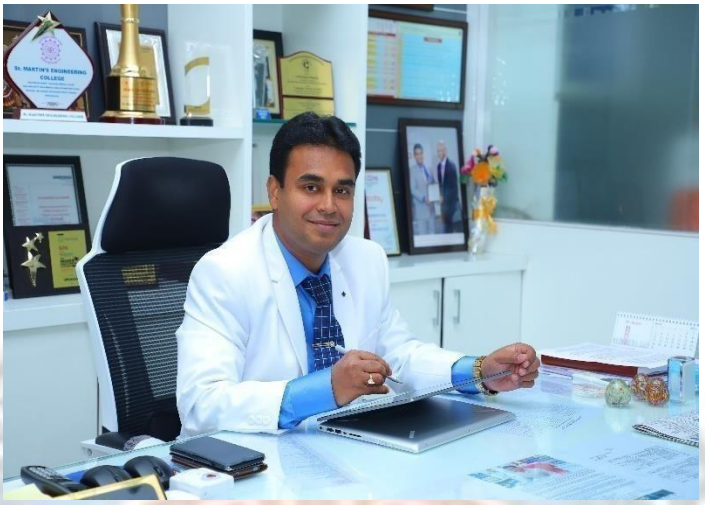
I am pleased to state that the Department of Computer Science and Engineering of SMEC is organizing 3rd "**International Conference on Innovations and Recent Trends in Computer Science"** (ICIRTCS – 23) on 15th and 16th of December 2023. For strengthening the "MAKEIN INDIA" concept many innovations need to be translated in to workable product. Conceptto commissioning is along route. The academicians can play a major role in bringing out new products through innovations.

I am delighted to know that there are large numbers of researchers has submitted the papers on Engineering and Technology streams. I wish all the best to the participants of the conference additional insight to their subjects of interest.

I wish the organizers of the conference to have great success.

G. CHANDRASEKHAR YADAV
Executive Director

Dr. P. SANTOSH KUMAR PATRA
GROUP DIRECTOR



MESSAGE

I am delighted to be the Patron & Program Chair for the 3rd **"International Conference on Innovations and Recent Trends in Computer Science"** (ICIRTCS – 23) organized by the Department of Computer Science and Engineering on 15th and 16th of December 2023. I have strong desire that the conference to unfold new domains of research among the Artificial Intelligence, Machine Learning, Block chain Technology, Internet of Things, Deep Learning, Data Analytics and will boost the knowledge level of many participating budding scholars throughout the world by opening a plethora of future developments in the field of Computer Science and Engineering.

The Conference aims to bring different ideologies under one roof and provide opportunities to exchange ideas, to establish research relations and to find many more global partners for future collaboration. About 200 research papers have been submitted to this conference, this itself is a great achievement and I wish the conference a grand success.

I appreciate the faculties, coordinators and Department Heads of Computer Science and Engineering for their continuous untiring contribution in making the conference a reality.

Dr. P. Santosh Kumar Patra
Group Director
St. Martin's Engineering College

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Dr. M. SRINIVAS RAO
Principal

MESSAGE

Contemporary Society is technological and relies on technology for various aspects of daily life. There is no life without digital platforms, Internet, apps, codes, etc. Navigating the complexities of a technological society requires a balance between embracing innovation and addressing the challenges that come in the way. Considering the immediate needs of the technical Society, SMEC has been organizing International Conferences every year which really help a candidate in acquiring technical skills and making themselves familiar with the new inventions.

International Conferences are a Perfect Platform for enthusiastic researchers to come up with their innovative ideas, and I am delighted that SMEC is organizing the 3rd **"International Conference on Innovations and Recent Trends in Computer Science"** (ICIRTCS – 23) this academic year as well to enhance the skills of desiring participants. The showcase of new ideas and the latest technological advancements through this Conference would facilitate the transfer of technology, helping participants to get updated with the latest tools and methodologies. I firmly believe that this Conference serves as the catalyst for change by bringing attention to pressing issues in different fields, encouraging discussions, fostering collaboration, and promoting initiatives that address different challenges on a global scale. It is an excellent opportunity to broaden our knowledge, establish meaningful connections, and contribute to advancing engineering research. I assure you that the commitment to excellence in education and research is reflected in this Conference, providing a unique platform for learning and growth.

Around 200 research papers were submitted to this Conference. I wish the authors a promising future and the Conference a grand success.

I appreciate the continuous efforts and dedication of the HOD of Computer Science and Engineering and faculty members for their invaluable contribution to advancing global discourse. My most profound appreciation to the organizers and coordinators for organizing a conference of such caliber.

Dr. M. Srinivas Rao
Principal

Dr. SANJAY KUMAR SUMAN
Dean R&D

MESSAGE

Research, curiosity and discovery has been in existence ever since man's presence on this planet millions of years ago, civilization has been characterized by curiosity and discovery. Therefore, the curiosity to explore what will happen, how it happens, is there a better way to do it, has been the driving force behind all research efforts. During the past few decades, the engineering faculties have taken a number of initiatives to reorient the engineering machinery to play leading roles in the industrial development process.

I am delighted to acknowledge the 3rd "**International Conference on Innovations and Recent Trends in Computer Science"** (ICIRTCS – 23) organized by the Department of Computer Science and Engineering on 15th and 16th of December 2023. I appreciate organizing team for showing their keen interest in organizing a successful conference to provide a platform for contributors to explore new ideas and exchange research findings among researchers. I thank the support of all students, authors, reviewers, conference team, faculty members, and conference Convenor for making the conference a grand success.

Best Wishes

Dr. Sanjay Kumar Suman

Dean R&D

Dr. S V S RAMA KRISHNAM RAJU
Dean Academics

MESSAGE

It gives me immense pleasure to know that St. Martin's Engineering College, 3rd "**International Conference on Innovations and Recent Trends in Computer Science"** (ICIRTCS – 23) organized by the Department of Computer Science and Engineering on 15th and 16th of December 2023. I am sure that this conference will provide a forum to national and international students, academicians, researchers and industrialists to interact and involve in Research andInnovation. Such academic events benefit the students, teachers and researchers immensely and widen thehorizons of their knowledge and work experience in thefield of Deep Learning, Machine Learning, Data Mining Engineering and Innovation.

I sincerely appreciate the humble efforts of the Institute in providing a platform for students, academicians, researchers and industrialists to share their ideas and research outcome through the forumof this Conference.

I give my best wishes to all delegates and organizing committee to make this event a grand success.

Best Wishes

Dr. S V S Rama Krishnam Raju

Dean Academics

Dr. D V SREEKANTH
Dean Administration

MESSAGE

I am delighted to acknowledge the 3rd **"International Conference on Innovations and Recent Trends in Computer Science"**(ICIRTCS – 23) organized by the Department of Computer Science and Engineering on 15th and 16th of December 2023 in St. Martin's Engineering College (SMEC), Hyderabad, India. The objective of this conference was to bring together experts from academic institutions, industries, research organizations for sharing of knowledge and experience in the recent trends and revolutionary technologies in Computer Science and engineering. The conference programme featured a wide variety of invited and contributed lectures from national and international speakers with expertise in their respective fields. The ICIRTCS-2023 has become one of the most extensive, spectacular international events hosted by St. Martin's Engineering College (SMEC), for its high-level quality and the large size of participation. Well- known international and national invited speakers addressed the audience, shared knowledge, and richexperiences on Revolutionary Technology in Computer Science and Engineering.

I am sure that this conference will provide a forum to national and international students, academicians, researchers and industrialists to interact and involve in Research and Innovation. Such academic events benefit the students, teachers and researchers immensely and widen the horizons of their knowledge.

Best Wishes

Dr. D V Sreekanth

Dean Administration

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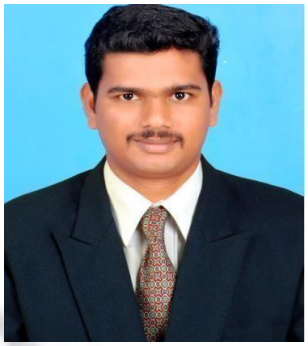
Associate Professor & HOD



MESSAGE

The world is always poised to move towards new and progressive engineering solutions that results in cleaner, safer and sustainable products for the use of mankind. India too is emerging as a big production center for world class quality. Computer Science and Engineering play a vital role in this endeavor.

The aim of the 3rd **"International Conference on Innovations and Recent Trends in Computer Science"** (ICIRTCS – 23) being conducted by the Department of Computer Science and Engineering of SMEC, is to create a platform for academicians and researchers to exchange their innovative ideas and interact with researchers of the same field of interest. This will enable to accelerate the work to progress faster to achieve the individuals end goals, which will ultimately benefit the larger society of India.

We, the organizers of the conference are glad to note that more than 200 papers have been received for presentation during the online conference. After scrutiny by specialist 150 papers have been selected, and the authors have been informed to be there at the online platform for presentations. Steps have been to publish these papers with ISBN number in the Conference Proceedings and all the selected papers will be published in Scopus/UGC recognized reputed journals.

The editorial committee and the organizers express their sincere thanks to all authors who have shown interest and contributed their knowledge in the form of technical papers. We are delighted and happy to state that the conference is moving towards a grand success with the untiring effort of the faculties of Department and Head of Computer Science and Engineering of SMEC and with the blessing of the Principal and Management of SMEC.

Dr. R. SANTHOSHKUMAR
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A NOVEL SOFTWARE ENGINEERING APPROACH TOWARD USING MACHINE LEARNING FOR IMPROVING EFFICIENCY OF HEALTHCARE SYSTEM

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ABSTRACT

Recently, Machine Learning has become a hot research topic. Therefore, this study investigates the interaction between software engineering and machine learning within the context of health systems. We proposed a novel framework for health informatics: the framework and methodology of software engineering for machine learning in health informatics (SEMLHI). The SEMLHI framework includes four modules (software, machine learning, machine learning algorithms and health informatics data) that organize the tasks in the framework using a SEMLHI methodology, thereby enabling researchers and developers to analyze health informatics software from an engineering perspective and providing developers with a new road map for designing health applications with system functions and software implementations. Our Novel approach sheds light on its features and allow users to study and analyses the user requirements and determine both the function of objects related to the system and the data machine learning algorithms that must be applied to the dataset. Our dataset used in this research consists of real data and was originally collected from a hospital run by the Palestine Government covering the last three years. The SEMLHI methodology include seven phases: designing, implementing, maintaining and defining workflows; structing information; ensuring security and privacy; performance testing and evaluation; and releasing the software applications.

Keywords: SEMLHI methodology, Machine Learning, Software Engineering, Health informatics

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REVOLUTIONARY HARD LANDING PREDICTION SYSTEM FOR COMMERICIAL FLIGHTS

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ABSTRACT

More than half of all commercial aircraft operation accidents could have been prevented by executing a go-around. Making a timely decision to execute a go-around manoeuvre can potentially reduce overall aviation industry accident rate. In this project, we describe a cockpit-deployable machine learning system to support flight crew go-around decision-making based on the prediction of a hard landing event. This work presents a hybrid approach for hard landing prediction that uses features modelling temporal dependencies of aircraft variables as inputs to a neural network. Based on a large dataset of 58177 commercial flights, the results show that our approach has 85% of average sensitivity with 74% of average specificity at the go-around point. It follows that our approach is a cockpit-deployable recommendation system that outperforms existing approaches.

***Keywords*:** Hard Landing, go-around point, cockpit-deployable model, and manoeuvre.

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CHILD ATTENTION DETECTION THROUGH FACIAL EXPRESSION USING SVM ALGORITHM

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ABSTRACT

Determining the ability of children to focus in a very young age is something that is very important for adults to know for them to understand the child's learning capability. The development of their attention skills during their younger years affects how much excellence they can perform during their adolescence stage. Since most attention detection researches are frequently done through eye gaze detection, this research is focused on detecting the attention of a child through facial expressions. The proposed system shows that basing from a child's facial expression, it can determine their attention skills which has given accurate results. A total of forty grade one students took part in this research. The data gathered was in the form of a recorded video obtained from the web camera. Each video was processed frame by frame to extract necessary facial features that is needed in determining the facial expression through Open cv application. SVM algorithm was used in training and testing the model's validity. The model is written in a Python Programming Language and has an output of a subtitle file which will be imported into the recorded video. From there, the subtitle file has a label of the student's facial expression, thus determines their attention. To determine the predictive power of the model, K-fold cross validation method was used.

***Keywords*:** Feature Extraction, Facial Expression Analysis, Support Vector Machine (SVM), Cross-Validation, Data Preprocessing

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DECENTRALIZATION AND SECURITY ISSUE IN BLOCKCHAIN ENABLED IOT

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ABSTRACT

Blockchain (BC), the technology behind Bitcoin crypto-currency system, is considered to be alluring for ensuring enhanced security and privacy for Internet of Things (IOT) eco-system. Much research is currently being conducted in both academia and industry in this domain. Proof of Work (POW), a cryptographic puzzle, plays a vital role in ensuring BC security by maintaining a digital ledger of transactions which is considered to be incorruptible. Furthermore, BC uses a changeable Public Key (PK) to record users' identity which provides extra layer of privacy. Not only in cryptocurrency, successful adoption of BC has been implemented in multifaceted non-monetary systems such as distributed storage systems, proof of location, healthcare and so forth. Recent research articles and projects/applications were surveyed to assert implementation of BC for IOT Security, identify associated challenges and propose solutions for BC enabled enhanced security for IOT ecosystem.

***Keywords*:** Blockchain, Internet of Things, Cryptocurrency, Public Key.

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EFFICIENT SPAM DETECTION: A RELIABLE METHOD EMPLOYING SUPERVISED LEARNING

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ABSTRACT

The Internet of Things (IoT) is a group of millions of devices having sensors and actuators linked over wired or wireless channel for data transmission. IoT has grown rapidly over the past decade with more than 25 billion devices are expected to be connected by 2020. The volume of data released from these devices will increase many-fold in the years to come. In addition to an increased volume, the IoT devices produces a large amount of data with a number of different modalities having varying data quality defined by its speed in terms of time and position dependency. In such an environment, machine learning algorithms can play an important role in ensuring security and authorization based on biotechnology, anomalous detection to improve the usability and security of IoT systems. On the other hand, attackers often view learning algorithms to exploit the vulnerabilities in smart IoT-based systems. Motivated from these, in this paper, we propose the security of the IoT devices by detecting spam using machine learning. To achieve this objective, Spam Detection in IoT using Machine Learning framework is proposed. In this framework, five machine learning models are evaluated using various metrics with a large collection of inputs features sets. Each model computes a spam score by considering the refined input features. This score depicts the trustworthiness of IoT device under various parameters. REFIT Smart Home dataset is used for the validation of proposed technique. The results obtained proves the effectiveness of the proposed scheme in comparison to the other existing schemes.

***Keywords*:** Internet of Things, Sensors, Actuators, Spam Score, Spam Detection, Machine Learning Algorithms, exploits, Vulnerabilities, REFIT Smart Home Dataset

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A MACHINE LEARNING ALGORITHM FOR FORECASTING AIR POLLUTION

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ABSTRACT

Air pollution represents an issue that raises many concerns nowadays, as it has various negative effects on the environment and the economy worldwide. Because of the rapid urbanization, cities are suffering from polluted air, so it is important to predict future air quality. For this purpose, new applications of artificial intelligence should be employed. In this project, we will present several Machine Learning algorithms, the possible software that can be used for them and the applications used in the field of air quality. As we know, major pollutants arise from Nitrogen Oxide, Carbon Monoxide & Particulate matter (PM), SO2 etc. Carbon Monoxide is arising due to the deficient Oxidization of propellant like as petroleum, gas, etc. nitrogen oxide (NO) is arising due to the ignition of thermal fuel; Sulphur Dioxide (So2) is major spread in air, So2 is a gas which is present more pollutants in air, it's affected more in human body. The goal of this improvement is to take a gander at the AI basically based ways for air quality expectation.

***Keywords*:** Air Quality Index, Particulate Matter, Support Vector Machine.

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A HYBRID DEEP LEARNING APPROACH FOR BOTTLENECK DETECTION IN IOT

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ABSTRACT

Cloud computing is perhaps the most enticing innovation in the present figuring situation. However, most of the IoT devices are resource-constrained, and there are many devices that cyber attacks could target. Cyber-attacks such as bottleneck, Dos, DDoS, and botnets are still significant threats in the IoT environment. Botnets are currently the most significant threat on the internet. A set of infected systems connected online and directed by an adversary to carry out malicious actions without authorization or authentication is known as a botnet. A botnet can compromise the system and steal the data. It can also perform attacks, like Phishing, spamming, and more. To overcome the critical issue, we exhibit a novel botnet attack detection approach .The proposed method performs better than previous ones in correctly identifying 99.98% of multi-variant sophisticated bot attacks.

***Keywords*:** Bottleneck, Internet of Things ,Deep learning

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REAL TIME VIDEO BASED VEHICLE DETECTION, COUNTING AND CLASSIFICATION SYSTEM

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ABSTRACT

Traffic Analysis has been a problem that city planners have dealt with for years. Smarter ways are being developed to analyze traffic and streamline the process. Analysis of traffic may account for the number of vehicles in an area per some arbitrary time period and the class of vehicles. People have designed such mechanism for decades now but most of them involve use of sensors to detect the vehicles i.e. a couple of proximity sensors to calculate the direction of the moving vehicle and to keep the vehicle count. Even though over the time these systems have matured and are highly effective, they are not very budget friendly. The problem is such systems require maintenance and periodic calibration. Therefore, this study has purposed a vision based vehicle counting and classification system. The system involves capturing of frames from the video to perform background subtraction in order detect and count the vehicles using Gaussian Mixture Model (GMM) background subtraction then it classifies the vehicles by comparing the contour areas to the assumed values. The substantial contribution of the work is the comparison of two classification methods. Classification has been implemented using Contour Comparison (CC) as well as Bag of Features (BoF).method.

Keywords: Vision-based system, Vehicle classification, Gaussian Mixture Model (GMM), Image analysis, Traffic analysis, Calibration.

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AN EXPERT SYSTEM FOR INSULIN DOSAGE PREDICTION

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ABSTRACT

Diabetes mellitus is a chronic metabolic disorder Normally,with a proper adjusting of blood glucose level(BGLs),diabetes patients could live a normal life without the risk of having serious complications that normally developed in the long run.However, Blood glucose levels of most diabetes patients are not well controlled for many reasons. Although the traditional prevention techniques such as eating healthy food and conducting physical exercise are important for the diabetes patients to control their BGLs, however taking the proper amount of insulin dosage has the crucial rule in the treatment process. In the project we are using Graddient boosting classifier to predict diabetes and then using linear regression algorithm to predict insulin dosage in diabetis detected patients. To implement this project we are using PIMA diabetes dataset and UCI insulin dosage dataset. we are training both algorithm with above mention dataset and once after training we will upload test dataset with no class label and then Gradient Boosting will predict presence of diabetes and Linear Regression will predict insulin dosage if diabetes detected by gradient boosting.

Keywords: Machine Learning, BGL, Linear regression, Gradient boosting, Accuracy

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DETECTION OF FRAUD CLAIMS IN HEALTH INSURANCE INDUSTRY

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ABSTRACT

Patients depend on health insurance provided by the government systems, private systems, or both to utilize the high-priced healthcare expenses. This dependency on health insurance draws some healthcare service providers to commit insurance frauds. Although the number of such service providers is small, it is reported that the insurance providers lose billions of dollars every year due to frauds. In this project, we formulate the fraud detection problem over a minimal, definitive claim data consisting of medical diagnosis and procedure codes. We present a solution to the fraudulent claim detection problem using a novel representation learning approach, which translates diagnosis and procedure codes into Mixtures of Clinical Codes (MCC). We also investigate extensions of MCC using Long Short Term Memory networks and Robust Principal Component Analysis. Our experimental results demonstrate promising outcomes in identifying fraudulent records. Fraud is widespread and very costly to the healthcare insurance system. Fraud involves intentional deception or misrepresentation intended to result in an unauthorized benefit. It is shocking because the incidence of health insurance fraud keeps increasing every year. To detect and avoid the fraud, data mining techniques are applied. This includes some preliminary knowledge of health care system and its fraudulent behaviours, analysis of the characteristics of health care insurance data. Data mining which is divided into two learning techniques viz., supervised, and unsupervised is employed to detect fraudulent claims. But, since each of the above techniques has its own set of advantages and disadvantages, by combining the advantages of both the techniques, a novel hybrid approach for detecting fraudulent claims in health insurance industry is proposed.

Keywords: Supervised, Unsupervised, Machine Learning, Software Engineering, Health informatics

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PERFORMANCE IMPROVEMENT OF SMART SURVEILLANCE CAMERA USING MODIFIED CNN TECHNIQUE

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ABSTRACT

Abnormal activity detection plays a very important role in surveillance applications. To capture the abnormal activity of humans without the intervention of the system i.e., automatically captures the video can be implemented. Human fall detection, suddenly jumping down which has an important application in the field of safety and security. Proposed system uses for detecting roadside human activities or behaviour by using the Probabilistic Neural Network (PNN) method for classifying activities or behaviour between training dataset and testing videos. The partitions between classes of normal activities have also been learned using multi-PNNs. recognizing human activity has become a trend in smart surveillance that contains several challenges, such as performing effective detection of huge video data streams, while maintaining low computational complexity. Current activity recognition techniques are using convolutional neural network (CNN) model with computationally complex classifiers, creating hurdles in obtaining quick responses for abnormal activity, so this paper proposes a framework for activity detection. First, we detect abnormal activity with humans in the surveillance stream using an effective CNN model. The detected individual is tracked throughout the video stream via an ultra –fast object tracker called 'minimum output sum of squared error' {MOSSE), Next, for each Tracked individual, pyramidal convolutional features are extracted from two consecutive frames using the efficient LiteFlowNet CNN.

***Keywords*:** MOSSE, CNN, PNN, Life-Flow-Net.

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CROP YIELD PREDICTION USING MACHINE LEARNING ALGORITHM

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ABSTRACT

The impact of climate change in India, most of the agricultural crops are being badly affected in terms of their performance over a period of the last two decades. Predicting the crop yield in advance of its harvest would help the policy makers and farmers for taking appropriate measures for marketing and storage. This project will help the farmers to know the yield of their crop before cultivating onto the agricultural field and thus help them to make the appropriate decisions. It attempts to solve the issue by building a prototype of an interactive prediction system. Implementation of such a system with an easy-to-use web based graphic user interface and the machine learning algorithm will be carried out. The results of the prediction will be made available to the farmer. Thus, for such kind of data analytic in crop prediction, there are different techniques or algorithms, and with the help of those algorithms we can predict crop yield & find the accuracy.

Keywords: Machine Learning, Prototype, Graphic User Interface, Crop Prediction, Accuracy

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AUTOMATIC DETECTION OF RETINAL DISEASES IN PEDIATRIC AGE USING PUPILLOMETRY

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ABSTRACT

Inherited retinal diseases cause severe visual deficits in children. They are classified as outer and inner retina diseases, and often cause blindness in childhood. The diagnosis for this type of illness is challenging, given the wide range of clinical and genetic causes. It is routinely based on a complex pattern of clinical tests, including invasive ones, and not always appropriate for infants or young children. This paper presents a novel Clinical Decision Support System (CDSS), based on Machine Learning using Chromatic Pupillometry to support diagnosis of Inherited retinal diseases in pediatric subjects. An approach that combines hardware and software is proposed: a dedicated medical equipment (pupillometer) is used with a purposely designed custom machine learning decision support system. Two distinct Support Vector Machines (SVMs), one for each eye, classify the features extracted from the pupillometry. The results, obtained by combining the two SVMs in an ensemble model, show satisfactory performance of the system, that achieved 0.846 accuracy, 0.937 sensitivity and 0.786 specificity. This is the first study that applies machine learning to pupillometric data to diagnose a genetic disease in pediatric age.

***Keywords*:** CDSS, Chromatic pupillometry, SVM, Pediatric, Machine learning.

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Predicting Tourist Mobility : Utilizing Social Media User Profiles

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ABSTRACT

This Project proposes PredicTour, an approach to process check-ins made by users of location-based social networks (LBSNs), and predict mobility patterns of tourists visitingnew countries with or without previous visiting records. PredicTour is composed of three key parts: mobility modeling, profile extraction, and tourist mobility prediction. In the first part, sequences of check-ins within a time interval are associated with other user information to produce a new structure called ``mobility descriptor''. In the profile extraction, self- organizing maps and fuzzy C-means work jointly to group users according to their mobility descriptors. PredicTour then identifies tourist profiles and estimates mobility patterns of tourists visiting new countries. When comparing the performance of PredicTour with three well-known machine learning-based models, the results indicate that PredicTour outperforms the baseline approaches. Therefore, it is a good alternative for predicting and understanding international tourists' mobility, which has an economic impact on the tourism industry when services and logistics across international borders should be provided. The proposed approach can be used in different applications, such as in recommender systems for tourists or in decision-making support for urban planners interested in improving tourists' experiences and attractiveness of venues through personalized services.

***Keywords*:** Tourist Mobility, Social Media, User Profiles, Mobility Modelling, Profile Extraction, Tourist Mobilty Prediction.

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BULLET IMPACT DETECTION USING RCNN

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ABSTRACT

The bullet impact detection in the silhouette plays an important role in the institutions which have a shooting range, specially where are regulated the license to carry a gun and where the evaluation manual process could present distortion in the ability's evaluation of the shooter and like a consequence the license's issuance. This paper proposes a method for an automatic detection of the bullet impacts in silhouettes based on deep learning and image processing, which consist of the following steps: pre-processing, impacts detection, edge detection and evaluation results. The experiments about 600 silhouettes with 2401 bullet impacts images of the proposed and implemented method considering the models Resnet 50 and Resnet 101 for Mask R-CNN show that Resnet 50 get better results than Resnet 101, achieving 97.6 %, 99.5 %, and 97.9 %, of accuracy, precision and recall, respectively, above the methods Circular Hough Transform, Circlet Detection, Random Sample Consensus, Randomized Hough Transform, Randomized Circle Detection, Support Vector Machine, Faster R-CNN, MnasNet and YOLO. Also, the results show 100 % of effectiveness in the edge detection and the count of the detected bullet impacts.

***Keywords*:** Silhouettes,Image processing, Pre-processing, Impacts detection, Edge detection,Resnet 50, Resnet 101, Mask R-CNN

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IMAGE ENHANCEMENT WITH THE APPLICATIONS OF LOCAL AND GLOBAL ENHANCEMENT METHODS FOR DARK IMAGES

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ABSTRACT

In real scenes, due to the problems of low light and unsuitable views, the images often exhibit a variety of degradations, such as low contrast, color distortion, and noise. These degradations affect not only visual effects but also computer vision tasks. This paper focuses on the combination of traditional algorithms and machine learning algorithms in the field of image enhancement. The traditional methods, including their principles and improvements, are introduced from three categories: gray level transformation, histogram equalization, and Retinex methods. Machine learning based algorithms are not only divided into end-to-end learning and unpaired learning, but also concluded to decomposition-based learning and fusion based learning based on the applied image processing strategies. Finally, the involved methods are comprehensively compared by multiple image quality assessment methods, including mean square error, natural image quality evaluator, structural similarity, peak signal to noise ratio, etc.

***Keywords*:** Image enhancement, Low-light images, Image processing, Deep learning

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PAPER ID: ICIRTCS-23-017

MACHINE LEARNING STRATEGY FOR DETECTING AND PREVENTING INTERNET OF THINGS THE RISE OF BOTNET ATTACKS

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ABSTRACT

The botnet attack is a multi-stage and the most prevalent cyber-attack in the Internet of Things (IoT) environment that initiates with scanning activity and ends at the distributed denial of service (DDoS) attack. The existing studies mostly focus on detecting botnet attacks after the IoT devices get compromised, and start performing the DDoS attack. Similarly, the performance of most of the existing machine learning based botnet detection models is limited to a specific dataset on which they are trained. As a consequence, these solutions do not perform well on other datasets due to the diversity of attack patterns. In the first fold, we trained a state-of-the-art deep learning model, i.e., ResNet-18 to detect the scanning activity in the premature attack stage to prevent IoT botnet attacks. While, in the second fold, we trained another ResNet-18 model for DDoS attack identification to detect IoT botnet attacks. Overall, the proposed two-fold approach manifests 98.89% accuracy, 99.01% precision, 98.74% recall, and 98.87% f1-score to prevent and detect IoT botnet attacks. To demonstrate the effectiveness of the proposed two-fold approach, we trained three other ResNet-18 models over three different datasets for detecting scan and DDoS attacks and compared their performance with the proposed two-fold approach. The experimental results prove that the proposed two-fold approach can efficiently prevent and detect botnet attacks as compared to other trained models.

Keywords: Machine Learning, IoT Security, Botnet, AnomalyDetection, Deep Learning, Supervised Learning, Security Updates

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MULTICLASS DRUG CLASSIFICATION USING MACHINE LEARNING MODELS

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ABSTRACT

In the world of medicine, drug classification holds immense importance as it helps determine the most suitable drugs for patients based on their unique characteristics and medical history. The dataset containing various features plays a vital role in assessing which drugs are best suited for individuals. This process is known as multi-class drug classification, where drugs are categorized into different classes based on their specific uses and therapeutic effects. Traditionally, drug classification has been carried out through manual or rule-based approaches, where physicians and medical experts rely on their knowledge and experience to prescribe drugs. This method can be time-consuming and may not be efficient when dealing with a large number of drugs and patients. That's where machine learning comes in to revolutionize the process. Since it is capable of analysing vast amounts of data, learning complex patterns, and making predictions in a more automated and effective manner. The main objective of this project is to develop a machine learning model that accurately classifies drugs into multiple classes using specific features like Age, Sex, BP, Cholesterol level, and Na to K ratio. The target variable is the "Drug," representing class of the drug. This project also focuses on Data visualization.

Keywords: Machine Learning, Drug Classification, Data Visualization, Target Variable, Accuracy

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EXPLORING TIME SERIES ANALYSIS OF RESIDENTIAL ELECTRICAL POWER CONSUMPTION

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ABSTRACT

Residential electricity consumption has become increasingly important as our global population grows and urbanization continues. The rising demand for electricity in households makes it crucial to understand and analyze the patterns of residential power usage. This analysis is essential for energy providers, policymakers, and individuals alike, as it allows us to optimize energy usage, improve efficiency, and make informed decisions about how we consume energy. In the past, analyzing time series data of residential power consumption involved using basic statistical methods and manually examining the data. But now, we aim to explore and analyze this data in a more comprehensive and sophisticated manner. The exploration of time series analysis in residential electrical power consumption is vital for several reasons. Firstly, it helps us become more energy-efficient by identifying opportunities to adopt energy-saving practices and utilize new technologies based on consumption patterns. Secondly, it aids in load management and forecasting, ensuring that utility companies can efficiently handle supply and demand to prevent blackouts and brownouts. Moreover, by predicting peak demand, we can optimize energy generation and distribution, reducing our reliance on expensive peak-load power plants. Time series analysis also plays a significant role in developing better demand response strategies .As we transition to renewable energy sources, exploring time series data becomes even more crucial. It enables us to align our energy consumption with the intermittent nature of renewable energy generation, fostering more sustainable practices. This benefits both consumers and energy providers, as it allows for fair and cost-effective billing.

Keywords: Machine Learning, Time Series Analysis, Data Preprocessing, Accuracy.

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STATISTICAL ANALYSIS OF ANOMALY DETECTION ALGORITHMS FOR IOT ENVIRONMENTAL SENSOR DATA

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ABSTRACT

The Internet of Things (IoT) is a fascinating concept that involves connecting devices, sensors, and objects together to gather and exchange data. In this context, IoT environmental sensor data is collected from sensors placed in the environment to keep track of crucial parameters like temperature, humidity, air quality, soil moisture, and more. However, there's a challenge we face with this data – it's prone to anomalies. Anomalies are deviations from the usual data patterns, indicating potential issues or abnormalities in the environment being monitored. There are various factors that can lead to these anomalies, such as sensor malfunctions, environmental disturbances, or even deliberate attacks on the sensor network. We need algorithms to automatically spot and flag unusual events or patterns in the IoT environmental sensor data. In the past, traditional approaches to anomaly detection relied on methods like fixed thresholds or simple rules. They involved setting predefined limits for each sensor parameter and labelling any data points that fell outside those boundaries as anomalies. While these methods were straightforward, they struggled to adapt to more complex and subtle anomalies. As a result, they often produced false alarms or missed critical anomalies. To address these challenges, this work implements statistical analysis i.e., random forest classifier as a powerful approach to detect anomalies in IoT environmental sensor data. This method allows for a deeper understanding of the data, considering various factors and relationships between different parameters. By doing so, this approach can achieve more accurate identification of abnormal events. This ensures that the proposed system stay on top of potential issues and maintain a healthier and safer environment.

Keywords: Internet of Things, Anomalies, Sensor malfunctions, Fixed Thresholds, Anomaly detection algorithms, Statistical analysis.

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PAPER ID: ICIRTCS-23-021

AN INNOVATIVE AI-DRIVEN AND CLOUD BASED PLATFORM FOR FARMERS: ENABLING PLANT DISEASE IDENTIFICATION, TRACKING AND FORECASTING

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ABSTRACT

Agriculture plays a vital role in feeding the ever-growing global population and providing essential resources. However, it faces numerous challenges, and one of the most significant issues for farmers is dealing with plant diseases. These diseases can wreak havoc on crop yields and overall agricultural productivity. The main problem lies in the difficulty faced by farmers in accurately identifying plant diseases in their crops. Different diseases often exhibit similar symptoms, making it challenging, especially for those farmers with limited expertise, to differentiate between them accuratelyTraditionally, farmers have relied on manual observation and experience to detect and identify plant diseases. However, this approach is time-consuming, subjective, and prone to errors. It heavily relies on the farmer's knowledge, experience, and ability to recognize disease symptoms accurately. While some farmers may seek advice from agricultural experts or extension workers, this is often not a scalable solution due to the limited availability of experts and the associated costs. To overcome the limitations of traditional methods, there is a critical need for an innovative AI-driven and cloud-based platform tailored specifically for farmers. This platform would harness the power of artificial intelligence, cloud computing, and data analysis to enable more precise, efficient, and easily accessible plant disease identification, tracking, and forecasting. By empowering farmers with cutting-edge technology, knowledge, and real-time insights, this platform can significantly improve crop yields, reduce losses, and ultimately contribute to enhancing global food security.

Keywords: Expertise, Agricultural experts, Extension workers, AI-driven platform, Cloud-based technology, Data analysis, Artificial intelligence, Global food security, Crop losses, Preventive measures, Innovation in agriculture.

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PAPER ID: ICIRTCS-23-022

REAL-TIME CCTV VIDEO ANALYSIS: DEEP LEARNING FOR WEAPON DETECTION

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ABSTRACT

CCTV cameras, you know those surveillance cameras you often see in public places, stores, and important buildings, play a crucial role in keeping us safe and secure. They constantly record video footage to monitor what's going on around and ensure our safety. The current way CCTV surveillance works is that human operators must manually watch all those live video feeds from multiple cameras, which is error-prone, and honestly, a person can only effectively keep an eye on so many cameras at once. With the huge amount of video data these cameras generate, it's practically impossible for human operators to watch everything continuously, which means security threats, might get missed .The traditional approaches passive i.e., the security personnel or operators sit and watch the video feeds, hoping to spot anything suspicious, like someone carrying a weapon. But this approach has its limitations too. Humans can make mistakes, and they might not react quickly enough in a real-time situation. In addition, as the number of cameras increases, it becomes tough to scale this method, and the costs can go up significantly. So, to overcome these challenges and enhance public safety, a more advanced solution is required. Therefore, this project develops a real-time CCTV video analysis with deep learning for weapon detection. By using deep learning models, a sophisticated system can be built that quickly analyzes the video streams from CCTV cameras in real-time. This means it can detect weapons and potential threats as they happen. It's super-fast and accurate, so it reduces the chances of false alarms or missing something important. In addition, it's scalable, cost-effective and helps security agencies respond quickly to potential threats and keeps us all protected in a better and more efficient way.

Keywords: CNN, Security Cameras, Weapon Detection, CCTV, Deep Learning.

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DETECTING LUNG CANCER FROM CT IMAGES USING SVM CLASSIFICATION AND COMPARING PATIENT SURVIVAL RATES WITH 3D CNN

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ABSTRACT

Medical imaging tools are essential in early-stage lung cancer diagnostics and the monitoring of lung cancer during treatment. Various medical imaging modalities, such as chest X-ray, magnetic resonance imaging, positron emission tomography, computed tomography, and molecular imaging techniques, have been extensively studied for lung cancer detection. These techniques have some limitations, including not classifying cancer images automatically, which is unsuitable for patients with other pathologies. It is urgently necessary to develop a sensitive and accurate approach to the early diagnosis of lung cancer. Deep learning is one of the fastest-growing topics in medical imaging, with rapidly emerging applications spanning medical image-based and textural data modalities. With the help of deep learning-based medical imaging tools, clinicians can detect and classify lung nodules more accurately and quickly. Therefore, this work implements the advanced modifications in CNN model for the detection of lung cancer from chest scan images. The proposed CNN model is able to classify the benign and malignant i.e., normal, and cancerous with higher accuracy as compared to state-of-the-art machine learning approach called support vector machine (SVM) classifier. In addition, the obtained quality metrics discloses the superiority of proposed deep CNN model for assisting the expertise in an enhanced diagnosis.

Keywords: Medical imaging tools, Early-stage lung cancer diagnostics, Monitoring of lung cancer during treatment, medical imaging modalities, Chest X-ray, Magnetic resonance imaging, Positron emission tomography, Computed tomography, Molecular imaging techniques.

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AN INTEGRATED APPROACH FOR DETECTING DIABETES AND RECOMMENDING DIET PLAN IN HEALTHCARE BIG DATA CLOUDS USING ENSEMBLE FRAMEWORK

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ABSTRACT

Diabetes, a chronic health condition characterized by elevated blood sugar levels, poses significant risks to patients if not managed properly. Its prevalence has been on the rise globally, making it a major public health concern. To tackle this issue, healthcare providers collect extensive patient data, encompassing clinical records, lab results, and lifestyle information, which is stored in large-scale data clouds. In the traditional approach to diabetes detection and diet planning, individual machine learning algorithms like logistic regression, decision trees, or support vector machines are commonly used. Researchers often focus on training a single algorithm with structured data, such as blood glucose levels and BMI, to identify diabetes. For diet planning, basic rule-based systems or statistical methods are employed, offering general dietary guidelines based on patient age, weight, and medical history. To overcome the challenges of diabetes detection and personalized diet planning in healthcare big data clouds, this project proposes an integrated approach that harnesses the power of ensemble frameworks. By combining various techniques and algorithms, this integrated system aims to provide an effective and accurate solution for diabetes detection and personalized diet plan recommendations based on individual health data. Ultimately, this integrated approach will empower healthcare providers to achieve higher accuracy and personalization in diabetes management, leading to improved patient care and better overall outcomes.

Keywords: Diabetes, chronic, blood sugar levels, patient data, data clouds, diabetes detection, diet planning, machine learning, algorithms, logistic regression, decision trees, support vector machines, structured data, blood glucose, BMI, diet planning, statistical methods, healthcare big data.

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CONVOLUTIONAL NEURAL NETWORK FOR MALARIA DETECTION: DIFFERENTIATING PARASITIZED AND UNINFECTED IMAGES

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ABSTRACT

The latest WHO report has highlighted a concerning increase in malaria cases in India, reaching 219 million last year, which is two million higher than the previous year. Despite India's efforts to combat malaria, progress has hit a plateau, and one of the significant reasons is the decline in international funding for malaria eradication programs in the country. Malaria, which is transmitted to people through the bites of infected female mosquitoes, remains a significant health challenge in India. The disease is prevalent in various regions of the country, with a substantial number of cases reported annually. Malaria-related deaths in India contribute to the global burden, adding to the urgency of addressing the issue. The most widely used method (so far) is examining thin blood smears under a microscope, and visually searching for infected cells. The patient's blood is smeared on a glass slide and stained with contrasting agents to better identify infected parasites in their red blood cells. Then, a clinician manually counts the number of parasitic red blood cells, sometimes up to 5,000 cells (according to WHO protocol). Manually counting is error-prone and slow. A clinician takes 10 minutes to 30 minutes to count such a number as it is a time-consuming process. There are general guidelines that lab technicians should process no more than 25 slides each day, but a lack of qualified workers leads some to process four times as many. On a positive note, AI-backed technology has shown promise in revolutionizing malaria detection. The utilization of the Malaria Cell Image Dataset from the official NIH website has been instrumental in enhancing diagnostic accuracy and reducing the burden on healthcare professionals in resource-constrained areas. Neural networks have performed well in recent years in their ability to automatically extract features and learn filters and acted as a very good classifier of images.

Keywords: Machine Learning, Deep Learning, Neural Networks, Convolutional Neural Networks, Images.

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PAPER ID: ICIRTCS-23-026

ENHANCING SMART SURVEILLANCE CAMERA PERFORMANCE THROUGH ADVANCED CNN MODIFICATION

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ABSTRACT

Surveillance cameras play a crucial role in upholding public safety, safeguarding properties, and acting as a deterrent to criminal activities. However, the conventional surveillance systems heavily rely on basic image processing techniques and rule-based algorithms for tasks like object detection, tracking, and recognition. Unfortunately, these methods have their limitations when dealing with complex scenarios such as occlusions, changes in lighting conditions, and variations in object appearances. To tackle these challenges head-on, researchers and engineers have been actively exploring the integration of advanced computer vision techniques, particularly Convolutional Neural Networks (CNNs), to augment the capabilities of smart surveillance cameras. The aim is to improve the efficiency and accuracy of these systems by leveraging cutting-edge CNN modifications. By elevating the performance of surveillance cameras, it becomes feasible to provide real-time and accurate insights to security personnel, law enforcement agencies, and other stakeholders. Hence, the core objective of this project revolves around enhancing the performance of smart surveillance cameras using advanced CNN modifications. A custom CNN architecture is proposed to optimize object detection, tracking, and recognition tasks. The results manifest significant improvements in the system's accuracy and efficiency, paving the way for more intelligent and reliable surveillance solutions across various applications. The outcomes of this research hold the potential to contribute significantly to the fields of computer vision and smart surveillance technology, enhancing public safety and security overall.

Keywords: Machine Learning, Enhancing Surveillance, CNN, Object Detection, Accuracy

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PAPER ID: ICIRTCS-23-027

INNOVATIVE MULTI-FEATURE BASED WEATHER CLASSIFICATION FOR SUPERVISED LEARNING IN MULTICLASS ENVIRONMENTS

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ABSTRACT

Highway traffic accidents have devastating consequences, leading to significant loss of lives and property. However, one promising solution to reduce these accidents lies in the implementation of advanced driver assistance systems (ADAS). These systems have proven to be effective in enhancing road safety. A critical component for these ADAS is the ability to perceive and understand complex traffic scenes under various weather conditions, as this valuable information can greatly improve their performance. Different weather conditions present unique challenges, particularly in terms of visibility, and specialized approaches are needed to address these challenges effectively. By tailoring the ADAS algorithms based on weather categories, we can enhance visibility and expand the application of these systems further. Among the weather conditions that significantly impact traffic safety are rainy days, dark nights, overcast and rainy nights, foggy days, and other situations with poor visibility. Most current vision-based driver assistance systems are optimized to function well under favorable weather conditions. To address the issue of poor visibility in bad weather situations, a multi-class weather classification method is proposed. Next, the supervised learning algorithms are employed to train classifiers, enabling the system to recognize different weather conditions accurately. The analysis of the proposed method shows promising results. The extracted features effectively describe the image semantics, and the trained classifiers demonstrate high recognition accuracy and adaptability. This lays the foundation for enhancing anterior vehicle detection during nighttime illumination changes and improving the driver's field of vision on foggy days.

Keywords: Highway traffic accidents, advanced driver assistance systems (ADAS), road safety, perceive, complex traffic scenes, specialized approaches, foggy days, vision-based driver assistance systems.

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PAPER ID: ICIRTCS-23-028

IDENTIFICATION OF ONLINE CHILD PREDATORS AND CYBER HARASSERS IN SOCIAL MEDIA ENVIRONMENT

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ABSTRACT

In today's digital age, social media platforms have become an integral part of our lives, connecting people from all over the world. While these platforms have brought numerous benefits, they have also exposed vulnerable individuals, particularly children, to various online risks. Among these risks are online child predators and cyber harassers who exploit the anonymity and reach of social media to harm others. In the past, combating these threats relied heavily on manual reporting and human moderators. Users would report suspicious activities, and then human moderators would review the content to determine if it violated platform guidelines. The proposed machine learning-based approach offers several advantages over traditional methods. First and foremost, it significantly reduces the response time, enabling platforms to take immediate action against harmful content and individuals. Moreover, machine learning algorithms can identify patterns and connections in vast amounts of data that might not be evident to human moderators, thereby increasing the accuracy of detection. By integrating machine learning into the social media moderation process, human moderators can focus on more complex tasks that require human judgment and intervention. This not only improves the overall efficiency of content moderation but also lightens the burden on human moderators. Further, the integration of machine learning in identifying and combating online child predators and cyber harassers marks a significant step forward in enhancing online safety.

Keywords: Social media platforms, Digital age, Online risks, Online child predators, Cyber harassers, Anonymity, Human moderators, Reporting, Machine Learning.

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PAPER ID: ICIRTCS-23-029

AN INNOVATIVE SYSTEM FOR MONITORING EMOTIONAL HEALTH TO IDENTIFY INDIVIDUALS AT RISK OF PSYCHOLOGICAL DISTURBANCES

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ABSTRACT

Mental health issues, such as anxiety, depression, and other psychological disturbances, have become a significant public health concern globally. Identifying individuals at risk of these conditions early on can lead to timely interventions and improved outcomes. With the rise of technology and the increasing use of smartphones and wearable devices, there is an opportunity to develop an innovative system that can monitor emotional health in real-time, helping to detect potential psychological disturbances before they escalate. Traditionally, mental health assessments relied on self-reporting and periodic check-ins with mental health professionals. These approaches often had limitations, as individuals may not always accurately report their emotional state, and there could be significant delays between assessments. Additionally, access to mental health services was not always readily available, leading to potential delays in diagnosis and treatment. Therefore, the need for an innovative system for monitoring emotional health arises from the desire to overcome the limitations of traditional approaches. By leveraging technology, such as machine learning, natural language processing, we can create a continuous and unobtrusive monitoring system. Such a system could gather real-time data on an individual's emotional state, behaviour, and physiological responses. Early detection of emotional disturbances can lead to timely intervention and support, improving the overall mental well-being of individuals and reducing the burden on mental health services. This innovative monitoring system has the potential to significantly improve mental health outcomes on a broader scale.

Keywords: Machine Learning, Innovative monitoring, self-reporting, Anxiety, Escalate

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PAPER ID: ICIRTCS-23-030

VISUALIZING AND INTERPRETING CLUSTERING RESULTS IN IOT WEATHER DATA

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ABSTRACT

The Internet of Things (IoT) has revolutionized the way weather data is collected, providing vast amounts of real-time information from various sensors and weather stations. However, processing and making sense of this massive volume of data can be challenging. One popular technique to analyse such data is clustering, which groups similar data points together based on their features. Clustering helps identify patterns, relationships, and insights in IoT weather data, aiding in understanding weather patterns and making informed decisions in various domains like agriculture, transportation, and disaster management. Additionally, older clustering algorithms were computationally expensive and had limitations in handling large-scale IoT weather datasets efficiently. Therefore, the proposed work aims to address the challenges of visualizing and interpreting clustering results in IoT weather data using unsupervised learning algorithm. The study explores the application of cutting-edge clustering algorithms to identify hidden structures and patterns within large-scale weather datasets collected through IoT sensors and stations. By leveraging advanced data visualization techniques, this project will develop interactive and intuitive visual representations of clustering results. The outcome of this project will enable domain experts, meteorologists, and decision-makers to gain valuable insights into IoT weather data, leading to better-informed decisions in various sectors. The intuitive visualizations will empower users to understand complex patterns, trends, and anomalies in the data, fostering advancements in weather forecasting, disaster preparedness, and climate studies.

.***Keywords:*** Insights of IOT, Clustering, weather patterns, manual interpretation, statistical techniques.

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PAPER ID: ICIRTCS-23-031

UNDERWATER IMAGE ENHANCEMENT THROUGH DEHAZING AND COLOR CORRECTION TECHNIQUES

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ABSTRACT

Underwater photography and videography suffer from significant challenges due to the inherent properties of water, such as light absorption, scattering, and colour distortion. When capturing images or videos underwater, the medium's particulate matter and water molecules cause haze and loss of colour fidelity, resulting in poor visual quality and reduced visibility. To address these issues and improve the overall quality of underwater imagery, researchers have developed various image enhancement techniques that aim to dehaze the images and correct colour distortions. The traditional approach to underwater image enhancement involved simple post-processing methods, such as contrast stretching and histogram equalization. While these techniques might help to some extent, they often fail to produce satisfactory results due to the complex and non-linear nature of underwater light attenuation and scattering. Therefore, the need for effective underwater image enhancement techniques arises from several factors such as, underwater imagery is crucial in various fields, including marine biology, underwater exploration, environmental monitoring, and underwater archaeology. In addition, high-quality images are essential for accurate data analysis and interpretation. Thus, this project presents an innovative and comprehensive approach to address the challenges associated with underwater imagery. The study proposes a novel combination of dehazing, and colour correction techniques tailored specifically for the unique characteristics of underwater environments.

Keywords: Color fidelity, Underwater Imagery, Underwater Exploration, Environmental Monitoring, Data analysis.

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PAPER ID: ICIRTCS-23-032

DEEP LEARNING-BASED LOW LIGHT IMAGE ENHANCEMENT FOR IMPROVED VISIBILITY

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ABSTRACT

Low light conditions pose significant challenges for image capture and processing, leading to degraded image quality with reduced visibility and increased noise. Traditional low light image enhancement methods typically involve hand-crafted image processing techniques, such as histogram equalization, contrast stretching, and noise reduction filters. The need for an advanced low light image enhancement technique arises from the widespread application of imaging devices in low light conditions. Industries such as surveillance, automotive, and photography heavily rely on cameras to capture images in challenging lighting situations. By enhancing the visibility and overall quality of low light images, the accuracy and reliability of image-based systems can be significantly improved. Therefore, an intelligent approach that can learn and adapt from data becomes essential to tackle the limitations of traditional methods. In recent years, deep learning has shown remarkable potential in various computer vision tasks, including image enhancement. This paper aims to explore and propose a deep learning-based approach to address the issue of low light image enhancement for improved visibility. The deep learning-based approach overcomes the limitations of traditional techniques by automatically capturing intricate patterns and features in low light images. This adaptability allows the model to generalize well across various low light scenarios, leading to visually appealing and realistic enhancements.

***Keywords*:** Deep Learning, Image processing, DE noising, Image restoration, Computer vision, Convolutional neural networks.

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PAPER ID: ICIRTCS-23-033

A DIGITAL FORENSIC TOOL FOR EXTRACTING USER ACTIVITY FROM MOBILE DEVICES

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ABSTRACT

The widespread use of mobile devices like smartphones and tablets in both personal and professional settings has unfortunately led to an increase in digital crimes involving these gadgets. To tackle these issues, digital forensics plays a crucial role in investigating and solving such cases by analyzing digital evidence from these devices. However, the diverse and complex nature of mobile platforms poses significant challenges for investigators. To overcome these limitations, there is a clear demand for a specialized digital forensic tool designed to extract user activity data efficiently and effectively from mobile devices. Such a tool should be versatile enough to handle various mobile operating systems and should offer standardized and automated procedures to ensure consistent and reliable results. Additionally, the tool must have a user-friendly interface to cater to both experienced and novice investigators, allowing them to use it effectively. Hence, this project proposes the development of a tool that enables investigators to obtain a comprehensive report and timeline of the activities performed on a mobile device. By combining information from various sources into a unified dataset, this tool streamlines the investigative process. It demonstrates the tool's functionality through an example, showcasing its feasibility and how investigators can apply it effectively. By leveraging this tool, investigators can significantly improve their efficiency in extracting and analyzing crucial user activity data from mobile devices, thereby supporting their efforts in solving digital crimes.

Keywords: Mobile Devices, Machine Learning.

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DETECTING ARTIFICIAL IMAGES THROUGH LOCAL BINARY PATTERN

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ABSTRACT

As digital image manipulation and deepfake technology continue to advance, the ability to distinguish between real and artificially generated images has become a critical concern. The proliferation of fake images can have severe implications in various fields, such as journalism, social media, and law enforcement. As digital image manipulation and deepfake technology continue to advance, the ability to distinguish between real and artificially generated images has become a critical concern. Therefore, there is a growing need for robust and accurate techniques to detect artificial images and combat the spread of misinformation. The traditional approach to detecting artificial images has relied on handcrafted features and classical machine learning algorithms. One commonly used method is the Local Binary Pattern (LBP), which extracts texture information from an image. This makes CNNs an ideal candidate for addressing the challenges posed by detecting artificial images, especially deepfakes that can be highly convincing. The proposed approach combines the strengths of traditional texture analysis using LBPs and the powerful feature learning capabilities of CNNs.

Keywords: LBP, CNN, Deep Fake Technology, Artificial Image Detection, Deep Learning, Digital Image Manipulation.

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STUDENTS ATTENDANCE VISUALIZATION USING DATA SCIENCE

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ABSTRACT

Understanding the academic performance of students in colleges is an essential topic in Education research field. Educators, program coordinators and professors are interested in understanding how students are learning specific topics, how specific topics may influence the learning of other topics, how students' grades/attendances in each course may represent important indicators to measure their performance, among other tasks. The use of data visualization and analytics is expanding in education institutions to perform a variety of tasks related to data processing and gaining into data-informed insights. In this paper, we present a visual analytic tool that combines data visualization and machine learning techniques to perform some visual analysis of students' data from program courses. Two educational data collections were used to guide the creation of i) predictive models employing a variety of well known machine learning strategies, attempting to predict students' future grade based on grade and attendance previous semesters and ii) a set interactive layouts that highlight the relationship between grades and attendance, also including additional variables such as gender, parents education level, among others. We performed several experiments, also using these data collections, to evaluate the layouts ability of highlighting interesting patterns, and we obtained promising results, demonstrating that such analysis may help the education experts to understand deficiencies on course structures.

Keywords: Information Retrieval, RDF, SPARQL, E-learning, Querying, Indexing, Ranking, Semantic Web.

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PAPER ID: ICIRTCS-23-036

MACHINE LEARNING AND REGRESSION APPROACH FOR PREDICTING THE RIGHT GROUP OF CUSTOMERS FOR AUTOMOBILE INDUSTRIES

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ABSTRACT

The automobile industry is highly competitive and focuses on meeting the needs of customers. It's essential for automobile manufacturers and dealers to accurately understand and predict customer preferences and behaviour. This knowledge helps them design effective marketing strategies, optimize inventory management, and provide personalized services. Traditionally, predicting the right group of customers in the automobile industry relied heavily on manual analysis and intuition-based decision-making. Companies used basic demographic data and historical sales records to make assumptions about customer preferences. However, this approach often lacked accuracy and failed to capture the complex patterns and relationships within the data. As a result, it led to suboptimal outcomes and missed opportunities. In recent years, Machine Learning (ML) has emerged as a powerful tool in this domain, empowering companies to make data-driven decisions by analyzing vast amounts of customer data. ML brings significant advantages to the automobile industry, especially in customer prediction. It can efficiently process large datasets, identify hidden patterns, and make precise predictions based on historical data and real-time customer interactions. By learning from past customer behaviors and preferences, ML algorithms enable businesses to predict future buying patterns accurately. This empowers automobile companies to offer personalized recommendations, run targeted marketing campaigns, and enhance overall customer experiences, ultimately leading to increased customer loyalty and higher sales.

Keywords: Automobile Industry, Precise Prediction, Demographic data, Relied, loyalty, machine learning, marketing campaigns.

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PAPER ID: ICIRTCS-23-037

ANALYTICAL APPROACH FOR FUTURE BLOCKCHAIN FORENSIC INVESTIGATION OF BITCOIN TRANSACTION NETWORK

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ABSTRACT

Since Satoshi Nakamoto introduced Bitcoin, its popularity as an alternative method of payment has grown tremendously over the past few yearsFurthermore, the global usage of cryptocurrencies, including Bitcoin, continues to increase steadily, making it crucial to monitor Bitcoin transactions more carefully. Unfortunately, conventional methods have proven to be insufficient in effectively analyzing Bitcoin transactions. Therefore, this research focuses on the development of a Bitcoin transaction network (BTN) using pattern matching rules (PMR). Initially, the dataset undergoes preprocessing to identify missing symbols and unknown characters from the forensic blockchain dataset. Then, a Petri-Net model is applied to the pre-processed dataset, helping to identify properties such as timestamps, transaction IDs, work tera hash, and work error details. The Petri-Net model plays a significant role in parsing and constructing the BTN model. Subsequently, PMR conditions are formulated to extract transaction addresses along with their timestamp details. This allows PMR to detect illegal payment addresses by comparing them with known data, thereby identifying potential spam addresses. Additionally, a cache based PMR (CPMR) is applied to detect fraudulent transactions. CPMR stores all previously detected illegal payment addresses, allowing it to ignore those addresses during new transactions. This results in a reduction of fraud transaction detection time and speeds up the overall processing. The approach shows promise in enhancing the efficiency and accuracy of Bitcoin transaction analysis, addressing the challenges posed by the growing use of cryptocurrencies and the need for more robust forensic investigation methods.

Keywords: Machine Learning, Drug Classification, Data Visualization, Target Variable, Accuracy

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PAPER ID: ICIRTCS-23-038

DIABETIC RETINOPATHY DETECTION AND CLASSIFICATION USING GENERATIVE ADVERSARIAL NETWORKS

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ABSTRACT

Diabetic Retinopathy (DR) is a serious complication of diabetes and a leading cause of vision loss among working-age adults. It occurs when high blood sugar levels damage the blood vessels in the retina, leading to the leakage of blood and other fluids. Early detection and accurate classification of DR are crucial for timely intervention and preventing vision loss. This process is time-consuming, subject to human error, and may not be feasible in resource-constrained areas with a high prevalence of diabetes. Although some automated methods have been developed based on handcrafted features and conventional machine learning algorithms, they may lack the capability to extract complex patterns and nuances from the retinal images, limiting their accuracy. Hence, there is a need for an automated and efficient system that can detect and classify DR in retinal images with a high level of accuracy. Such a system would significantly reduce the burden on ophthalmologists, enable early detection of DR, and allow for timely treatment interventions, potentially preventing vision loss in diabetic patients. In recent years, advancements in machine learning and computer vision techniques have shown promise in automating DR detection and classification, thereby aiding ophthalmologists in providing better patient care. Therefore, proposed approach utilizes Generative Adversarial Networks (GANs) for the detection and classification of DR in retinal fundus images. GANs are a class of deep learning models that consist of two neural networks, the generator, and the discriminator, engaged in a competitive learning process. Here, the GAN framework is employed to enhance the ability to extract intricate features from retinal images, thereby improving the accuracy of DR detection and classification.

Keywords: Machine Learning, Ophthalmologists , GANs, Target Deep learning , Accuracy

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PAPER ID: ICIRTCS-23-039

AI-POWERED SYSTEM QUANTIFIES SUICIDE INDICATORS AND IDENTIFIES SUICIDE-RELATED CONTENT IN ONLINE POSTS

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ABSTRACT

Suicide is a serious public health concern worldwide, and the rise of social media and online platforms has brought new challenges in identifying and preventing suicidal behaviors. In the past, identifying suicide indicators and related content in online posts relied on human moderators or mental health professionals to manually review and categorize content. This manual approach was both labour-intensive and often lacked real-time capabilities, leading to delays in providing support to individuals in distress. Moreover, the scale of online content made it difficult for traditional methods to handle the ever-increasing volume of information. As a result, this project develops AI-powered system stems from the urgency to tackle the growing issue of suicide in the digital age, which can process data at a scale and speed that exceeds human capabilities, enabling it to analyze a large number of posts, recognize patterns, and detect potential suicide indicators in real-time. This proposed AI-powered system's ability to process and analyze large-scale data in real-time allows for early detection and timely intervention, significantly improving the effectiveness of suicide prevention efforts. The main aim is to find a strong co-relation between components in the subsystem and compare the accuracies to build an alarming system. "Better late than never" the victim can be saved by the proposed method and immediate treatment can be started. Further, this AI-powered system holds great promise in revolutionizing the field of mental health care by enabling more proactive and personalized support for individuals at risk of suicide. Through continuous refinement and development, it is hoped that this technology will play a crucial role in saving lives and promoting mental well-being in an increasingly connected world.

Keywords: Machine Learning, Alarming System, Artificial Intelligence, Online Content, Accuracy

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NLP-BASED EXTENDED LEXICON MODEL FOR SARCASM DETECTION WITH TWEETS AND EMOJIS

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ABSTRACT

Sarcasm detection in NLP is challenging due to its implicit nature. Traditional methods struggled with tweets' informality and emoji use. Our project, the Extended Lexicon Model (ELM), employs advanced NLP techniques, including word embeddings, to better capture sarcasm's linguistic and contextual cues in social media texts. ELM incorporates an extended sarcastic lexicon and considers emojis, enhancing accuracy in detecting sarcasm, particularly in tweets. This model is a valuable tool for NLP researchers dealing with the complexities of modern communication.

Keywords: Sarcasm detection, NLP (Natural Language Processing), Implicit nature, Traditional methods, Tweets informality, Emoji use, Extended Lexicon Model (ELM), Advanced NLP techniques, Word embeddings.

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PAPER ID: ICIRTCS-23-041

MACHINE LEARNING FOR ROBOT NAVIGATION CLASSIFICATION USING ULTRASOUND SENSOR DATA

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ABSTRACT

Robot navigation is a critical aspect of robotics, crucial for enabling autonomous robots to traverse their surroundings safely and efficiently. Traditional rule-based methods, while effective in controlled environments, struggle to adapt to the dynamic and unpredictable nature of real-world scenarios. This paper introduces a novel approach that leverages machine learning (ML) techniques, specifically logistic regression and multilayer perceptron models, to enhance robot navigation capabilities. The focus is on utilizing ultrasound sensor data to provide accurate distance information, enabling precise obstacle detection and path planning. The proposed ML-based approach allows robots to learn from real-time sensory inputs and adapt their navigation strategies on the fly. By employing ultrasound sensor data, the system gains valuable insights into its environment, enhancing obstacle detection and avoidance. The study demonstrates the effectiveness of logistic regression and multilayer perceptron models in enabling robots to navigate complex and ever-changing surroundings.

Keywords: Robot Navigation, Machine Learning, Ultrasound Sensors, Obstacle Detection, Path Planning, Adaptive Robotics.

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PAPER ID: ICIRTCS-23-042

MACHINE LEARNING-BASED CAR MODEL PREDICTION THROUGH VEHICLE PATTERN RECOGNITION

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ABSTRACT

Traditionally, identifying car models relied on manual methods or rule-based systems. Experts had to carefully analyze various features of the cars, such as the shape of headlights, grilles, and taillights, to make accurate predictions. Unfortunately, this approach was time-consuming, prone to errors, and not suitable for handling a large number of diverse car models. On the other hand, the need for a Machine Learning-Based approach arises from the ever-growing complexity and diversity of car models on the market. With thousands of different models available, a more automated and accurate system is essential for efficient car model prediction. By using machine learning algorithms, the system can learn from a vast dataset of labeled car images, allowing it to recognize and generalize patterns effectively. This enables the system to predict car models with a high degree of accuracy. Therefore, the primary objective of the research is to develop a cutting-edge machine learning-based system capable of accurately predicting car models using vehicle pattern recognition. To achieve this, a diverse dataset of car images with labeled make and model information is collected, and state-of-the-art machine learning techniques, such as deep learning, are employed to learn relevant patterns and features from the images. The research findings indicate that the proposed machine learning-based approach significantly outperforms traditional methods, achieving higher accuracy in car model prediction. This breakthrough has tremendous implications in various real-world applications, including intelligent transportation systems, law enforcement, and the automobile industry.

Keywords: Image Processing, Accurate Predictions, Intelligent Transport Systems, Law Enforcement, Machine learning.

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PAPER ID: ICIRTCS-23-043

ENHANCING LIVER DISEASE PREDICTION THROUGH DATA BALANCING ALGORITHMS USING ML MODEL

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ABSTRACT

Liver disease poses a significant global health concern, impacting millions of individuals. Timely and accurate diagnosis is vital for effective disease management and better patient outcomes. Machine learning (ML) techniques have shown great promise in predicting various medical conditions, including liver diseases. However, the success of ML models heavily relies on the quality and quantity of training data. Unfortunately, many datasets suffer from class imbalance, where certain classes, such as diseased and non-diseased patients, are not equally represented. Therefore, this project aims to overcome the challenge of class imbalance by employing advanced data balancing algorithms. Our proposed system involves preprocessing the dataset using the Synthetic Minority Over-Sampling Technique (SMOTE) that generates synthetic samples for the minority class, creating a more balanced dataset. Additionally, it also adjusts the learning process's cost function to account for the class imbalance, further improving the model's performance. Once we have a balanced dataset, an ML model (logistic regression, support vector classifier, and gradient boosting classifier) is trained to predict liver disease. The proposed model is evaluated on an independent test dataset, using various metrics such as accuracy, precision, recall, and F1-score to assess its effectiveness. By effectively handling class imbalance through data balancing algorithms, this model is expected to offer valuable support to medical practitioners in diagnosing liver diseases early and accurately, ultimately leading to improved patient care and outcomes.

Keywords: Liver disease, machine learning algorithms, feature scaling, accuracy, precision XGBoost, SVM and LR model.

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PAPER ID: ICIRTCS-23-044

ENHANCING TEXTUAL UNDERSTANDING: UNVEILING COMPLEX DEPENDENCIES AND AUTOMATED FEATURE REPRESENTATION LEARNING WITH CNN MODELS

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ABSTRACT

The rapid expansion of digital content and online platforms has resulted in an overwhelming abundance of information available to users. To help users discover relevant and personalized content, recommender systems have become essential tools. Traditionally, these systems have relied on two main approaches: collaborative filtering and content-based filtering. On the other hand, content-based filtering uses the characteristics of items and users' past preferences to generate recommendations. While these methods have proven effective, they often fall short in capturing the underlying sentiment and emotional aspects of users' preferences, leading to less satisfying recommendations. To overcome this limitation, a novel approach has emerged, known as "enhancing textual understanding." This approach incorporates sentiment analysis and leverages deep learning techniques to provide more accurate and context-aware recommendations. The need for this new approach arises from the shortcomings of traditional methods in understanding user sentiments and emotions. User preferences are not solely based on explicit ratings or past behaviours but are also influenced by emotional factors such as satisfaction, excitement, or disappointment. Deep learning methods play a crucial role in this approach by allowing the system to learn complex patterns and relationships in the data. This enhances the recommendation process, as the system can grasp intricate user item interactions and sentiment embeddings, leading to more refined and precise recommendations.

Keywords: Deep Learning, Recommendations, CNN Models, Sentiment Analysis, Machine Learning, Textual Understanding.

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PAPER ID: ICIRTCS-23-045

PREVENTING FORGERY WITH BLOCKCHAIN-POWERED CERTIFICATE VERIFICATION

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ABSTRACT

Certificate forgery is a long-standing problem that plagues various industries, including education, professional certifications, and legal documentation. In the past, verifying certificates involved manual processes, where physical examination of paper-based documents was necessary. Unfortunately, this process was slow, lacked transparency, and left room for fraudulent activities. Moreover, traditional paper-based certificates were vulnerable to tampering and counterfeiting, raising concerns about their authenticity and credibility. Recent advancements in technology have paved the way for a promising solution using blockchain technology to power certificate verification. Therefore, this project outlines a novel approach to tackle the persistent issue of certificate forgery. The proposed system leverages the capabilities of blockchain technology to create a robust, decentralized, and tamper-resistant certificate verification platform. Blockchain technology offers a decentralized and immutable way of storing and managing data, making it an ideal candidate for revolutionizing certificate verification. By leveraging blockchain, the entire process becomes more efficient and secure. Each certificate issuance is recorded in a tamper-proof manner with a timestamp, making it virtually impossible to alter or delete the information. Furthermore, the decentralized nature of blockchain eliminates the reliance on a central authority, reducing the risk of data manipulation and building trust in the verification process. Finally, the proposed system revolutionizes the current practices and address the challenges associated with certificate forgery, offering a more secure, efficient, and trustworthy solution.

Keywords: Decentralization, Smart Contracts, Private and Public key Encryption, Timestamps, Hash Functions, Digital Signatures, Cryptographic Hashing

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PAPER ID: ICIRTCS-23-046

ADVANCEMENTS IN MUSIC MOOD CLASSIFICATION: MACHINE LEARNING TECHNIQUES FOR MOOD ANALYSIS

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ABSTRACT

Music is a fundamental aspect of human life and has the power to evoke various emotions and moods. Understanding and categorizing music based on its emotional content, also known as music mood classification, has become a prominent area of research in recent years. The annotated data would then be used to build handcrafted rule-based systems or simple statistical models to classify music into different mood categories. While these approaches provided some insights, they were limited in scalability, generalization, and accuracy. In addition, manual annotation is time-consuming, expensive, and lacks objectivity. Moreover, human listeners may not always agree on the emotional interpretation of a particular piece of music, leading to discrepancies in the labeled data. To overcome these challenges and enable large-scale mood analysis of music collections, there is a demand for automated and data-driven approaches. Machine learning techniques offer a promising solution to this problem by leveraging computational models to learn patterns and relationships from data, thus enabling the automatic classification of music based on its emotional content. Therefore, this project develops an emotion recognition-based music recommendation system, which performs the mood analysis first, and then recommend the music according to the detected mood of the users. The experiments on real data confirm that the proposed mood classification system can be integrated to any music recommendation engine.

Keywords: Deep Learning, Emotion in Music, Neural Networks, Emotion Recognition, Machine Learning in Music, Audio Feature Extraction.

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PAPER ID: ICIRTCS-23-047

ADVANCEMENTS IN FOREST COVER TYPE CLASSIFICATION: MACHINE LEARNING APPROACHES FOR PREDICTION

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ABSTRACT

The classification of different forest cover types plays a crucial role in monitoring the environment, managing forests, and conserving biodiversity. It's essential to accurately identify and map these forest types to understand ecological patterns, assess forest health, and make well-informed decisions about sustainable land use. In the past, forest cover type classification heavily relied on manual interpretation of remote sensing data and the expertise of forestry professionals. These traditional methods were time-consuming and labor intensive, limiting their accuracy and scalability. However, as the demand for accurate forest cover information grew, traditional methods faced challenges in handling large-scale datasets and adapting to varying forest conditions. To address these challenges, machine learning (ML) techniques emerged as a promising solution. Machine Learning offered the potential for more accurate and efficient predictions. As a result, this project explores recent developments and innovations in using Machine Learning techniques such as support vector machine classifier, and random forest classifier for forest cover type classification.

Keywords: Machine Learning, Accuracy, Scalability, Support Vector Classifier, Random Forest Classifier, Forest Cover Type Classification.

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EFFICIENT PAYMENT FRAUD DETECTION WITH META LEARNING CLASSIFIER IN A COST-SENSITIVE FRAMEWORK

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ABSTRACT

Payment fraud has become a significant concern in today's digital era, causing financial losses and unauthorized transactions for individuals and businesses alike. The current methods used for detecting payment fraud often rely on rule-based systems or machine learning models like logistic regression and decision treesAn accurate and effective fraud detection system can not only save financial institutions substantial amounts of money but also safeguard their reputation and protect customers from falling victim to fraudulent activities. To address these challenges, our project focuses on using a meta-learning classifier within a cost-sensitive framework to tackle payment fraud. This ensures that the model stays up to date with the latest fraud trends, increasing its overall detection accuracy. By reducing false positives, our proposed approach optimizes resource allocation for fraud investigation, streamlining the entire process. Further, this proposed model offers a promising solution to the challenges posed by payment fraud detection, providing financial institutions with an efficient, adaptive, and cost-effective approach to safeguarding their assets and maintaining customer trust in an increasingly digital and complex financial landscape.

Keywords: Rule based systems, Accurate Predictions, Intelligent Transiton Systems, Fraud detection , Machine learning.

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COMPUTER VISION AND MACHINE LEARNING FOR VITICULTURE TECHNOLOGY

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ABSTRACT

This paper gives two contributions to the state-of-the-art for viticulture technology research. First we present a comprehensive review of computer vision, image processing, and machine learning techniques in viticulture. We summarise the latest developments in vision systems and techniques with examples from various representative studies.We focus on how computer vision and machine learning techniques can be integrated into current vineyard management and vinification processes to achieve industry relevant outcomes. The second component of the paper presents the new GrapeCS-ML Database which consists of images of grape varieties at different stages of development together with the corresponding ground truth data (e.g. pH, Brix, etc.) obtained from chemical analysis.It concludes by highlighting future challenges that need to be addressed prior to successful implementation of this technology in the viticulture industry.

Keywords: Viticulture, computer vision, machine vision, visual computing, image processing, machine learning.

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PAPER ID: ICIRTCS-23-050

CARDIOVASCULAR STROKE PREDICTION USING MACHINE LEARNING TECHNIQUES

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ABSTRACT

Over the past few decades, cardiovascular diseases have surpassed all other causes of death as the main killers in industrialized, underdeveloped, and developing nations. Early detection of heart conditions and clinical care can lower the death rate. Based on the patient's various cardiac features, we proposed a model for forecasting heart disease and identifying impending heart disease using machine learning techniques such logistic regression, SVM, Multinomial Nave Bayes, Random Forest, and Decision Tree. In most cases, input is received through numerical data of various parameters, and output findings are generated in real-time, predicting whether or not the patient has a disease. We'll use a variety of supervised machine learning methods before deciding which one is best for the model. Existing systems rely on classical machine learning models, which are inefficient and imprecise. They aren't as accurate as the proposed model and take a little longer to process.

Keywords: Stroke Prediction, logistic regression, SVM, Multinomial Nave Bayes, Random Forest and Decision Tree.

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MACHINE LEARNING BASED IRIS RECOGNITIONMODERN VOTING SYSTEM

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ABSTRACT

A Project ballot or an Electronic Voting Machine (EVM) based on Direct Response Electronic (DRE) or Identical Ballot Boxes have traditionally been used for voting. This study recommends a digital voting system based on a Machine Learning algorithm that uses Iris recognition to address the flaws in the current voting process in order to fix the traditional voting system's flaws. A program called the Iris recognition-based Voting System identifies people based on the iris pattern of their eyes. Iris recognition is an automated biometric identification technology that analyses video evidence of one or both of an individual's iris to identify complex patterns that are distinct, stable, and visible from a distance. A voter may only cast one ballot, whereas the proposed technology prohibits multiple votes from the same person because it can spot duplicate entries. Additionally, this technique does away with the need for the user to carry a voter ID that has the relevant information since the Aadhar is incorporated with the voter ID thus enhancing the digitalization by means of digital verification of biometric and iris patterns available in Aadhar card of every user. At the votingvenue, a simple iris scan will allow the voter's iris to be collected and used as identification. The iris recognition process consists of the following four steps: image acquisition, iris segmentation, feature extraction, and pattern matching. Iris recognition is one of the most trustworthy biometric modalities due to its high identification rate. Thereby this system eliminates the major drawbacks of traditional voting systems and enhances digital voting by incorporating modern transformation.

Keywords: iris recognition, pattern recognition, Normalization, Segmentation, Accuracy.

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A NOVEL REAL-TIME AUTOMATED FACE CLASSIFICATION AND DETECTION SYSTEM USING MACHINE LEARNING TECHNIQUE

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ABSTRACT

In recent days, Image classification and detection technique has become an important and more essential in the Image processing research field. Creating effective face detection is an essential aspect of handling the detection mechanism, tracking mechanism and Validation mechanism. The classical methods used for face detection do not have sufficient output. This research paper presents various studies and how machine learning methods are becoming to solve many challenges present in the face detection system. The first phase of work has a classification model with support vector machines, decision trees and Hybrid Ensemble Transfer learning algorithm. The second phase of work is investigated with real-the world's most popular dataset from World Masked Face Image Dataset and Label Faces in the wild (RMFD). Moreover, the experiment results show better accuracy and fast computation which has been achieved by the Hybrid Ensemble algorithm with SVM and Decision Trees machine learning techniques. This research helps to assist many social applications such as during pandemics like covid-19 and personal identity, it can be verifying the mask-worn persons.

Keywords: Image Classification, SVM, Decision Trees, Hybrid Ensemble Transfer Learning algorithm, RMFD.

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PREDICTION OF DIABETES USING HYBRIDIZATION BASED MACHINE LEARNING ALGORITHM

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ABSTRACT

Diabetes is often referred to as a metabolic disease. It is a category of metabolic disorders caused by a prolonged elevated amount of sugar in the blood. If diabetes can be predicted early, the chance and danger of diabetes can be minimized. Owing to the small amount of labelled data and the inclusion of outliers (or incomplete values) in diabetes databases, predicting diabetes correctly and accurately is extremely difficult. We propose a rigorous architecture for diabetes prediction that includes outlier exclusion, missing meaning filling, data standardization, function collection, and various Machine Learning (ML) classifiers (k-nearest Neighbour, Decision Trees, Random Forest, Logistic regression, support vector machine). In addition, we suggested the creation of a hybrid algorithm. We used a variety of algorithms to conduct hybridization in order to improve accuracy. Pima Indian Diabetes Data Collection was used as the data source.

Keywords: Metabolic, Outliers, Machine Learning, K-Nearest Neighbor, Decision Trees, Random Forest, Logistic Regression, Support Vector Machine, Pima Indian Diabetes Data Collection

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PAPER ID: ICIRTCS-23-054

MACHINE LEARNING BASED INTRUSION DETECTION SCHEME TO DETECT REPLAY ATTACKS IN SMART GRID

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ABSTRACT

Intrusion detection method combining a deep learning-based method and a feature-based method is proposed for smart grid. Specifically, long short-term memory and extreme gradient boosting are adopted for intrusion detection, and the results are fused based on the accuracies of these two models. As the XGBoost method is sensitive to its parameters and unsuitable selections greatly degrade its performance, A Bayesian method is proposed to optimize these parameters. Moreover, a crossover scheme in a genetic algorithm is introduced to reduce the impact of falling into a local optimum of Bayesian optimization. Extensive experimental results show the effectiveness of the proposed algorithm.Intrusion detection is an important and challenging problem that has a major impact on quality and reliability of smart city services. To this extent, replay attacks have been one of the most common threats on smart city infrastructure, which compromises authentication in a smart city network. For example, a replay attack may physically damage smart city infrastructure resulting in loss of sensitive data, incurring considerable financial damages. Therefore, towards securing smart cities from reply attacks, intrusion detection systems and frameworks based on deep learning have been proposed.

Keywords: Intrusion, Extreme Gradiant Boost(XG Boost), Deep Learning, Long Short Term Memory(LSTM), Bayesian Optimization.

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PAPER ID: ICIRTCS-23-055

MACHINE LEARNING APPLIED TO SPEECH EMOTION ANALYSIS FOR DEPRESSION RECOGNITION

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ABSTRACT

Depression is a psychiatric condition that can have an impact on a person's emotional and physical health. Untreated depression can make it difficult for a person to go about their everyday lives and trigger a variety of other symptoms. The only available diagnostic techniques today are therapeutic interventions. As a result, this system is suggested to help with clinical management decisions throughout therapy as well as early detection of depression. As machine learning technology advances, more intelligent systems will soon be usable in daily life. Intelligent systems are interactive, operate with little human effort, and rely mostly on voice input. Hence, based on the speech input given, a new computational methodology for detecting various emotions and depression is proposed. Audio samples from the DAIC-WOZ dataset and the (RAVDESS)The Ryerson Audio-Visual Database of Emotional Speech and Song dataset were used to create the dataset for depression-related data. Speech signal is exposed to a feature extraction process. Speech corpus is classified using long short-term memory (LSTM) algorithm and its performance is compared with conventionally used Support Vector Machine (SVM). Preliminary result indicates whether individual is depressed or not depressed.

Keywords: Depression, RAVDESS, DAIC-WOZ, Support Vector Machine.

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IDENTIFYING THE GENDER OF HUMAN CYBER ATTACKERS USING MACHINE LEARNING TECHNIQUES

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ABSTRACT

Face recognition using an automated surveillance camera. The proposed system consists of different steps, including training of images, face detection using Haar-classifier, comparison of trained images, result based on the comparison. An important application of interest is automated surveillance, where the objective is to recognize people who are on a watch list. The aspiration of this paper is to compare an image with several images which has been already trained. In this paper, we represent a methodology for face detection robustly in real time environment. Haar cascading is one of the algorithm for face detection. Here we use Haar like classifiers to track faces on OpenCV platform. The accuracy of the face recognition is very high. The proposed system can successfully recognize more than one face which is useful for quickly searching suspected persons as the computation time is very low. The system is identified the person is crime or normal. If the person is crime, the details will be shown. The system is developed the different classification algorithm such as random forest and CNN. Finally, the experimental results shows that some performance metrics such as accuracy and error rate.

Keywords: Neural Network, CNN, Decision Tree Algorithms, SVM, KNN.

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ONLINE PHISHING DETECTION USING MACHINE LEARNING

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ABSTRACT

Phishing is an internet scam in which an attacker sends out fake messages that look to come from a trusted source. A URL or file will be included in the mail, which when clicked will steal personal information or infect a computer with a virus. Traditionally, phishing attempts were carried out through wide-scale spam campaigns that targeted broad groups of people indiscriminately. The goal was to get as many people to click on a link or open an infected file as possible. There are various approaches to detect this type of attack. One of the approaches is machine learning. The URL's received by the user will be given input to the machine learning model then the algorithm will process the input and display the output whether it is phishing or legitimate. There are various ML algorithms like SVM, Neural Networks, Random Forest, Decision Tree, XG boost etc. that can be used to classify these URLs. The proposed approach deals with the Random Forest, Decision Tree classifiers. The proposed approach effectively classified the Phishing and Legitimate URLs with an accuracy of 87.0% and 82.4% for Random Forest and decision tree classifiers respectively

Keywords: Random Forest, Decision Tree, url

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SONG RECOMMENDATION BASED ON VOICE TONE ANALYSIS

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ABSTRACT

Music suggestions based on elements including user listening history, music genre, etc. have become more popular in recent years. The user's emotional state is not considered by conventional music recommendation algorithms; therefore, they might not offer suggestions that are appropriate for their present mood. This study introduces a song recommendation system that uses artificial intelligence and machine learning to make individualized music suggestions based on the emotional state of the user. The system extracts feature with the help of MFCC to analyze the tone of the user. The suggested method incorporates deep learning models such as Artificial Neural Networks that provide better accuracy to train the model. The major challenge in creating such a system is to successfully determine the data for the recommendation process by accurately and consistently detecting the user's emotional state from speech. The proposed system offers new pathways for research in the fields of artificial intelligence and music recommendation and has the potential to alter the way people listen to music.

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Keywords: Mel-Frequency Cepstral Coefficients (MFCC), Convolutional Neural Network (CNN), Artificial Neural Networks (ANN)

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ARTIFICIAL INTELLIGENCE BASED CYBER SECURITY THREATS IDENTIFICATION IN FINANCIAL INSTITUTIONS USING MACHINE LEARNING

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ABSTRACT

As digital assets become more interconnected, cyber threats are growing at an unprecedented rate. Financial institutions need to invest in artificial intelligence-based solutions for identifying these threats and protecting their assets. Machine learning is a powerful tool for investigating complex financial security threats that constantly evolve and can be difficult to predict. By leveraging AI technologies such as natural language processing, algorithms, and automated reasoning systems, banks can develop a better understanding of potential risks and create more efficient controls around their data. In this paper, an artificial intelligence based cyber security threats identification has proposed in financial institutions using machine learning approach. Machine learning algorithms are constantly being improved to identify anomalies in the data that might indicate a security threat. This approach enables financial firms to identify and defend against malicious attacks using custom-made models that provide actionable insights into both internal and external risks.

Keywords: Artificial Intelligence, Machine Learning, Cyber Threats, Malicious Attacks

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PAPER ID: ICIRTCS-23-060

FOREST FIRE DETECTION USING CNN-RF AND CNN-XGBOOST MACHINE LEARNING ALGORITHMS

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ABSTRACT

Detection of forest fire should be quick and accurate as forests are the important sources to lead a vital life on earth. Detection of fire can be extremely difficult using existing methods of smoke sensors installed and they are slow and cost inefficient, so in order to avoid large scale fires, detection from visual scenes is required. In this work detection of fire in an image is done by extracting features using Deep learning algorithm and with those features as input to machine learning algorithm, a model is build with the help of different machine learning algorithms like Random Forest, Support Vector Machine, XGBoost and K-Means Clustering. Using these algorithms the data sets are classified into fire and non fire images to build the model and the test data of the data set is provided as input for getting the validation accuracy of the model. Then comparison is done among machine learning algorithms to find which algorithm provides more accuracy. To test the accuracy of the fire presence classification evaluation metrics are used in the model and find that accuracy of CNN-RF and CNN-XGBOOST are 98.53% which is greater than accuracy of CNN-SVM 97.06%.

Keywords: Deep Learning, Convolutional Neural Network, Random Forest, Support Vector Machine, Accuracy.

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PAPER ID: ICIRTCS-23-061

AN IMPROVED SYSTEM FOR BRAIN PATHOLOGY CLASSIFICATION USING HYBRID DEEP LEARNING ALGORITHM

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ABSTRACT

Speech, recognizing, learning, programming, and problem-solving are all meant to be included in artificial intelligence computing activities. Artificial intelligence (AI), a subfield of computer engineering, is concerned with developing sophisticated software or technologies that act and function like human. Deep learning, a category of algorithms used in deep learning, is based on learning data representations and is one of many machine learning techniques. Deep learning is used to develop brain tumour screening and classification models for rapid and uncomplicated tumour identification using Magnetic Resonance Images (MRI) imaging. This paper shows how the pretrained model Alexnet with Transfer Learning (TL) may be trained on tiny and innovative fresh data for classification problems using the stochastic-gradient descent with momentum-SGDM optimizer. Numerous hybrid models were presented with the aim of classifying a brain tumour MR image as a benign as well as malignant tumour. The accuracy, error rate, and confusion matrix parameter of the suggested models are evaluated in order to show how the works have improve.

Keywords: Deep Learning, Neural Network, Artificial intelligence (AI), Magnetic Resonance Images (MRI) Imaging.

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PAPER ID: ICIRTCS-23-062

SUPERVISED AND UNSUPERVISED LEARNING TECHNIQUES UTILIZING MALWARE DATASETS

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ABSTRACT

Malware continues to gain momentum as it becomes more sophisticated against detection. Monitoring tools and antivirus software do not have the ability to keep up with the ever-going changes of these malignant variants. Due to these dilemmas, machine learning has gained popularity in classification and detection of malware related data. In this study, two separate datasets, Malware-Exploratory and CIC-MalMem-2022, undergo a series of supervised and unsupervised learning procedures to first gather information for observation. The developed model in this research utilizes three clustering algorithms for analysis, K-Means, DBSCAN, and GMM. The model also uses seven classification algorithms for predicting malware including Decision Tree, Random Forest, Ada Boost, KNeighbors, Stochastic Gradient Descent, Extra Trees, and Gaussian Naïve Bayes. Results have shown that Malware-Exploratory dataset averaged an accuracy score of 90% while CIC-MalMem-2022 dataset averaged a score of 99%. Both datasets also showed consistency across all three clustering algorithms. Besides, correlation between variables do not necessarily need to be highly related for malware detection. Future studies will determine if the results remain stable against feature selection and genetic algorithms.

Keywords: K-Means, DBSCAN, GMM, Decision Tree, Gaussian Navi Bayes

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PAPER ID: ICIRTCS-23-063

BAYESIAN OPTIMIZATION MACHINE LEARNING MODELS FOR TRUE AND FAKE NEWS CLASSIFICATION

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ABSTRACT

The performance of a machine learning algorithm depends largely on determining a set of hyper parameters. These hyper parameters have a significant influence on the accuracy of the algorithm. With the increase in algorithm complexity, there are more and more candidates for hyper parameters. How to quickly and accurately select the right hyper parameters for a given problem has become a popular area of research. This paper is based on a Bayesian optimization approach to assist machine learning for hyper parameter extraction. It is also fully validated based on the task of dichotomous classification of true and false news. This paper analyses the principles of the Bayesian optimization approach and how it can be applied to machine learning model parameter selection. The machine learning models to be used in this paper include K-Nearest Neighbor (KNN), Random Forest as well as Gradient Boosted Decision Trees (GBDT). These three are commonly used machine learning models for binary classification problems, with different numbers and classes of hyper parameters. The results of the experiments show that adjusting the original hyper parameters of machine learning using Bayesian optimization can substantially improve classification accuracy. The research in this paper can also provide ideas for other similar work of super parameter selection.

Keywords: K-Nearest Neighbor (KNN), Random Forest as well as Gradient Boosted Decision Trees (GBDT),Bayesian optimization

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PAPER ID: ICIRTCS-23-064

MRI BRAIN TUMOR CLASSIFICATION USING A HYBRID VGG16-NADE MODEL

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ABSTRACT

A brain tumor is determined to be an abnormal cell development on the brain walls and inside the skull. A malignant variation is a dangerous form of cancer with an increased mortality rate.Analyzing Magnetic Resonance Imaging (MRI) through deep learning models is the most prevalent and accurate method of early cancer detection. A novel hybrid model is proposed with the VGG16 convolution neural network (CNN) and Neural Auto regressive Distribution Estimation (NADE). The experiment was conducted on 3064 MRI brain tumor images grouped into three categories :

1) Primary brain tumor
2) Benign
3) Malignant

The T1 weighted contrast-enhanced MRI images were classified using the hybrid VGG16-NADE model and compared with other methods.The results prove that the proposed hybrid VGG16-NADE model outperforms the rest in terms of classification accuracy, specificity, sensitivity and F1 score.The prediction accuracy of the proposed hybrid VGG16-NADE is 96.01%, precision 95.72%, recall 95.64%, F-measure 95.68%, Receiver operating characteristic (ROC) 0.91, error rate 0.075, and the Matthews correlation coefficient (MCC) 0.3564.

Keywords: Deep Learning, Convolutional Neural Network, Support Vector Machine, Accuracy , MRI .

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PAPER ID: ICIRTCS-23-065

INTEGRATED ML WITH NLP FRAMEWORK FOR DRUGRECOMMENDATON SYSTEM

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ABSTRACT

The field of healthcare has experienced significant advancements in recent years, withthe integration of machine learning (ML) and natural language processing (NLP) emerging as a promising approach for medical applications. Additionally, these approaches lacked the adaptability required to keep pace with the continuously evolving medical landscape, making them less reliable in dynamic healthcare environments. To address these challenges, this project proposes an innovative sentiment and machine learning-based drug recommendation system. The system accepts disease names from patients and subsequently recommends drugs while simultaneously displaying a sentiment rating based on reviews from previous users, reflecting their experiences. This approach aims to enhance patient trust in the recommended drugs by providing additional information based on real user feedback. The proposed work utilizes various feature extraction algorithms, including TF-IDF (term frequency-inverse document frequency), Bag of Words, and Word2Vec. These extracted features are then applied to several machine learning algorithms, such as Logistic Regression, Linear SVC, Naïve Bayes, and Multi-Layer Perceptron (MLP) classifier. By leveraging these powerful techniques, the system can analyze and process the input data effectively, leading to accurate and personalized drug recommendations. By combining the capabilities of ML and NLP, this approach enhances the accuracy and personalization of drug recommendations, ultimately leading to improved patient outcomes and higher levels of trust in the healthcare system.

Keywords: Machine Learning, safe drug, pandemics, recommender systems, a medical emergency.

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A NOVEL DESIGN AND IMPLEMENTATION ON WOMEN AND CHILD SAFETY BASED ON IOT TECHNOLOGY

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ABSTRACT

Women and child protection is now considered to be a major problem in a globalized society. Women especially face severe immoral and brutish annoyance. But one thing to be remembered is that not all the time can adwoman use the mobile so that the application is full time accessible. Hence we need to develop a smart device that can work well without the need of making a phone call or by using mobile phones. The developed device needs to be handy and easy to carry out anytime and anywhere. There are many such devices on sale but they do not provide effectual, powerful and accurate measure and solution. Here, we are presenting a "novel design and implementation on women and child safety based on IOT technology". We will be considering the situation where the women walking will be facing some unethical harassmentpractices and so she needs to be protected from this situation. The device will be in the form of a button that can be attached to the cloth. This smart device is implemented using different software and hardware modules for capturing the videos, images and tracking the location where the incident is occurring. This gathered information is then forwarded to the neighbouring or to the adjacent police station and to the victim's family. This work is accomplished by using GPS (Global Positioning System) and GSM (Global System for Mobile Communication). The developed smart piece of equipment also has memory cards and microcontrollers where in all these sophisticated and advanced components provide more accuracy and model the device to be more reliable.

Keywords: GPS, GSM, IoT, Victims, Child Protection,

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STOCK MARKET TREND PREDICTION USING K-NEAREST NEIGHBOUR (KNN)ALGORITHM

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ABSTRACT

This paper examines a hybrid model which combines a K-Nearest Neighbour (KNN) approach with a probabilistic method for the prediction of stock price trends. The KNN algorithm is a simple, easy-to-implement Machine learning supervised algorithm with a low computational cost. There's no need to build a model, tune several parameters, or make additional assumptions. The KNN algorithm assume that similar things are near to each other. It is also necessary to construct enhanced model that integrates KNN with a probabilistic method which utilizes both centric and non-centric data points. The embedded probabilistic method is derived from Bayes' theorem. Bayes' theorem allows you to update predicted probabilities of an event by incorporating new information. It is often employed in finance in updating risk evaluation.

***Keywords*:** K-Nearest Neighbor (KNN), Machine Learning, Bayes theorem, Stock Market Prediction

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PAPER ID: ICIRTCS-23-068

BIG MART SALES USING MACHINE LEARNING WITH DATA ANALYSIS

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ABSTRACT

Nowadays shopping malls and Big Marts keep the track of their sales data of each and every individual item for predicting future demand of the customer and update the inventory management as well. These data stores basically contain a large number of customer data and individual item attributes in a data warehouse. Further, anomalies and frequent patterns are detected by mining the data store from the data warehouse. The resultant data can be used for predicting future sales volume with the help of different machine learning techniques for the retailers like Big Mart. In this paper, we propose a predictive model using Xgboost technique for predicting the sales of a company like Big Mart and found that the model produces better performance as compared to existing models. A comparative analysis of the model with others in terms performance metrics is also explained in details.

***Keywords*:** Machine Learning, Sales Forecasting, Random Forest, Regression, Xgboost.

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PAPER ID: ICIRTCS-23-069

MUSIC ARTIST RECOGNITION USING DEEP LEARNING

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ABSTRACT

Music artist (i.e., singer) recognition is a challenging task in Music Information Retrieval (MIR). The presence of different musical instruments, the diversity of music genres and singing techniques make the retrieval of artist-relevant information from a song difficult. Many authors tried to address this problem by using complex features or hybrid systems. The proposed MAR system has been designed to classify ten artist classes. The dataset has been collected from the Midwood data. Support Vector Machine (SVM) and Artificial Neural Network (ANN) with spectral features are used for classification. We could achieve a 77 % accuracy using MFCC features on a 10 class's artist recognition task using ANN.

***Keywords*:** Music Artist Recognition, Mel Frequency Cepstral Coefficients (MFCC), Support Vector Machine (SVM), Artificial Neural Network (ANN).

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BLOCK CHAIN FOR SECURE EHRS SHARING OF MOBILE CLOUD BASED E-HEALTHSYSTEMS

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ABSTRACT

The main objective of this paper is securely stored and maintain patient records (EHR) in health care. Health care can be a data-intensive domain where an oversized quantity of data is formed, which is accessed on daily basis. Block chain technology is employed to safe guard the health care data hosted in the cloud. The block contains the medical data and the time stamp. Cloud computing will connect different healthcare providers. It allows the health care provider to access the patient's details more securely from anywhere. It preserves data from attackers. The data is encrypted before posting to the cloud. The health care provider must decrypt the data before download.

***Keywords*:** AES Algorithm, Block chain, Cloud Computing, EHRs, HealthCare Provider.

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ARTIFICIAL INTELLIGENCE MARKETING: CHATBOT

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ABSTRACT

Artificial Intelligence is a tool that enables marketers to create highly personalized customer experieces, increases organization's responsiveness and solve customers' problems. In this paper, the chat bot is analysed as an artificial intelligence tool in marketing, its today'sapplication, as well as its future potential in the above-mentioned field. A survey of respondents' behaviours, habits, and expectations when using different communication channels was conducted, with particular emphasis on chatbots, their advantages and disadvantages in relation too their communication channels, in total sum of 60 survey respondents. The results showed that the greatest advantage of using chatbots in the marketing service was when providing simple, fast obtained information, but also showed respondents' fear of chat bots giving them the wrong information. Organizations should consider using chatbots, especially if challenges in communication with customers are reality,but also if they intend to keep up with the growing number of consumers' lifestyle.

Keywords: chatbot, chatbots, artificial intelligence, marketing, bigdata.

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HUMAN COMPUTER INTERACTION SYSTEM: COMPUTER CURSOR MOVEMENT USINGHUMAN EYEBALL MOVEMENT

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ABSTRACT

People require an artificial locomotion device such as a virtual keyboard for a variety of reasons. Because of a sickness, the number of persons who need to move around with the assistance of some article. Furthermore, incorporating a controlling system into it allows them to walk without the assistance of another person, which is really beneficial. The concept of eye controls is extremely beneficial to not only the future of natural input, but also the handicapped and crippled. The image of eye movement is captured by the camera. First, determine the position of the eye's pupil Centre. Then, depending on the pupil position, a separate command set for the virtual keyboard is generated. The signals are routed through the motor driver, which connects to the virtual keyboard. To enable the virtual keyboard to go forward, left, right, and stop, the motor driver will regulate both speed and direction.

***Keywords*:** Human Computer Interaction, Virtual Keyboard, Cursor Movement, controlling system, handicapped and crippled

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IDENTIFYING AND SAFEGUARDING WOMEN AGAINST VIOLENCE IN INDIA USINGSUPPORT VECTOR CLASSIFIER ON TWITTER DATA

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ABSTRACT

In terms of women's security, we are living in the worst time our society has ever seen. Women experience a lot of harassment, starting from stalking, passing vulgar comments, and leading to sexual assault. The main motive of the project is to analyse women safety using social networking messages and by applying machine learning algorithms on it. Now-a-days almost all people are using social networking sites to express their feelings and ifany women feel unsafe in any area then she will express negative words in her post/tweets/messages and by analysing those messages we can detect which area is more unsafe for women. In this paper we focus on how social media is used to promote the safetyof women in India. Tweets consist of text messages, audio data, video data, images, smiley expressions and hash-tags. The content being shared can be used to educate people to raise their voice if any abusive language or any harassment is done against women.

***Keywords*:** Hash tag, Safety, Sentimental Analysis, Sexual Harassment, Women.

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E-ASSESSMENT USING IMAGE PROCESSING IN EXAMS

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ABSTRACT

This paper features a software system which supports (primarily in higher education) paper based examination and makes it easier, more comfortable and speed up the whole process while making keeping every single positive attribute of it but also reducing the number of negative aspects. The approach significantly differ from the ones used in the previous 10+ years which were implemented in a such a way that they could not reproduced and replace the traditional based paper examination model. The heart of the article relies on the most important element of the software which is the image processing flow. The way of conducting testing the knowledge of a person using Multiple Choice Questions (MCQ) has been increased gradually. In education industries (like schools and colleges) it more common now days having test using multiple choice questions. Even in conducting interviews it is used. Current day scenario is either using OMR technology to correct the test or manually. In real time it is quite difficult to have OMR at all the time and manually it is highly taking the time to correct and it may give you the error. We address this issue, in our proposed system we using digital image processing technique to correct the answer using multiple choice questions in python. We are here using Open Source Computer Vision Library (Open CV) to process and correct the answer. Python is the best language to implement this concept with the available Open CV library. In this system we also implement in the Django environment.

***Keywords*:** E-Assessment, Computer-Based Assessment, Computer-Assisted Assessment, Computer-Aided Assessment, Image Processing

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SMART CONTRACT BASED ACCESS CONTROL FOR HEALTH CARE DATA

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ABSTRACT

Healthcare was the sector with the highest profits and information boom. With so many electronic health records, the need for the hour was security. There was an urge to use the block chain technology to make this critical information more secure. Research has therefore come up with a blockchain technology solution in medical care that not only prevents information from being abused, but also guarantees that data leakage is prevented. In this paper, we analyze the data storage and sharing scheme for decentralized storage systems and implement hybrid-consensus mechanism. This research will promote the provision of better healthcare facilities and cost optimization for all stakeholders involved in the medical system.

Keywords: Blockchain, Security, Health record, Smart contract, Data sharing

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PAPER ID: ICIRTCS-23-076

ADVANCED SELF-ASSESSMENT OF GLOBAL PANDEMICS LIKE COVID-19 FORHEALTHY RACE USING MACHINE LEARNING

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ABSTRACT

A huge amount of false content regarding this dangerous virus is shared online. In this project we use machine learning to quantify COVID-19 content, which is falsely appearing, online, which leads to establishment of health guidance, particularly about vaccinations. We found that the anti-vax community is developing a less focused debate around COVID-19 than its counterpart, the pro-vaccination community. However, the anti- vax community exhibits a broader range of topics related to COVID-19, and hence the information can appeal to a broader cross-section of individuals seeking COVID-19 guidanceonline, for example individuals wary of a mandatory fast-tracked COVID-19 vaccine or those seeking alternative remedies. Hence the anti-vax community looks better positioned to attract fresh support going forward when compared to pro-vax community. The popularity of anti- vax community leads widespread lack of adoption of a COVID-19 vaccine, which means the world falls short of providing herd immunity, leaving countries open to future COVID-19 resurgences. We provide a mechanistic model that interprets these results and could help in assessing the likely efficacy of intervention strategies. Our approach is scalable and hence tackles the urgent problem facing social media platforms of having to analyse huge volumes of online health misinformation.

***Keywords*:** COVID-19: social computing: machine learning: mechanistic model: topic modelling: Pandemics

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MEASURING OF AVERAGE FUEL CONSUMPTION IN HEAVY VEHICLES USINGMACHINE LEARNING ALGORITHMS

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ABSTRACT

This research suggests a data summarising strategy based on distance rather than the typical time span for constructing personalised machine learning models for fuel economy. This strategy is integrated with seven variables obtained from vehicle speed and road grade to build a highly predictive neural network model for average fuel consumption in large vehicles. The proposed model may be readily constructed and deployed for each individual vehicle in a fleet to maximise fuel usage. The predictors of the model are averaged over a range of distance window sizes. For routes involving both city and highway duty cycle segments, the results show that a 1 km window can predict fuel consumption with a 0.91 coefficient of determination and a mean absolute peak-to-peak percent error of less than 4% for routes with a 0.91 coefficient of determination and a mean absolute peak-to-peak percent error of less than 4%.

Keywords: Vehicle modelling, neural networks, average fuel consumption, data summarization, fleet management

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SUSPICIOUS ACTIVITY DETECTION SYSTEM

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ABSTRACT

With the increasing in the number of anti-social activities that have been taking place, security has been given utmost importance lately. Many Organizations have installed CCTVs for constant Monitoring of people and their interactions. For a developed Country with a population of 64 million, every person is captured by a camera 30 times a day. A lot of video data generated and stored for a certain time duration. A 704x576 resolution image recorded at 25fps will generate roughly 20GB per day. Constant Monitoring of data by humans to judge if the events are abnormal is near impossible task as requires a workforce and their constant attention. This creates a need to automate the same. Also, there is need to show in which frame and which part of it contain the unusual activity which aid the faster judgment of the unusual activity being abnormal. This paper consists of six abnormal activities such as abandoned object detection, theft detection, fall detection, accidents and illegal parking detection on road, violence activity detection, and fire detection. In general, we have discussed all the steps those have been followed to recognize the human activityfrom the surveillance videos in the literature, Such as foreground object extraction, object detection based on tracking or non-tracking methods, feature extraction, classification; activity analysis and recognition. The objective of this paper is to provide the literature review of six different suspicious activity recognition systems with its general framework to the researchers of this field.

Keywords: Abandoned object detection, Theft detection, fall detection accidents, illegal parking detection on road, violence activity detection, fire detection

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A SURVEY ON CLASSIFICATION AND IMPLEMENTATION OF DATA MINING CONCEPTS IN R PROGRAMMING

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ABSTRACT

Data Mining is a process of extracting and working on unstructured data. There are different unstructured data on which we apply the Classification techniques. It involves analyzing data patterns in large batches of data using one or more software. R is a programming language for the purpose of statistical computations and data analysis. The R language is widely used by the data miners and statisticians on high dimensional pattern extraction. R is freely available under the GNU General Public Licenses and the source code is written in FORTAN, C and R. R Studio is a good interface for R Programming is employed extensively for generating reports supported many current trends models likerandom forest, support vector machine,C4.5, K-Means, APRIORI, EM, Page, Rank, ADABOOST, KNN, NAÏVEBAYES, CART. R extremely stands unique for massive quantity of inherent statistical formulae and algorithms. This present survey focuses on existing classification algorithms using data mining techniques, Comparison table, Applications that is widely used in R programming.

Keywords: k-means, Apriori, EM, Rank, AdaBoost, KNN, NaïveBayes.

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CLOUD COMPUTING-BASED FORENSIC ANALYSIS FOR COLLABORATIVE NETWORKSECURITY MANAGEMENT SYSTEM

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ABSTRACT

Internet security problems remain a major challenge with many security concerns such as Internet worms, spam, and phishing attacks. Botnets, well-organized distributednetwork attacks, consist of a large number of bots that generate huge volumes of spam or launch Distributed Denial of Service (DDoS) attacks on victim hosts. New emerging botnet attacks degrade the status of Internet security further. To address these problems, a practical collaborative network security management system is proposed with an effective collaborative Unified Threat Management (UTM) and traffic probers. A distributed security overlay network with a centralized security center leverages a peer-to-peer communication protocol used in the UTMs collaborative module and connects them virtually to exchange network events and security rules. Security functions for the UTM are retrofitted to share security rules. In this paper, we propose a design and implementation of a cloud-based security center for network security forensic analysis. We propose using cloud storage tokeep collected traffic data and then processing it with cloud computing platforms to find the malicious attacks. As a practical example, phishing attack forensic analysis is presented and the required computing and storage resources are evaluated based on real trace data. The cloudbased security center can instruct each collaborative UTM and prober to collect events and raw traffic, send them back for deep analysis, and generate new security rules. These new security rules are enforced by collaborative UTM and the feedback events of such rules are returned to the security center. By this type of close-loop control, the collaborative network security management system can identify and address new distributed attacks more quickly and effectively.

Keywords **-** Antibotnet; anti-phishing; Hadoop file system; eucalyptus; amazon web service.

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TUMBLING THE THREAT OF CUSTOMER RELOCATION BY USING BIG DATA CLUSTERINGALGORITHM

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ABSTRACT

In the world of endurance of the fittest the marketplace contests are escalating and management of the clients has Emerge as all the focal point for business. For the identical , various consumer migration or churn predicting models are been advanced and used by many Bigdata industries which can be suffering to emerge .At the latest , there exits many clustering Algorithms which focus on the same. And additionally many clustering algorithms also were put forward for the same. One Amoung those algorithmsare SCM and SCSCM whose foremost awareness is on churn predictions. They make use Hadoop map Lessen framework. A more powerful and green clustering set of rules is parallel kernel ok-means is proposed on this paper. Our proposed system layout effectively and successfully plays clustering large quantity of heterogeneous dataset. Proposed algorithm can cluster established, unstructured and semi-structured statistics considered concurrently for clustering. The kernels run in parallel accepting datasets and balancing the load of massive data it's time intake as compared to other, is expected to be very less, quicker execution of clustering and complements the profit to a massive quantity

Keywords: Parallel kernel, k-means++, SCM, SDSCM, Clustering, Map Reduce.

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AN AUTOMATED LIVE FORENSIC AND POST-MORTEM ANALYSIS TOOL FORBIT COIN ON WINDOWS SYSTEMS

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ABSTRACT

Bitcoin is a well-known crypto currency which is gaining popularity day-by day because of its features. It is not only popular with customers but also with criminals like using for ransomware, extortion and online child exploitation. Knowing the potential of Bitcoin involvement in criminal investigation, the need to have an in-depth understanding on the forensic acquisition and analysis of Bitcoins is crucial. However, the research on Bitcoin has been limited in the literature. The general focus of existing research is on post-mortem analysis of a specific locations like wallets on mobile devices rather than the approach that combines live data forensic and post-mortem analysis to facilitate the identification, acquisition analysis of usage of bitcoin on windows system. Hence, the proposed focus on where we present an open-source tool for live forensic and post-mortem analysis automatically. With the help of this tool, we can describe a list of artifacts which can be obtained from a forensic investigation on Bitcoin clients and their web wallets on different browsers on windows 7 and 10 platforms.

Keywords: Bitcoin forensics, crypto currency forensics, digital forensics, Bitcoin web wallets.

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PAPER ID: ICIRTCS-23-083

DETECTION OF CYBER ATTACKS ON WEB APPLICATIONS USING MACHINE LEARNINGTECHNIQUES

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ABSTRACT

The increased usage of cloud services, growing number of web applications users, changes in network infrastructure that connects devices running mobile operating systems and constantly evolving network technology cause novel challenges for cyber security. In order to counter arising threats and to address the needs and problems of the users, there should some network security mechanisms, sensors and protection schemes. Here, we focus on countering emerging application layer cyber -attacks since those are listed as top threats and the main challenge for network and cyber security. The major contribution is the proposition of machine learning approach to model normal behaviour of application and to detect cyber-attacks. The model consists of patterns (in form of Perl Compatible Regular Expressions (PCRE) regular expressions) that are obtained using graph based segmentation technique and dynamic programming. The model is based on information obtained from HTTP requests generated by client to a web server. We have evaluated our method on CSIC 2010 HTTP Dataset achieving satisfactory results.

Keywords: Cyber-attacks, Graph based approach, Needleman-Wunsch algorithm, Web Applications.

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PAPER ID: ICIRTCS-23-084

DRIVER DROWSINESS DETECTION USING OPEN CV

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ABSTRACT

Driver fatigue has become one of the main causes of vehicle accidents in the worldin recent years. The driver's condition, i.e., drowsiness, is a clear way of measuring driver exhaustion. It is therefore very important to recognize the driver's drowsiness in order assist the human to reach destination safely without any problem. In this paper the main motto is to implement a reliable framework that suits the application for the detection for sleepiness. The primary objective of the work is to capturing the images from the driver continuously and obtain the information of eye in accordance with the specified algorithm. A webcam in this system records the video and the driver is detected with image processing techniques in each frame. The facial characteristics of the detected face are pointed and the aspect ratio, the mouth opening ratio and the nose longitation relationship are calculated and drowsiness is detected in accordance with their values.

Keywords: Image Processing, Open CV, Face Recognition, Raspberry pi

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PAPER ID: ICIRTCS-23-085

RESEARCH ON RECOGNITION MODEL OF CROP DISEASES AND INSECT PESTSBASED ON DEEP LEARNING IN FIELDS

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ABSTRACT

Agricultural diseases and insect pests are two of the most significant factorsthreatening agricultural development. Early detection and identification of pests will significantly minimize pest-related economic losses. In this paper, a convolutional neural network is used to classify crop diseases automatically. The data comes from the AI Challenger Competition's public data collection from 2018, which includes 27 disease imagesfrom ten crops. In this paper, the CNNInception-ResNet-v2 model is used for training. The residual network unit to the model has a cross layer direct edge and multi-layer convolution. The connection into the ReLu feature activates it after the combined convolution process is completed. The overall identification accuracy is 98 %, according to the experimental findings. The proposed model's effectiveness is verified by the experimental findings.

Keywords:ResNet-v2, Keras, Recognition of pests and diseases, Deep Learning,Convolutional Neural Network (CNN).

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FACIAL EXPRESSION RECOGNITION USING YOLO OBJECT DETECTIONALGORITHM

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ABSTRACT

Automatic face expression analysis is a difficult problem with various applications. The majority of currently available automated facial expression analysis algorithms aim to recognise a few prototypical emotional expressions, such as anger and happiness. The method provided, will use three algorithms: You only look Once (YOLO), Convolution Neural Networks (CNN) and Recurrent Neural Network (RNN) to identify facial expressions. With a combination of these three, this project can recognize the expressions in both frontal view images and profile view images

Keywords: Faces, CNN, YOLO, RNN, Detection, Recognition, Expressions

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PAPER ID: ICIRTCS-23-087

COVID -19 DETECTION USING CLINICAL TEXT DATA ANALYSIS BYMACHINE LEARNING APPROACHES

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ABSTRACT

Technology advancements have a rapid effect on every field of life, be it medical field or any other field. Artificial intelligence has shown the promising results in health care through its decision making by analysing the data. COVID-19 has affected more than 100 countries in a matter of no time. It is imperative to develop a control system that will detect the coronavirus. In this paper, we classified textual clinical reports into four classes by using classical and ensemble machine learning algorithms. Feature engineering was performed using techniques like Term frequency/inverse document frequency (TF/IDF), Bag of words (BOW) and report length. These features were supplied to traditional and ensemble machine learning classifiers. Logistic regression and Multinomial Naıve Bayes showed better results than other ML algorithms by having 96.2% testing accuracy. In future recurrent neural network can be used for better accuracy.

Keywords: Artificial Intelligence, COVID-19, Imperative, Machine Learning, Ensemble.

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PAPER ID: ICIRTCS-23-088

HYPER PARAMETER TUNING FOR VARIOUS MACHINE LEARNING TECHNIQUES

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ABSTRACT

Several popular Machine learning algorithms such as Decision Tree, SVM, KNN, Navies Bayes, XGBoost and Random Forest are used in classification problems widely. The Hyperparameters of each model plays a vital role in deciding their performance. Hyperparameters are crucial as they control the overall behaviour of a machine learning model. The ultimate goal is to find an optimal combination of hyperparameters that minimizes a predefined loss function to give better results. The recognition of hand written digits is one of the most significant tasks in many applications. There is a need to identify the handwritten digits that the user upload through a smartphone or a scanner or other digital devices. In this work, Digits dataset is taken for classification. Three algorithms Decision tree, Support vector machine and Random forest are taken here for classification and their parameters are fine tuned to obtain better performance.

Keywords: Machine learning, Hyperparameter Tuning, SVM, Decision Trees, Random Forest

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AN IMPROVED APPROACH OF PROCTORING SYSTEM FOR ONLINE MODE EXAMS

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ABSTRACT

As we all know, the COVID19 pandemic impacted Schools, Universities, CampusHiring programs a lot. All of these shifted to Online mode like Teaching classes, Conductingexams, and Conducting interviews. Exams are not a simple thing and must be held and written with utmost responsibility. However, everything has both positive and negative sides. Test-takers who are giving their exams online for Companies or College exams might even cheat using various ways, this affects the test-takers who are giving the exam sincerely.This also leads many colleges not to conduct the exams online. So, if the process is strict enough, every examination can be conducted online by proctoring online which eases a lotof physical work at the same time. Our Project is an Improved approach to Proctoring system for Online Mode Exams, here continuous proctoring will be enabled throughout the exam session and if anything happens wrong, it will detect them and declare the test-taker is cheating. There is an existing system[1] that implemented Face Spoofing, Audio Detection, Real-time Head pose Estimation in their system. Although it was not a complete system, we would like to extend it by implementing few more functionalities.

***Keywords*:** Remote Proctoring, Face spoofing, Audio detection, Real-time Head pose estimation.

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RUMOUR DETECTION SYSTEM ON SOCIAL MEDIA

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ABSTRACT

Twitter is one of the most popular micro blogging services, which is generally used to share news and updates through short messages. However, its open nature and large user base are frequently exploited by automated rumours, content polluters, and other ill- intended users to commit various cybercrimes, such as cyber bullying, trolling, rumour dissemination, and stalking. Accordingly, a number of approaches have been proposed by researchers to address these problems. In this study, we present a hybrid approach for detecting automated rumours by amalgamating community- based features with other feature categories, namely metadata- , content-, and interaction-based features. The novelty of the proposed approach lies in the characterization of users based on their interactions with their followers given that a user can evade features that are related to their own activities. The rumours are identified based on the followers and the user's previous tweets and Automated Tweet Similarity, Reputation scheme is implemented for detect the spam in the system but evading those based on the followers is difficult. Nineteen different features, including six newly defined features and two redefined features, are identified for learning three classifiers, namely, random forest, decision tree, KNN, and Bayesian network, on a real dataset that comprises benign users and rumours. The discrimination power of different feature categories is also analysed, and interaction- and community-based features are determined to be the most effective for spam detection, whereas metadata-based features are proven to be the least effective.

Keywords: Metadata, interaction based features, automated tweet similarity, KNN, rumours

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MOVIE RECOMMENDATION SYSTEM USING CURRENT TRENDS AND SENTIMENT ANALYSIS FROM MICROBLOGGING DATA RUMOUR DETECTION ON SOCIAL MEDIA

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ABSTRACT

Recommendation systems (RSs) have garnered immense interest for applications in e-commerce and digital media. Traditional approaches in RSs include such as collaborative filtering (CF) and content-based filtering (CBF) through these approaches that have certain limitations, such as the necessity of prior user history and habits for performing the task of recommendation. To minimize the effect of such limitation, this article proposes a hybrid RS for the movies that leverage the best of concepts used from CF and CBF along with sentiment analysis of tweets from microblogging sites. The purpose to use movie tweets is to understand the current trends, public sentiment, and user response of the movie. Experiments conducted on the public database have yielded promising results.

Keywords: Collaborative filtering, Content based filtering, Recommendation System, Sentiment Analysis, Twitter

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PROTECTING USER DATA IN PROFILE MATCHING SOCIAL NETWORKS

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ABSTRACT

In this paper, we consider a scenario where a user queries a user profile database, maintained by a social networking service provider, to find out some users whose profiles are similar to the profile specified by the querying user. A typical example of this application is online dating. Most recently, an online data site, Ashley Madison, was hacked, which results in disclosure of a large number of dating user profiles. This serious data breach has urged researchers to explore practical privacy protection for user profiles in online dating. In this paper, we give a privacy preserving solution for user profile matching in social networks by using multiple servers. Our solution is built on homomorphic encryption and allows a user to find out some matching users with the help of the multiple servers without revealing to anyone privacy of the query and the queried user profiles. Our solution achieves user profile privacy and user query privacy as long as at least one of the multiple servers is honest. Our implementation and experiments demonstrate that our solution is practical.

Keywords: data site, Ashley Madison, service provider, database, multiple servers

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BEHAVIOUR ANALYSIS FOR MENTALLY AFFECTED PEOPLE

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ABSTRACT

Mental health is a measure of a person's emotional, psychological, and social well-being. It determines how a person thinks, feels, and responds to events. Working successfully and reaching one's full potential requires good mental health. Mental health is crucial at every age, from childhood to maturity. Stress, social anxiety, depression, obsessive compulsive disorder, substance addiction, and personality disorders are all elements that contribute to mental health issues that lead to mental disease. When deployed in real time, such apps will serve society by functioning as a surveillance toolfor people who engage in aberrant conduct. To assess the status of mental health in a target population, this research recommends using several machine learning methods such as support vector machines, decision trees, nave bayes classifier, K-nearest neighbor classifier, and logistic regression. The replies to the designed questionnaire acquired from the target group were first subjected to unsupervised learning techniques. The Mean Opinion Score was used to validate the labels that were acquired as a consequence of clustering. These cluster labels were then utilized to create classifiers that might predict an individual's mental health. The population was divided into target categories, including high school pupils, college students, and working professionals. The study examines the impact of the mentioned machine learning algorithms on the target groups and makes recommendations for further research.

Keywords: Machine learning, Hyperparameter Tuning, SVM, Decision Trees, Random Forest

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A NOVEL FEATURE MATCHING RANKED SEARCH MECHANISM OVER ENCRYPTEDCLOUD DATA

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ABSTRACT

Encrypted search technology has been studied extensively in recent years. With more and more information being stored in cloud, creating indexes with independent keywords has resulted in enormous storage cost and low search accuracy, which has become an urgent problem to be solved. Thus, in this paper, we propose a new feature matching ranked search mechanism (FMRSM) for encrypted cloud data. This mechanism uses feature score algorithm (FSA) to create indexes, which allows multi-keywords which are extracted from a document as a feature to be mapped to one dimension of the index. Thus, the storage cost of indexes can be reduced and the efficiency of encryption can be improved. Moreover, FMRSM uses a matching score algorithm (MSA) in generating trapdoor process. With the help of FSA, the matching score algorithm can rank the search results according to the typeof match and the number of matching keywords , and therefore it is able to return results with higher ranking accuracy. Comprehensive analysis prove that our mechanism is more feasible and effective.

Keywords: FMRSM, FSA, MSA, multi-keywords, encrypted.

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EMOTION BASED MUSIC RECOMMENDATION SYSTEM USING WEARABLE SENSORS

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ABSTRACT

Most of the existing music recommendation systems use collaborative or content- based recommendation engines. However, the music choice of a user is not only dependent to the historical preferences or music contents. But also dependent to the mood of that user. This paper proposes an emotion-based music recommendation framework that learns the emotion of a user from the signals obtained via wearable Accessories which include sensors. In particular, the emotion of a user is classified by a wearable computing device which is integrated with a galvanic skin response (GSR) and photo plethysmography(PPG) physiological sensors and an optical sensor like camera. This emotion information is feed to any collaborative or content- based recommendation engine as a supplementary data. Thus, existing recommendation engine performances can be increased using these data. Therefore, in this paper emotion recognition problem is considered as arousal and valence prediction from multi-channel physiological signals. Experimental results are obtained on 32 subjects' GSR and PPG signal data with/out feature fusion using decision tree, random forest, support vector machine and k-nearest neighbour algorithms. The results of comprehensive experiments on real data confirm the accuracy of the proposed emotion classification system that can be integrated to any recommendation engine.

Keywords: vector machine, GSR, PPG, K-nearest algorithms, valence prediction.

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MODELLING AND PREDICTING CYBER HACKING BREACHES USING STOCHASTIC PROCESS MODELS

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ABSTRACT

The selection of parameters greatly affects the prediction accuracy of support vector machine. Analyzing cyber incident data sets is an important method for deepening our understanding of the evolution of the threat situation. This is a relatively new research topic, and many studies remain to be done. In this paper, we report a statistical analysis of a breach incident dataset corresponding to 12 years (2005–2017) of cyber hacking activities that include malware attacks. We show that, in contrast to the findings reported in the literature, both hacking breach incident inter-arrival times and breach sizes should be modeled by stochastic processes, rather than by distributions because they exhibit autocorrelations. Then, we propose particular stochastic process models to, respectively, fit the inter-arrival times and the breach sizes. We also show that these models can predict the inter-arrival times and the breach sizes. In order to get deeper insights into the evolution of hacking breach incidents, we conduct both qualitative and quantitative trend analyses on the data set. We draw a set of cybersecurity insights, including that the threat of cyber hacks is indeed getting worse in terms of their frequency, but not in terms of the magnitude of their damage.

Keywords: parameters, malware attacks, breach sizes, dataset, cyber hacking

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SLIDING WINDOW BLOCKCHAIN ARCHITECTURE FOR INTERNET OF THINGS

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ABSTRACT

Internet of Things (Io−T) refers to the concept of enabling Internet connectivity and associated services to non-traditional computers formed by integrating essential computing and communication capability to physical things for everyday usage. Security and privacy are two of the major challenges in IoT. The essential security requirements of IoT cannot be ensured by the existing security frameworks due to the constraints in CPU, memory, and energy resources of the IoT devices. Also, the centralized security architectures are not suitable for IoT because they are subjected to single point of attacks. Defending against targeted attacks on centralized resources is expensive. Therefore, the security architecture for IoT needs to be decentralized and designed to meet the limitations in resources. Blockchain is a decentralized security framework suitable for a variety of applications. However, blockchain in its original form is not suitable for IoT, due to its high computational complexity and low scalability. In this paper, we propose a sliding window blockchain (SWBC) architecture that modifies the traditional blockchain architecture to suit IoT applications. The proposed sliding window blockchain uses previous (n 1) blocks to form the next block hash with limited difficulty in Proof-of-Work. The performance of SWBC is analyzed on a real-time data stream generated from a smart home testbed. The results show that the proposed blockchain architecture increases security and minimizesmemory overhead while consuming fewer resources.

Keywords: blockchain, SWBC, IoT, hash, proof-of-work, security.

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CLOUD BASED SOLUTION TO ENSURE THE SECURITY OF E-HEALTH RECORDS USINGBLOCKCHAIN

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ABSTRACT

Late years we have seen a change in perspective of Electronic Health Records (EHRs) on versatile cloud conditions where cell phones are coordinated with distributed computing to work with clinical information trades among patients and medical services suppliers. This high level model empowers medical care administrations with low operational expense, high adaptability and EHRs accessibility. Notwithstanding, this new worldview likewise raises worries about information protection and organization security for e-wellbeing frameworks. Instructions to dependably divide EHRs between versatile clients while ensuring high security levels in portable cloud is a difficult issue. In this paper, we propose a novel EHRs sharing structure that joins blockchain and the decentralized interplanetary record framework (IPFS) on a versatile cloud stage. In Particular, we plan a dependable access control component utilizing savvy agreements to accomplish secure EHRs dividing between various patients and clinical suppliers. We present a model execution utilizing Ethereum blockchain in a genuine information sharing situation on a portable application with Amazon distributed computing. Observational outcomes show that our proposition gives a successful answer for dependable information trades on portable mists while safeguarding delicate wellbeing data against likely dangers. The framework assessment and security examination additionally show execution upgrades in lightweight access control plan, least organization inertness with high security and information protection levels, contrasted with existing information sharing models.

Keywords: EHRs, blockchain, IPFS, protection level, medical care.

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CONTAMINENT ZONE ALERTING APPLICATION USING GEO - FENCING ALGORITHM

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ABSTRACT

The World Health Organization has declared the outbreak of the novel coronavirus, Covid-19 as pandemic across the world. With its alarming surge of affected cases throughout the world, lockdown, and awareness (social distancing, use of masks etc.) among people are found to be the only means for restricting the community transmission. In adensely populated country like India, it is very difficult to prevent the community transmission even during lockdown without social awareness and precautionary measures taken by the people. Recently, several containment zones had been identified throughout the country and divided into red, orange and green zones, respectively. The red zones indicate theinfection hotspots, orange zones denote some infection and green zones indicate an area with no infection. This project mainly focuses on development of an Android application which can inform people of the Covid19 containment zones and prevent trespassing into these zones. This Android application updates the locations of the areas in a Google map which are identified to be the containment zones. The application also notifies the users if they have entered a containment zone and uploads the user's IMEI number to the online database. To achieve all these functionalities, many tools, and APIs from Google like Firebase and Geofencing API are used in this application. Therefore, this application can be used as a tool for creating further social awareness about the arising need of precautionary measures to be taken by the people of India.

Keywords: COVID19, Geofencing API, IMEI, Firebase.

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BITCOIN CRYPTO CURRENCY PREDICTION

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ABSTRACT

The goal of this paper is to ascertain with what accuracy the direction of Bitcoin price in USD can be predicted. The price data is sourced from the Bitcoin Price Index. The task is achieved with varying degrees of success through the implementation of a Bayesian optimized recurrent neural network (RNN) and a Long Short Term Memory (LSTM) network. The LSTM achieves the highest classification accuracy of 52% and a RMSE of 8%.The popular ARIMA model for time series forecasting is implemented as a comparison to the deep learning models. As expected, the non-linear deep learning methods outperform the ARIMA forecast which performs poorly. Finally, both deep learning models are benchmarked on both a GPU and a CPU with the training time on the GPU outperforming theCPU implementation by 67.7%.

Keywords: GPU, CPU, RNN, LSTM, Bitcoin

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PAPER ID: ICIRTCS-23-101

DETECTING AT-RISK STUDENTS WITH EARLY INTERVENTION USING MACHINELEARNING TECHNIQUES

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ABSTRACT

Massive Open Online Courses (MOOCs) have shown rapid development in recent years, allowing learners to access high-quality digital material. Because of facilitated learning and the flexibility of the teaching environment, the number of participants is rapidly growing. However, extensive research reports that the high attrition rate and low completion rate are major concerns. In this, the early identification of students who are at risk of withdrew and failure is provided. Therefore, two models are constructed namely at-risk student model and learning achievement model. The models have the potential to detect the students who are in danger of failing and withdrawal at the early stage of the online course.

Keywords: MOOCs, Digital Material, Learning, model, course.

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PAPER ID: ICIRTCS-23-102

REAL TIME HUMAN EMOTION RECOGNITION BASED ON FACIAL EXPRESSIONDETECTION USING SOFTMAX CLASSIFIER AND PREDICT THE ERROR LEVEL USING OPENCV LIBRARY

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ABSTRACT

Facial emotion recognition (FER) is an important topic in the fields of computer vision and artificial intelligence. It is developing technology with multiple real-time applications. Currently, the Deep Neural Networks, especially the Convolutional Neural Network (CNN), is widely used in FER by virtue of its inherent feature extraction mechanism from image. The developed System presents an approach towards facial emotion recognition using dataset consisting faces of seven classes of emotion (angry, disgusted, fearful, happy, sad, surprised, neutral) and it uses different models of deep neural networks such as You Only Look Once (YOLO), Convolutional Neural Networks (CNN).

***Keywords*:** Facial Emotion Recognition, You Only Look Once (YOLO), Convolutional Neural Networks (CNN).

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PAPER ID: ICIRTCS-23-103

CYBER THREAT DETECTION BASED ON ARTIFICIAL NEURAL NETWORKS USING EVENTPROFILES

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ABSTRACT

One of the major challenges in cybersecurity is the provision of an automated and effective cyber-threats detection technique. In this paper, we present an AI technique for cyber-threats detection, based on artificial neural networks. The proposed technique converts multitude of collected security events to individual event profiles and use a deep learning- based detection method for enhanced cyber-threat detection. For this work, we developed an AI-SIEM system based on a combination of event profiling for data pre-processing and different artificial neural network methods, including FCNN, CNN, and LSTM. The system focuses on discriminating between true positive and false positive alerts, thus helping securityanalysts to rapidly respond to cyber threats. All experiments in this study are performed by authors using two benchmark datasets (NSLKDD and CICIDS2017) and two datasets collected in the real world. To evaluate the performance comparison with existing methods, we conducted experiments using the five conventional machine-learning methods (SVM, k- NN, RF, NB, and DT). Consequently, the experimental results of this study ensure that our proposed methods are capable of being employed as learning-based models for network intrusion detection, and show that although it is employed in the real world, the performance outperforms the conventional machine-learning methods.

***Keywords*:** True Positive Alerts, LSTM, CNN, FCNN, cyber security, machine learning,network intrusion detection.

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PAPER ID: ICIRTCS-23-104

STUDY ON DETECTION AND MITIGATION APPROACHES OF CROSS-SITE SCRIPTINGATTACKS ON SNS (SOCIAL NETWORKING SITES) ENVIRONMENT

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ABSTRACT

Now a day's online network platform is an important platform to share ideas and their thoughts between the public. It is an online platform and provides virtual communication for online users that share like personal or career interests or real-life connections, not only personal also organizations, politicians etc. These sites are a speedy, safe and competitive way for communication that's why social networking sites become more in the World Wide Web. Some commonly used social networking sites are, Face book, Instagram, Twitter, MySpace, and LinkedIn. At the same time, security vulnerabilities have become major issues to all, this allows an attacker to breach integrity, availability, the secrecy of the social media services, and resulting into some valuable information's losses social media users. Among the variety of security vulnerabilities, Cross write scripting attack is one of the most often occurring types of attacks on SNS environment recently, nearly 60% of all attacks on the web were detected as XSS-related attack. Cross-site scripting attack is a malicious script that is injected into trusted websites at the client side, where the attacker put into malicious code, typically javascript etc, into the web application to execute in the victim browser. Resulting from this type of Attack such as data compromise, stealing of cookies, passwords, credit card numbers etc. In this survey, the paper focuses on the different detection and prevention mechanisms available in the literature for Cross-site scripting attacks on social networking sites, along with discussing the advantage and disadvantage of each method also discuss comparison between these approaches.

***Keywords*:** Cross-site Scripting (XSS), XSS attacks detection and prevention, Social networking services.

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PAPER ID: ICIRTCS-23-105

STOCK MARKET TREND PREDICTION USING K-NEAREST NEIGHBOR ALGORITHM

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ABSTRACT

This paper examines a hybrid model which combines a K-Nearest Neighbours (KNN) approach with a probabilistic method for the prediction of stock price trends. One of the main problems of KNN classification is the assumptions implied by distance functions. The assumptions focus on the nearest neighbours which are at the centroid of data points for test instances. This approach excludes the non-centric data points which can be statistically significant in the problem of predicting the stock price trends. For this it is necessary to construct an enhanced model that integrates KNN with a probabilistic method which utilizes both centric and non-centric data points in the computations of probabilities for the target instances. The embedded probabilistic method is derived from Bayes' theorem. The prediction outcome is based on a joint probability where the likelihood of the event of the nearest neighbours and the event of prior probability occurring together and at the same point in time where they are calculated. The proposed hybrid KNN Probabilistic model was compared with the standard classifiers that include KNN, Naive Bayes, One Rule (One-R) and Zero Rule (ZeroR). The test results showed that the proposed model outperformed the standard classifiers which were used for the comparisons.

***Keywords*:** Stock Price Prediction, K-Nearest Neighbours, Bayes' Theorem, Naive Bayes, Probabilistic method

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PAPER ID: ICIRTCS-23-106

DATA ACCESSIBILITY IN BLOCKCHAIN-BASED HEALTHCARE SYSTEMS THAT IS SECUREAND EFFICIENT

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ABSTRACT

Constant reformulation and innovation takes place in the health care industry. Protective the confidentiality of patients' data is one of the maximum significant systems for healthcare reform to succeed. To ensure that only authorised entities have access to patients' confidential information, it is critical to use secure data pathways. Thus, the paper presents the idea of using distributed blockchain technology to safeguard the statistics in healthcare organizations. This investigation suggests a blockchain-based healthcare system allows patients and doctors to store personal data with ease and security. My proposed solution provides a compromise that also protects the privacy of the patients. It has been shown to withstand widely known attacks while keeping the system secure. Furthermore, an Ethereum based implementation has tested our proposed system's feasibility.

Keywords: Block chain, Data Accessibility, Privacy, Smart Contracts, Smart Healthcare, Security.

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PAPER ID: ICIRTCS-23-107

CHARACTERISING AND PREDICTING EARLY REVIEWERS FOR EFFECTIVE PRODUCTMARKETING ON E - COMMERCE WEBSITES

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ABSTRACT

Online reviews have become an important source of information for users before making an informed purchase decision. Early reviews of a product tend to have a high impact on the subsequent product sales. In this paper, we take the initiative to study the behavior characteristics of early reviewers through their posted reviews on two real-world large e-commerce platforms, i.e., Amazon and Yelp. In specific, we divide product lifetime into three consecutive stages, namely early, majority and laggards. A user who has posted a review in the early stage is considered as an early reviewer. We quantitatively characterize early reviewers based on their rating behaviors, the helpfulness scores received from others and the correlation of their reviews with product popularity. We have found that an early reviewer tends to assign a higher average rating score; and an early reviewer tends to post more helpful reviews. Our analysis of product reviews also indicates that early reviewers' ratings and their received helpfulness scores are likely to influence product popularity. By viewing review posting process as a multiplayer competition game, we propose a novel margin-based embedding model for early reviewer prediction. Extensive experiments on two different e-commerce datasets have shown that our proposed approach outperforms a number of competitive baselines.

Keywords: Amazon, analysis, process, multiplayer, Yelp.

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PAPER ID: ICIRTCS-23-108

ANALYSIS OF PARKINSON'S DISEASES USING PRE-TRAINED CONVOLUTIONAL NEURALNETWORK

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ABSTRACT

Parkinson's disease is one of the main type neurological disorder that is affectedby progressive brain degeneration. This disease affects nearly affects 50 percent of men and women. There is no particular methodology or test to perceive the Parkinson's disease at the early stage. This results in the increased morality rate. To overcome, this computer-aided- diagnosis has been introduced to detect the Parkinson's disease. In the proposed work, Pre- Trained Convolutional Neural Network namely GoogleNet classifier is used as a feature extractor. To classify between the normal and Parkinson's disease affected patients Support Vector Machine and Random Forest were used. The system shows the satisfactory performance of 94.50 % when implementing with GoogleNet with Support Vector Machine.

***Keywords*:** Parkinson's Disease (PD), Support Vector Machine (SVM), Random Forest (RF), Convolutional Neural Network (CNN), GoogleNet

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PAPER ID: ICIRTCS-23-109

ELECTRONIC VOTING SYSTEM USING PUBLIC BLOCKCHAIN WITH PRIVACY,TRANSPARENCY AND SECURITY

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ABSTRACT

With the advanced technology and developments since the 20th century, new procedure of casting votes in an election is developed every now and then. This project uses advanced technology like block chain and homomorphic encryption in order to make the election more safe and secure. By implementing the idea of block chain e-voting the electionscan be made fairer, as it double checks the votes casted by the voters before and after the elections. Moreover, it eliminates the chances of malpractices as images of voters are taken into consideration. Hence, a voter can only vote once and can recheck their vote. At present the voting is done using paper ballots and electronic voting but it has problems mainly regarding security, credibility, transparency, reliability, and functionality. So, block chain e- voting can deliver an answer to all these problems and further can add advantages like as immutability and decentralization.

***Keywords*:** Blockchain, immutability, decentralization, transparency, homomorphic encryption.

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PAPER ID: ICIRTCS-23-110

ANALYSIS OF WOMEN SAFETY IN INDIAN CITIES USING MACHINE LEARNING ONTWEETS

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ABSTRACT

Sonar signals are used to detect objects in terms of women's security, we are living in the worst time our society has ever seen. Women from various parts of the world always experience a lot of harassment, starting from stalking, passing vulgar comments, and leading to sexual assault. The main motive of the project is to analyze women safety using social networking messages and by applying machine learning algorithms on it. Now-a-days almost all people are using social networking sites to express their feelings and if any women feel unsafe in any area then she will express negative words in her post/tweets/messages and by analyzing those messages we can detect which area is more unsafe for women. In this paper we focus on how social media is used to promote the safety of women in Indian cities from various social media platforms such as Twitter, Face book and Instagram. Tweets consists of text messages, audio data, video data, images, smiley expressions and hash-tags. The content being shared can be used to educate many people to raise their voice if any abusive language or any harassment is done against women. Hashtags used by Instagram and Twitter can be used to convey one's thoughts across the globe and make the women feel free to express their views and feelings.

***Keywords*:** Hash tag, Safety, Sentimental Analysis, Sexual Harassment, Women

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PAPER ID: ICIRTCS-23-111

EFFECTIVE CYBER SECURITY MONITORING AND LOGGING PROCESS

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ABSTRACT

Information technology drives productivity and growth in almost every industry today. One computing device contains more confidential information than thousands ofdocuments in hardcopy. Cyber Security Monitoring is a critical part of Managed Detection and Response Service (MDR). Every activity on your environment, from emails to logins to firewall updates, is considered a security event. All of these events are, (or should be,) loggedin order to keep tabs on everything that's happening in your technology landscape. Cyber monitoring is the process of continuously observing an IT system in order to detect data breaches, cyber threats, or other system vulnerabilities. Managed Security Monitoring Service will help to gain visibility, security and control of your industrial operations. Proactive monitoring across the security ecosystem maximizes investment value, while helping to balance outsourced expertise and in-house teams. Log file is an automatic documentation of the operations a computer device and its user perform, such as file creation/modification time, user access, adjustments, to name a few. Log files contain critical information for organizations.

Keywords: cyber security, logging, Security incidents, cyber intelligence, attacks, event logs

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PAPER ID: ICIRTCS-23-112

OPTIMIZED FEED FORWARD NEURAL NETWORK FOR CLASSIFICATION OF DIABETES INBIG DATA ENVIRONMENT

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ABSTRACT

One of the main problems in the human body is diabetes. Diabetes is one of the critical health issues in the human body it causes human life severely. In women, the diabetesrate is more and higher as compared with the others. It severely affects pregnant ladies while they are affected by diabetes. This can be affected the daily routine. This algorithm provides good prediction results bytaking the data from the dataset. In this diabetes prediction, the machine learning algorithms combine with the big data environment. In the previous methods, the k-means clustering and cuckoo search is used in optimization. In this existing system, its accuracy and performance are high but it takes a huge time to computational process. To solving this problem an optimization based on machine learning is applied. Here the dataset is downloaded from the Indian diabetes dataset. For removing the unwanted and missing data in the dataset we use pre-processing and clustering. And the feature reduction is done in the use of glow-worm optimization. The glow-worm is the fastest method compared to the cuckoo search optimization. The classification of diabetes is done with the help of feed-forward neural networks. The aim of the classification is that the user misunderstanding the values after removing the unwanted data. The whole process is realized in the MATLAB R 2018a environment and evaluated in terms of accuracy, precision, recall, F-measure, and Matthew correlation coefficient. This approach outperforms all other existing techniques with an F- measure of 97.7%.

Keywords: Diabetic, dataset, pre-processing, glow-worm, Feedforward neural network.

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PAPER ID: ICIRTCS-23-113

TECHNIQUES AND APPROACHES TO RECHARGE THE SENSOR NODES IN WIRELESSRECHARGEABLE SENSOR NETWORKS: A STUDY

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ABSTRACT

Wireless sensor networks (WSNs) have drawn its enormous attention by the researchers and scientific community due to its wide range of applications. However, sensor nodes (SNs) are equipped with the limited battery/energy source which restricts the perpetual operation. Thus, various techniques/approaches are suggested or proposed by the researchers to preserve the precious energy of the SNs. However, these techniques and approaches only extend the limited operational time of the network. Recent advancement in the wireless energy transfer (WET) techniques have revolutionized the way to recharge SNs and draws the attention of the researchers to replenish the energy of the wireless rechargeable sensor networks (WRSNs). In this technique a single or multiple mobile or static charger are used to restore the energy of the rechargeable SNs. In this paper we have presented various techniques/schemes/approaches proposed by the researchers to utilize the single or multiple mobile or static charger to replenish the energy of the SNs to enhance the lifetime of the WRSNs.

Keywords: Wireless sensor networks, Wireless rechargeable sensor networks, WET,Scheduling, Mobile charger.

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PAPER ID: ICIRTCS-23-114

A SURVEY ON CORAL SPECIES CLASSIFICATION USING VARIOUS LEARNING ALGORITHMS

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Without coral reefs, marine ecosystems cannot sustain themselves. There have been recent reports of falling population and health of coral reefs. Underwater imaging technologies, such as autonomous underwater vehicles (AUV) and towed diver sleds, have significantly increased the amount of data about coral reefs that can be studied. In coral reefs, picture clarity varies greatly, class boundaries are complex, and variations within classes are substantial. This makes it challenging to classify corals. This work offers a thorough overview of the ways in which machine learning and deep learning have been used in underwater picture processing to enhance our understanding of coral reefs. Deep learning algorithms have achieved state-of-the-art results in a wide range of computer vision issues, including object detection, scene interpretation, and image categorization. Marine ecosystems present a challenge to computer vision due to the intricacy of the scenes involved. The challenge of categorizing coral species is one that deep learning can handle well.

Keywords: Corals, machine learning, classification, deep learning, marine images, CNN

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REVIEW ON APPLICATION OF MACHINE LEARNING ALGORITHM IN DNA SEQUENCE CLASSIFICATION

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ABSTRACT

DNA (Deoxyribonucleic acid) is a large molecule found in living things. Its main purpose is to store information. As sequencing technology has improved, DNA sequence data has grown at a very fast rate. This has put the study of DNA sequences in the big data wave. Also, machine learning is a powerful method for analyzing big amounts of data and learning on its own. It has been used a lot to analyze DNA sequence data and has led to a lot of study successes. First, the review explains how sequencing technology has changed over time. It also goes into detail about DNA sequence data structure and sequence resemblance. Then look at the basic steps of data mining, summarize a few of the most important machine learning algorithms, and talk about the problems that machine learning algorithms face when mining biological sequence data, as well as some possible future answers. Then, we look at four common ways machine learning is used with DNA sequence data: DNA sequence alignment, DNA sequence classification, DNA sequence grouping, DNA pattern mining, with help of DNA in Forensics. looked at the history and importance of their biological applications, and put together a list of how the field of DNA sequence data mining has changed and what problems might come up in the future.

DNA, found in most of our cells, is unique to each person and leaves a trail everywhere we go. This aids forensic investigators who use DNA to identify crime scene victims and suspects. This review discussed genetic markers in forensics and their limitations.

Keywords: DNA sequence, machine learning, data mining, DNA sequence alignment, DNA sequence classification, DNA sequence clustering, DNA pattern mining, DNA forensics.

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HANDWRITTEN DIGIT RECOGNITION USING IMAGE PROCESSING AND NEURAL NETWORKS

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ABSTRACT

This working prototype system can detect handwritten digits from a scanned image of an input form by using Neural network technique. Hand writing recognition and Image detection through this methodology is very fast and effective as compared to old fashioned image pixel comparison methodology, which is comparably slow. Once the blank forms have been manually filled by different people then scan these forms with the help of scanner. So now we have images of hand writing samples of digits. In the 2nd phase, we use image slicing technique to slice sample image of size 16*16 pixel for each digit from the scanned form [1]. Each scanned form image will make nearly 100 images of 16*16 pixels. Repeat the same step for all scanned sample forms and place all these 16*16 pixel images (sample pool) into one location. In the detection phase, a three-layered neural network is used: After training, the obtained weight and bias are stored for each digit sequence(signature). It is now possible to identify the meaning of any hand written digit with the help of AI engine. So now when ever any handwritten digit will be given as sample input in to the system , the output array will automatically give the digit whose corresponding match value is detected. The above process is a blueprint of human cognitive thinking process.

***Keywors*:** Neural Network, Hand Written, Recognition, Neurons, Training

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WASTE WATER MANAGEMENT SYSTEM USING IOT

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ABSTRACT

Water is a critical resource for agriculture and has not been well managed in India. The urban wastewaterhas been monitored by using the smart solution for testingthe quality of water by using an array of sensors and thus the measured value is displayed in LCD. the foremost aim of this project includes the estimation of water quality parameters like PH, Turbidity, Temperature, BOD, TDS that helps to identify the deviations in parameters and provides an alert message when there's an abnormal level,i,e. the value exceeds the predefined threshold or the standard value set within the Arduino Uno Controller.

Keywords: Arduino uno, sensors, LCD

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PAPER ID: ICIRTCS-23-118

A CLUSTER BASED DATA COLLECTED IN AUV TO AVOID LOAD BALANCING FOR UNDERWATER WIRELESS SENSOR NETWORKS

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ABSTRACT

The underwater wireless sensor networks have been the main focus of ocean exploration. Over the past few years, underwater wireless sensor networks have attracted a lot of attention in research circles as they have shown to be applicable to a wide range of applications. Beyond research, however, the ocean is vital for navigation, surveillance, monitoring, border security, and underwater industrial uses, which includes the extraction of precious resources like minerals and gas. It also advances important military objectives. The proposed work as Multilayer Cluster Based Energy Efficient (MLCE2) is appropriate for extensive and profound underwater regions. The MLCE2 employs numerous Autonomous Underwater Vehicles (AUVs) to facilitate cluster-based data gathering and transfer of sensor node data while under observation. When using AUV for multilayer clusteringbased data collection, the network lifetime is extended and the load is balanced. Hence, in terms of delivery ratio, network speed, and end-to-end latency, the outcomes are promising.

Keywords: Autonomous Underwater vehicle, Energy consumption, multilayer data forwarding, Underwater wireless sensor network.

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A SURVEY OF TEXT DOCUMENT CLUSTERING BY USING CLUSTERING TECHNIQUES

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ABSTACT

Clustering is one of the best important unsupervised data analysis technique, which divides data objects into clusters based on similarity and summarization of datasets. Clustering has been studied and applied in many different fields, including pattern recognition, advanced data mining, computational data science and Machine learning, information retrieval. This research focused on text document which are containing of similarities word. The combination of two algorithm methods, improved k-means and traditional kmeans algorithm use to improving quality of initial cluster centres.

Keywords: Text Clustering, K-means, Clustering Text Document, Text similarity.

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PAPER ID: ICIRTCS-23-120

Simulated Real-world Challenges: A Machine Predictive Maintenance Classification Dataset for Industry-Driven Insights

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ABSTRACT

In present study, it has been introduced a newly curated machine predictive maintenance classification dataset aimed at replicating real-world challenges encountered in industrial scenarios. The dataset is specifically designed to mirror conditions found in manufacturing environments, incorporating a diverse range of features relevant to predictive maintenance tasks. These features encompass parameters such as air temperature, process temperature, rotational speed, torque, tool wear, and unique product identifiers. The primary objective of the dataset is to address the intricate nature of predictive maintenance in industrial machinery, offering insights into potential failures or maintenance requirements. Synthetic data is employed to capture the complexities of machinery behavior, facilitating the development and evaluation of robust predictive maintenance models. The proposed CNN architecture comprises a Conv1D layer with 64 filters, followed by BatchNormalization, MaxPooling1D, a Flatten layer, and two densely connected layers. To prevent overfitting, a dropout layer is incorporated. The binary cross-entropy loss function is employed, and the model is optimized using the Adam optimizer. The dataset is split into training and testing sets, and the model is trained using early stopping to prevent overfitting. Additionally, the ModelCheckpoint callback is employed to save the best-performing model during training. The evaluation metrics include not only accuracy but also precision, recall, and F1-score, providing a more comprehensive understanding of the model's performance. The proposed methodology is demonstrated on a practical dataset, showcasing the implementation of key concepts such as data preprocessing, model architecture design, and effective use of callbacks for improved training. The findings emphasize the importance of considering various metrics for model evaluation and the potential impact of architectural choices on classification performance. This study serves as a valuable reference for practitioners seeking to apply CNNs to time-series binary classification problems in industrial settings.

Keywords: Binary classification, Predictive maintenance, Convolution neural network

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DEPRESSION ANALYSIS USING SUPERVISED MODELS

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Depression is one of the severe and grave health disorders that affects the steadiness of mind. It has become a serious issue in the present generation. The total number of cases has been increasing day-by-day due to a number of reasons like stress at school, college, work, personal life, other diseases, etc. Although it has become one of the most common disease, people are still reluctant to talk about it openly due to the fear that others might consider them lunatic. The introduction of Machine Learning into the field of Medicine and Health industry has provided diagnostic tools that are able to enhance the precision and accuracy while reducing the difficult tasks which require the intervention of humans. There is promising evidence that Machine Learning has the capability not only to detect but also significantly enhance the treatment of compound mental conditions such as depression by developing a framework. In the past, Machine Learning Algorithms have been proved to be fairly supportive where researchers worked on the data from social media to foresee the number of persons suffering from this ailment on the basis of their initial symptoms. The main aim is to help those patients who suffer from depression in the early recognition of symptoms of this disease which can prove to be valuable not only to them but also to their families.

Keywords: Depression, Machine Learning, Naïve Bayes Algorithm, Support Vector Machine, Decision Tree, Random Forest, K Nearest Neighbour Classifier.

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PAGE RANK, HITS, AND A COORDINATED STRUCTURE FOR LINK EVALUATION

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ABSTRACT

Two popular webpage ranking algorithms are HITS and PageRank. HITS highlights mutual reinforcement between authority and hub webpages, while PageRank emphasizes hyperlink weight normalization and web surfing based on random walk models. We methodically generalized/combine these concepts into a unified framework .The ranking framework contains a large algorithm space HITS and PageRank are two extremely ends in this space. We study several normalized ranking algorithms which are intermediate between HITS and PageRank, and obtain closed-form solutions. We show that, to first or-der approximation, all ranking algorithms in this framework, including PageRank and HITS, lead to the same rank-ing which is highly correlated with ranking by in degree. Rankings of web graphs of different sizes and queries are presented to illustrate our analysis.

Keywords: mutual reinforcement, hyperlink normalization, similarity graph, score propagation.

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PAPER ID: ICIRTCS-23-123

FUTURE CROP YIELD PREDICTION USING FUZZY C MEANS AND NAIVE BAYES UNDER MACHINE LEARNING

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ABSTRACT

Farming is the absolute most significant supporter of the Indian economy. Horticulture crop creation relies upon the season, organic, and monetary reason. The guessing of rural yield is testing and advantageous undertaking for each country. These days, Farmers are battling to deliver the yield on account of flighty climatic changes and definitely lessen in water asset so; we are making a horticulture information. To enhance the existing and as a contribution to our society we are using more productive algorithms to improve the overall efficiency. Hard clustering that is K-means is replaced by soft clustering Fuzzy c means and Naïve bayes is been added to improve the overall performance. Thus the combined methodology will act as a connecting bridge between the farmer and the yield. Results from experiment show that proposed work optimizes the time consumption and increases the overall accuracy.

Keywords— Horticulture, Fuzzy c means, Naïve bayes, CSV

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BRAIN TUMOR DETECTION FROM MRI IMAGES USING CNN

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ABSTRACT

Brain tumor is the main threat among the people. But currently, it become more advanced because of the many Machine Learning techniques. Magnetic Resonance Imaging is the greatest technique among all the image processing techniques which scans the human body and gives a clear resolution of the tumors in an improved quality image. The fundamentals of MRI are to develop images based on magnetic field and radio waves of the anatomy of the body. The major area of segmentation of images is medical image processing. Better results are provided by MRI images than CT scan, Xrays etc. Nowadays the automatic tumor detection in large spatial and structural variability. Recently Convolutional Neural Network plays an important role in medical field and computer vision. One of its application is the identification of brain tumor. Here, the pre-processing technique is used to convert normal images to grayscale values because it contains equal intensity but in MRI, RGB content is included. Then filtering is used to remove the unwanted noises using median and high pass filter for better quality of images. The deeper architecture design in CNN is performed using small kernels. Finally, the effect of using this network for segmentation of tumor from MRI images is evaluated with better results.

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LUNG CANCER DETECTION USING CNN

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ABSTRACT

Cancer is a quite common and dangerous disease. The various methods of cancer exist in the worldwide. Lung cancer is the most typical variety of cancer. The beginning of treatment is started by diagnosing CT scan. The risk of death can be minimized by detecting the cancer very early. The cancer is diagnosed by computed tomography machine to process further. In this paper, the lung nodules are differentiated using the input CT images. The lung cancer nodules are classified using support vector machine classifier and the proposed method convolutional neural network classifier. Training and predictions using those classifiers are done. The Nodules which are grown in the lung cancer are tested as normal and tumor image. The testing of the CT images are done using SVM and CNN classifier. Deep learning is always given prominent place for the classification process in present years. Especially this type of learning is used in the execution of tensor Flow and convolutional neural network method usingdifferent deep learning libraries.

Keywords: CT image, Convolutional neural network, SVM.

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ANXIETY AND STRESS DETECTION THROUGH SPEECH RECOGNITION USING CNN

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ABSTRACT

Stress is a feeling of emotional tension. It can have an influence on our mental health and for the people around us. While anxiety is a natural reaction to stress which can be fearful this can lead to panic attacks. These mental issues have to be addressed by everyone. This paper explains how we are using vocal/audio dataset to detect stress and anxiety in a person. We have developed a stress and anxiety detection model using deep neural network. Here audio datasets is considered from Kaggle in which the audio consists of 7 emotions i.e., joy, fear, disgust, neutral, sadness, surprised and anger. These audio datasets are used to train and test classification models like CNN. Then the audio is pre-processed through acoustic feature extraction, classified through CNN which provides the accuracy based on those 7 emotions. By this we can predict if the person is stressed or has anxiety

Keywords: Convolutional Neural Network, Emotion Classification, Stress Detection, MFCC(Mel frequency cepstral coefficients),Chroma

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PAPER ID: ICIRTCS-23-127

AI BASED CHEST X-RAY IMAGES DETECTION AND EVALUATE PNEUMONIA CASES AT THE ERA OF COVID-19

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ABSTRACT

The outbreak of the novel corona virus disease (COVID-19) in December 2019 has led to global crisis around the world. The disease was declared pandemic by World Health Organization (WHO) on 11th of March 2020. Currently, the outbreak has afected more than 200 countries with more than 37 million confrmed cases and more than 1 million death tolls as of 10 October 2020. Reverse-transcription polymerase chain reaction (RT-PCR) is the standard method for detection of COVID-19 disease, but it has many challenges such as false positives, low sensitivity, expensive, and requires experts to conduct the test. The current work proposes the use of a deep learning approach based on pretrained AlexNet model for the classifcation of COVID-19, non-COVID-19 viral pneumonia, bacterial pneumonia, and normal CXR scans obtained from diferent public databases. The model was trained to perform two-way classifcation (i.e., COVID-19 vs. normal, bacterial pneumonia vs. normal, non-COVID-19 viral pneumonia vs. normal, and COVID-19 vs. bacterial pneumonia), three-way classifcation (i.e., COVID-19 vs. bacterial pneumonia vs. normal), and four-way classifcation (i.e., COVID-19 vs. bacterial pneumonia vs. non-COVID-19 viral pneumonia vs. normal). For non-COVID-19 viral pneumonia and normal (healthy) CXR images, the proposed model achieved 94.43% accuracy, 98.19% sensitivity, and 95.78% specifcity. For bacterial pneumonia and normal CXR images, the model achieved 91.43% accuracy, 91.94% sensitivity, and 100% specifcity. For COVID-19 pneumonia and normal CXR images, the model achieved 99.16% accuracy, 97.44% sensitivity, and 100% specifcity. For classifcation CXR images of COVID-19 pneumonia and non-COVID-19 viral pneumonia, the model achieved 99.62% accuracy, 90.63% sensitivity, and 99.89% specifcity. For the three-way classifcation, the model achieved 94.00% accuracy, 91.30% sensitivity, and 84.78%. Finally, for the four-way classifcation, the model achieved an accuracy of 93.42%, sensitivity of 89.18%, and specifcity of 98.92%.

Keywords: COVID-19 · Non-COVID-19 viral pneumonia · Bacterial pneumonia · AlexNet · Chest X-rays images (CXR)

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SIGN LANGUAGE RECOGNITION UTILIZING LSTM & MEDIAPIPE FOR DYNAMIC GESTURES OF ISL

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ABSTRACT

Humans, in general, are social creatures who communicate themselves through an assortment of spoken languages. One of the most crucial pillars of daily life is communication because it allows people to express their ideas and opinions and thus helps them integrate into society. The ability to hear and speak, however, is not shared by all people, and thereby some find it difficult to use. As a result, they are unable to communicate normally and struggle to fit into society.Deaf and Mute individuals converse in a manner that's comparable, however many others are ignorant of their sign language. As a result, there is a need to develop a system that facilitates communication among the hearing and hard-of-hearing communities. This research offers a real-time Indian Sign Language (ISL) recognition system for 24 dynamic signals using the Mediapipe framework and an LSTM network. The method proposed in the study involves training a LSTM to differentiate between different signs using a dataset created of 24 dynamic gesture signs. To accomplish dataset creation, a pre-trained Holistic model of the Mediapipe framework is used as a feature extractor. The results of the study demonstrate that the above approach achieves 97% test accuracy.

Keywords: Indian Sign Language, Dynamic Gestures, Mediapipe, LSTM, Computer Vision

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IOT BASED HOME AUTOMATION SYSTEM

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ABSTRACT

This paper proposes the development of a home automation system using Wi-Fi and ESP8266. Home automation refers to the application of computer and information technology for control of home appliances easily. Home automation for the elderly and disabled can provide increased quality of life for persons who might otherwise require caregivers or institutional care. The system will allow users to control various household appliances such as lights, fans, air conditioners, and electronic devices using their smartphones or other connected devices. The proposed system will use the ESP8266 microcontroller, which has Wi-Fi capabilities, to connect to the internet and receivecommands from the user's device. The system will use a web interface that will allow users to control and monitor their devices remotely. The web interface will be hosted on a local server, and the system will use MQTT protocol for data communication. We created the Flutter application to turn on and off the all home appliances through the application.

Keywords: IOT, Home Automation, Wi-Fi, Microcontroller

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SIGN LANGUAGE TO SPEECH CONVERTER FOR INDIAN LANGUAGES

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ABSTRACT

Sign language is a very essential communique tool for plenty deaf and mute human beings. In our surrounding we are able to see there are people having various disabilities and a few of them are located to be deaf and mute. To talk with others, those humans want to learn sign language and ordinary people are unable to apprehend signal language. This problem reasons miscommunication among humans. Due to this miscommunication mute human beings can live remoted from society. So we proposed a version to understand sign gestures the usage of YOLOv5 (You only look as soon as version 5). This version can locate sign gestures in complicated surroundings also. For this model we were given the accuracy of 88.4% with precision of 86.6% and don't forget of 87.2%. The proposed model has evaluated on a labeled dataset Roboflow. Moreover we added some photographs for schooling and checking out to get higher accuracy. We as compared our model with CNN (convolutional neural network) in which we were given accuracy of 91.98%. We checked this model for actual time detection also and got the accurate consequences.

Keywords: YOLOv5, Sign language, miscommunication, CNN

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AMAZON VIRTUAL PRIVATE CLOUD EXPERIMENTAL AND APPLICATION

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ABSTRACT

Amazon Virtual Private Cloud lets you create a secure, private network utilising Amazon VPC. Using AWS' scalable architecture, this virtual network is almost identical to one you would find in your own data centre. To create, access, and manage VPCs, you may make use of any of the following APIs: Using the AWS Management Console, you may manage your virtual private networks . Using the CLI, you may access all of AWS's services, including VPC. Many of the complexities of a connection, such as calculating signatures, retrying requests, and fixing issues, are handled by the AWS SDKs. As the name suggests, the Query API is designed for accessing low-level API operations through HTTPS requests. Since VPC can only be accessed via its own application, low-level tasks like generating the hash for signing the request and handling errors must be handled by your programme. A wide range of VPC concepts were addressed in this article, including the creation of a VPC, as well as subnets, routes, security groups, and gateways .

Keywords: VPC,gateway,Aws

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CNN: MUSIC RECOMMENDATION BASED ON FACIAL EXPRESSION RECOGNITION

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ABSTRACT

Finding out which tune to pay attention to from the huge series of current options is often puzzling. relying to your temper, numerous thought frames are available on topics which includes music, food, and purchasing. the principal cause of our tune advice gadget is to offer guidelines that in shape the consumer's flavor. by way of reading the user's facial expressions and feelings, it is possible to recognize the person's contemporary emotional and mental state. song andvideo are fields that provide remarkable possibilities to provide a wide variety of picks tocustomers, thinking of their passions and recorded information. people are recognized to use facialexpressions to more certainly explicit what they imply and in what context they suggest a word. I hold thinking that I cannot maintain music of which song wishes to be performed. via developing arecommendation machine, the consumer can determine which music to concentrate to and decrease her level of strain. customers do not have to waste time looking for songs. It recognizes the track that quality fits the user's temper and gives songs to the user according to the person's temper. user pics are captured using webcams. A person's image is taken and relying at the person's temper/feeling, appropriate songs from the person's playlist are displayed to meet the user's needs.

Keywords: Face Recognition, Feature Extraction, Emotion Detection, Pygame, Tkinter, Music Player, Camera, or a Convolutional Neural Network

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ARTIFICIAL INTELLIGENCE AND COMPUTER VISION APPROACH FOR THE SEGMENTATION OF BALL DELIVERIES AND TRACKING IN CRICKET

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ABSTRACT

There has been a significant increase in the adoption of technology in cricket recently. This trend has created the problem of duplicate work being done in similar computer vision-based research works. Our research tries to solve one of these problems by segmenting ball deliveries in a cricket broadcast using deep learning models, MobileNet and YOLO, thus enabling researchers to use our work as a dataset for their research. The output from our research can be used by cricket coaches and players to analyze ball deliveries which are played during the match. This paper presents an approach to segment and extract video shots in which only the ball is being delivered. The video shots are a series of continuous frames that make up the whole scene of the video. Object detection models are applied to reach a high level of accuracy in terms of correctly extracting video shots. The proof of concept for building large datasets of video shots for ball deliveries is proposed which paves the way for further processing on those shots for the extraction of semantics. Ball tracking in these video shots is also done using a separate RetinaNet model as a sample of the usefulness of the proposed dataset. The position on the cricket pitch where the ball lands is also extracted by tracking the ball along the y-axis. The video shot is then classified as a full-pitched, good-length or short-pitched delivery.

***Keywords*:** Segmentation; Cricket; Deep Learning; MobileNet; YOLO; RetinaNet

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RESEARCH PAPER ON ARTIFICIAL INTELLIGENCE & ITS APPLICATIONS

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ABSTRACT

It is the engineering and science of creating intelligent devices, particularly computer programs. While the aim of utilizing computers to comprehend human intelligence is similar, artificial intelligence (AI) is not limited to techniques that may be observed through biological means. Although there isn't a universally accepted definition of artificial intelligence (AI), AI is often understood to as the investigation of computations enabling perception, reasoning, and behavior. The amount of data generated today—by both humans and machines—far exceeds our capacity to process, comprehend, and apply that data to make sophisticated judgments. All computer learning is based on artificial intelligence, which is also the foundation for all complicated decision-making in the future.

Keywords: machine learning,deep learning,neural networks,Natural Language Processing and Knowledge Base System

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REVIEW ARTICLE ON COVID-19 OUTBREAK PREDICTION USING MACHINE LEARNING ALGORITHM

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ABSTRACT

Towards Data Science is a medium distribution essentially dependent on the investigation of information science and AI. We are not wellbeing experts or disease transmission specialists, and the assessments of this article ought not be deciphered as expert wellbeing exhortation. Nonetheless, this article will be center around how AI can be utilized to anticipate the spread of the pandemic. This paper is utilized to decide information investigation on COVID 19 by AI procedures. the primary methods are addressing the accompanying piece of this paper. This paper also represents the regression model analysis for determine the patient records-based data analysis for COVID 19 DATASET.

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COMPUTER VISION BASED MOUSE CONTROL USING OBJECT DETECTION AND MARKER MOTION TRACKING

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ABSTRACT

There have been a lot of developments towards the Humans Computers Interaction (HCI). The importance of computers is increasing constantly. Computer can be used for many purposes. We often used hardware devices such as mouse and keyboard to interact with the computers. In today‟s world, technologies are evolving day by day. One of the example is the Human-Computer Interface (HCI). Many modules have been developed to help the physical world interact with the digital world. Here, the proposed paper serves to be a new approach for controlling mouse movement using Colored object and marker motion tracking. The project mainly aims at mouse cursor movements and click events based on the object detection and marker identification. The software is developed in Python Language and OpenCV and PyAutoGUI for mouse functions. We have used colored object to perform actions such as movement of mouse and click events. This method mainly focuses on the use of a Web Camera to develop a virtual human computer interaction device in a cost effective manner.

***Keywords*:** Color Detection, HCI, PyAutoGUI, Marker Motion Identification, Object Detection

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CRIME RATE PREDICTION USING MACHINELEARNING AND DATA MINING

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ABSTRACT

Analysis of crime is a methodological approach to the identification and assessment of criminal patterns and trends. In a number of respects cost our commu- nity profoundly. We have to go many places regularly for our daily purposes, and many times in our everyday lives we face numerous safety problems such as hijack, kidnapping, and harassment. In general, we see that when we need to go anywhere at first, we are searching for Google Maps; Google Maps show one, two, or more ways to get to the destination, but we always choose the shortcut route, but we do not understand the path situation correctly. Is it really secure or not that's why we facemany unpleasant circumstances; in this job, we use different clustering approachesof data mining to analyze the crime rate of Bangladesh and we also use K-nearest neighbor (KNN) algorithm to train our dataset. For our job, we are using main andsecondary data. By analyzing the data, we find out for many places the prediction rate of different crimes and use the algorithm to determine the prediction rate of the path. Finally, to find out our safe route, we use the forecast rate. This job will assist individuals to become aware of the crime area and discover their secure way to thedestination.

***Keywords*:** Crime Numerous safety problem Data mining KNN

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SICKLE CELL DISEASE CLASSIFICATION

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ABSTRACT

This research examines the utilization of machine learning to classify medical datasets, especially to guide sickle cell illness therapy. Numerous studies had shown that machine learning algorithms enhance pre-processing of medical time-series data signals and help classify medical data accurately. This study presents data for different kinds of medical learning algorithms. The first case is to identify drug dosages for individuals with Sickle Cell Disorder. The present study explores the performance and accuracy of Fuzzy C- means architectures. The major goal of using categorization is to help healthcare institutions give proper medicine dosage. Accuracy curves for the training and testing datasets are represented by the matching curves for each of the bars on the graphs During trials, the Fuzzy C-means delivered the best overall results with an accuracy of 99.90%.

Keywords: Machine Learning, Sickle Cell Anaemia, Fuzzy C-Means, Healthcare, Drug Dosages, Medical Dataset

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STUDENTS' PERFORMANCE EVALUATION USING MACHINELEARNING ALGORITHMS

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ABSTRACT

Predicting student performance is very important to the success of any educational process. The discovery of knowledge from large databases is known as data mining. The purpose of this process is to extract hidden information or repetitive patterns that may be useful in many sciences. Harnessing methods of data mining and machine learning to predict their performance based on data available in schools and student records can explain their behavior, the impact of each factor on the progress of the educational process for students, the relationship of the age stage and follow-up of parents and days of absence. This paper discusses the possibility of harnessing machine learning algorithms to predict student performance and determine the importance of each factor to that performance and Comparing the performance of machine learning algorithms (GBDT-RFDT-Deeplearning) in exploring educational data.

Keywords—Student performance, GBDT, RFDT, Deeplearning,Prediction.

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IoT BASED WHEAT DISEASE DETECTION AND CLASSIFICATION USING RESNET152

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ABSTRACT

Detecting and classifying crop diseases is crucial for maintaining crop productivity and quality. Traditional methods of crop disease identification are time-consuming and labour-intensive. Therefore, computer-based techniques have been developed to identify the disease automatically. Furthermore, wheat is the third most harvesting and consumed grain after rice and maize. Nowadays, crop disease detection is one of the leading research topics. Deep learning algorithms have recently been used to recognize and categorize various wheat diseases. This article describes a proposed deep learning-based method for detecting and classifying wheat diseases using a Residual Network (ResNet152), considered one kind of Convolutional Neural Network (CNNs). The proposed method achieves higher accuracy in identifying and classifying different types of wheat diseases than other existing methods. Moreover, it is observed through the results that the proposed approach provides the early detection and treatment of wheat diseases, leading to improved crop yielding and quality.

Keywords: Convolution Neural Network, Deep learning model, Wheat crop disease, Image analysis, Performance evaluation

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IOT AND MACHINE LEARNING BASED HEALTH MONITORING AND HEART ATTACK PREDICTION SYSTEM

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ABSTRACT

The increased use of mobile technologies and smart devices in the area of health has caused great impact on the world. Health experts are increasingly taking advantage of the benefits of these technologies and hence generating a significant improvement in health care in clinical settings. Internet of things (IoT) and machine learning techniques can be used efficiently for this purpose. The objective of this work is to design and develop a real-time IoT based health monitoring and heart attack prediction system that integrates vital signs sensors, location sensors, ad-hoc networking and web portal technology to allow remote monitoring of patient's health status and to predict the heart disease through various machine learning techniques. In this work it has ensured the correct and efficient transmission of the vital signs data to the ThingSpeak server through the internet via a given access point(AP) and notified the user of the same through the GSM module. A heart attack prediction system is also developed to predict the probability of heart attack from the available parameters. The novelty of the proposed work is that it takes the advantage of both the IoT and machine learning technology to monitor and predict the diseases. The proposed system is inexpensive too.

Keywords: Health monitoring, vital signs, IoT, heart attack prediction system, machine learning.

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A METHODOLOGY TO IDENTFY BRAIN TUMOR USING DEEP LEARNING TECHNIQUES

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ABSTRACT

Patients suffering from brain tumors are some of the most prevalent and aggressive, and in the latter stages of the disease, they have a very low life expectancy. The planning stage of surgical procedures is very important if the goal is to provide patients a higher quality of life throughout the course of their lives. Imaging techniques such as computed tomography (CT), magnetic resonance imaging (MRI), and ultrasound are often used in the process of locating malignancies in various parts of the body, including the brain, lungs, liver, breast, and prostate. In this particular instance, magnetic resonance imaging (MRI) scans are carried out in order to examine the patient's brain in search of signs of cancer. On the other hand, since an MRI gets so much information at once, it is difficult to differentiate between a tumor and something that isn't a tumor at the same time. This approach has a lot of drawbacks, the most notable one being that it can only produce accurate quantitative data for a constrained selection of photographs. This is one reason why brain tumors can be so dangerous. In this article, fresh techniques to the early identification of malignant brain tumors are explained. CNNs are put to use in order to classify the data (Convolutional Neural Networks). According on the site of the tumor, this section classifies gliomas, meningiomas, pituitary tumors, and other types of tumors that are not malignant. The architectural design of the system's deeper levels is predicated on the use of tiny kernels as the building blocks. This is a reference to the very little amount of mass that the neuron has. The fact that CNN's accuracy in test results was 99.5% puts it in a class by itself above all other methods used by the present generation. In addition to this, it is simple to understand and much simpler to put into practice.

Keywords: CNN, MRI, tumours

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A REVIEW ON AUTOMATED HYGIENE FOR PUBLIC TOILET SYSTEM USING IOT

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ABSTRACT

While improvements are undoubtedly made in the modern world, our country's cleanliness is declining . The abstract of this project is to deliver clean and hygiene toilets. All The public restrooms ought to be hygienic and tidy. One of the goals of the Clean India initiative is to maintain clean restrooms. The clean India project may benefit from the support of this project. It may play a significant role in the clean India initiative in the future. They are primarily concerned with recognising thedirt in the toilets under the current system. In our suggested strategy, we focused on maintaining spotless restrooms whilekeeping an eye on the sweeper's work activities. It can avoid a variety of syndromes. It might raise people's awareness of proper lavatory management. We are therefore developing to utilise sanitary and secure restrooms. The MQ-135 sensor, PIR sensor, Ultrasonic sensor, and Turbidity sensor are only a few of the various sensors used in this project, which is built on IOT and image-processing techniques. Making use of these sensors we can create smart toilets.The emergence of the Internet of Things (IoT) has revolutionized various aspects of our daily lives, including the integration of smart technology into everyday objects. This abstract presents the concept of an IoT-enabled smart toilet, designed to enhance efficiency and hygiene while providing a seamless user experience. By integrating sensors, connectivity, and intelligent data analysis, the smart toilet brings forth a range of innovative features. The IoT-enabled smart toilet has sensors built in to keep track of a number of factors, including occupancy, water use, air quality, and seat temperature. These sensors allow for real-time monitoring and data collecting, which improves user comfortand resource management.

Keywords - MQ- 135 sensor, PIR sensor, ultrasonic sensor, turbidity sensor, IOT

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AIR POLLUTION HOTSPOT DETECTION USING MACHINE LEARNING AND IOT

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ABSTRACT

Air pollution rates nowadays are drastically increasing in all the developed and developing countries which require a more portable and cost effective solution. The proposed system includes the design for monitoring air pollution and creating awareness among the public .The proposed system is installed in a particular locality where there is acute air pollution. The level of each hazardous pollutant is monitored at periodic intervals. The Air Quality Sensor for the observed pollutants is determined and awareness is created among the public through a proposed system that displays the level of each observed pollutant and also the air quality sensor in that particular location. Thus, the quality of air in that area can be understood numerical and graphical formats. Further, this system is to be themselves in an app that pushers weekly or monthly air quality notification that is more comfortable to access. In this proposed Quality Sensor and Arduino controller to detect air pollution and use machine learning algorithm to predict whether it is an Air Pollution Hotspot or not.

***Keywords**:* Air Pollution; Air Quality Sensor; Air Pollution Hotspot Prediction; Machine Learning & Classification; IoT; Decision Tree Algorithm; Arduino Controller; and Dataset; etc.

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EFFICIENT CONTENT BASED IMAGE RETRIEVAL ANALYSIS OF DISTANCE MATRICES

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ABSTRACT

In this paper, we proposed a new method of feature extraction to improve the efficiency for retrieving the JPEG Compressed Images. Content Based Image Retrieval (CBIR) is the retrieval of images based on visual features such as colour, shape and texture. These features are used to retrieve images in database. In CBIR, each image that is stored in the database has its features extracted and compared to the features of the query image. Digital image database have grown enormously in both size and number, over the years. We extract two DCT features, namely DC feature and AC feature, from the compressed image. Then we measure the image distance between the query image and the images in the database using these DCT features. Our retrieval system will give rank to the retrieved database images to define its similarity with the query image. Our proposed system does not need to full decoding, it only needs partial entropy decoding. Therefore, our proposed system takes less time for retrieving the images.

Keywords: DCT, DPCM, Huffman Coding, JPEG Compression, Variable length coding

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NAVIGATING COMMUNITY ENGAGEMENT IN VIRTUAL BOOK RETAIL: METHODOLOGICAL PERSPECTIVES IN BOOKSTORE MANAGEMENT

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ABSTRACT

Online book store are platforms that provide individuals with an easy and convenient way to buy and sell books. As these platforms grow in popularity, community usage is becoming increasingly important. The purpose of this paper is to explore the benefits and challenges of community management for online book store. The paper will begin withan overview of online book store and their growth in recent years. It will then examine the importance of community sales and usage, including the benefits of fostering a sense of community among users and the challenges of managing user- generated content. The paper will also provide practical advice for the creators, including strategies for engaging with users and managing conflict. The paper will draw on case studies of successful online book classifieds platforms, as well as interviews with existing platform and users. It will also incorporate a survey of users to gather insights into their experiences and expectations. Overall, the paper will argue that effective community sales is essential for the success of online book store platforms. By fostering a sense of community and managing user-generated content, these platforms can attract and retain users, build brand loyalty, and drive growth. The paper will conclude with the output for the application and online book classifieds platforms looking to improve their application more efficient.

Keywords: Online book store, Community usage, user content, classifieds, rental

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PERMITTIVITY MEASUREMENT OF EDIBLE FOOD MATERIALS: A REVIEW PAPER

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ABSTRACT

This study investigates the dielectric characteristics of a range of food items, such as potatoes, apples, chicken breast meat, quinoa seeds, Carasau bread dough, coconut oil, turmeric, jamun, tamarind, vegetables, beef, cheddar cheese, wheat grains, and dairy products. A variety of techniques, including the vector network analyser, planar transmission line sensor, Marconi instrument, and novel planar double spiral sensor, are used to do measurements over a range of frequencies. This study also explains how dielectric characteristics are affected by temperature, frequency, moisture content, and density. In order to address particular applications like food quality monitoring, adulteration detection, and process optimization, the research also introduces novel sensors and techniques, such as a complementary Meta resonator, the Cavity Perturbation Technique, an ultra-broadband characterization method, and metamaterial-based microwave sensors. The results provide important new information for a variety of businesses and further our understanding of the dielectric characteristics of food products.

***Keywords*:** Adulteration**,** dielectric constant, permittivity, edible food materials

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WHITE BLOOD CLASSIFICATION BASED ON DEEP LEARNING

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ABSTRACT

Machine learning (ML) and deep learning (DL) models have been employed to significantly improve analyses of medical imagery, with these approaches used to enhance accuracy of prediction and classification. Model predictions and classifications assist diagnoses of various cancers and tumors. This review presents an in-depth analysis of modern techniques applied within the domain of medical image analysis for white blood cell classification. The methodologies that use blood smear images, magnetic resonance imaging (MRI), X-rays, and similar medical imaging domains are identified and discussed, with a detailed analysis of ML/DL techniques applied to the classification of white blood cells (WBCs) representing the primary focus of the review. The data utilized in this research has been extracted from a collection of 136 primary papers that were published between the years 2006 and 2023. The most widely used techniques and best-performing white blood cell classification methods are identified. While the use of ML and DL for white blood cell classification has concurrently increased and improved in recent year, significant challenges remain - 1) Availability of appropriate datasets remain the primary challenge, and may be resolved using data augmentation techniques. 2) Medical training of researchers is recommended to improve current understanding of white blood cell structure and subsequent selection of appropriate classification models. 3) Advanced DL networks including Generative Adversarial Networks, R-CNN, Fast R-CNN, and faster R-CNN will likely be increasingly employed to supplement or replace current techniques.

Keywords: White Blood Cell Subtypes, Machine Learning, Classification, Feature Extraction, Deep Learning, Image Analyses, Autoimmune Diseases.

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PAPER ID: ICIRTCS-23-149

AN INTELLIGENT RECOGNITION SYSTEM FOR COMPUTER NUMERICAL CONTROL MACHINE TOOLS BASED ON DEEP LEARNING IN ELM-EMBEDDED

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ABSTRACT

The intelligent tool management for Computer Numerical Control (CNC) machines is crucial to production automation in today's automated and flexible manufacturing industry. The smooth integration with downstream process planning and scheduling processes may be facilitated by the automatic tool recognition in terms of geometric shapes, materials, and utilisation functions. In order to meet the high efficiency and accuracy requirements of intelligent manufacturing, a novel hybrid framework of multi-channel deep learning network with non-iterative and fast feedforward neural network is proposed in this research as an intelligent tool identification system. Accurate feature extraction and quick identification are balanced by combining the random parameter assignment process of Extreme Learning Machines (ELMs) with the fine-tuning capabilities of Convolutional Neural Net-works (CNNs). The suggested hybrid framework generates compact but rich feature information by aggregating features from effective CNNs into robust ELM auto-encoders (ELM-AEs), which are then sent to the single layer ELM network that follows for tool recognition. The effectiveness of the suggested architecture is confirmed using a self-constructed multi-view 3D data represented tool library database in addition to multiple standardised 3D shape retrieval and classification datasets. The suggested intelligent recognition system has a promising application potential for manufacturing automation, as demonstrated by numerical trials.

***Keywords*:** Computer Numerical Control (CNC), Extreme Learning Machines (ELMs), CNN

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FAULT DETECTION AND CLASSIFICATION IN MICRO GRID DATA USING HYPER-TUNED MACHINE LEARNING MODELS

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ABSTRACT

Fault detection in Micro-grid (MG) is the area of study in this proposed work. Frequent fault is one of the major drawbacks in micro grids, while transmitting power from the service provider to users. The frequent fault may cause damage to the network as well as the user gets dissatisfied. The common faults occur due to short circuits in microgrids, this is caused due to the contact between the conductors. The frequent short circuits may affect the power supply to end users. The detection of faults due to short circuit may help the network from further damage and to enhance the fast recovery of faults. The fault detection with higher accuracy is required for the micro grid networks. The fault may cause more damage to the system if it is unnoticed. The proposed work is classification of the power grid as 'fault' and 'normal'. Machine learning is used for classifying the micro grid data as fault or normal is proposed. To improve the accuracy of detection machine learning algorithms are hyper tuned with parameter regularization techniques. Grid Search cross validation is used for tuning the parameters for machine learning algorithms. The models used in the proposed work are Decision Tree (DT) and Random forest (RF). Thus the proposed work increases the fault detection accuracy for micro grid dataset. The proposed work analyzes the performance of both algorithms and finds the more suitable one for fault detection.

Keywords: Microgrid, Machine learning, Hyper tuning, Grid search cross validation, Decision Tree, Random forest

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PAPER ID: ICIRTCS-23-151

A HOUSING AND STOCK MARKET EARLY WARNING SYSTEM BASED ON MACHINE LEARNING

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ABSTRACT

This study dissects the connection between the lodging and financial exchanges, zeroing in on real estate market bubbles. Securities exchange elements for the most part essentially affect lodging cost developments than real estate market elements have on stock costs. Nonetheless, assuming real estate market data is given as a sign, lodging value developments can foresee financial exchange instability. Appropriately, we construct an AI based early admonition framework for the real estate market utilizing a long short-term memory (LSTM) neural network. We apply the summed up supreme expanded Dickey-Fuller test to extricate an air pocket signal for the real estate market. The sign fundamentally recognizes future cost changes in the real estate market and makes sense of securities exchange unpredictability. Our initial admonition framework really recognizes the air pocket signal utilizing the LSTM neural network. We affirm that the LSTM approach performs better compared to other benchmark models, the irregular woodland and backing vector machine models. Our exact experimental outcomes propose that our initial admonition framework can at the same time recognize takes a chance in the lodging and securities exchanges.

INDEX TERMS Early Warning System; Housing Market Bubble; Long Short-Term Memory; Machine Learning; Stock Market Volatility.

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THE DESIGN AND DEVELOPMENT OF META MATERIAL BASED ANTENNA FOR BIOMEDICAL APPLICATIONS

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ABSTRACT

The metamaterial antenna is having different types of antennas based on the application the antenna is designed specifically. The meta material antenna uses various range frequencies according to the applications [1]. In printed antenna the demerit is which effects on human tissue were located on the human head and electric field strength leakages, respectively. In Minkowski fractal antenna which is used for medical based, its performance and selectivity is so poor to sense the cancer cells [2]. The biocompatible antenna is a coplanar waveguide-fed antenna it requires large area, size and shape is cannot be changed in real-time application, it has a low gain and narrow bandwidth [3]. Hence, proposed the 3D printed antenna, it is a method of creating structure by stacking layers on top of each other. The 3D printed antenna were used in wide area network of technologies, with in the w-band frequency range (27 - 31GHz) [4]. The fabrication process is cheaper, faster and flexible manner.

Keywords: Minkowski defective ground structure Metamaterial Biosensor Split ring resonator, SAR; flexible antenna; wearable; MTM

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A HOUSING AND STOCK MARKET EARLY WARNING SYSTEM BASED ON MACHINE LEARNING

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ABSTRACT

This study dissects the connection between the lodging and financial exchanges, zeroing in on real estate market bubbles. Securities exchange elements for the most part essentially affect lodging cost developments than real estate market elements have on stock costs. Nonetheless, assuming real estate market data is given as a sign, lodging value developments can foresee financial exchange instability. Appropriately, we construct an AI based early admonition framework for the real estate market utilizing a long short-term memory (LSTM) neural network. We apply the summed up supreme expanded Dickey-Fuller test to extricate an air pocket signal for the real estate market. The sign fundamentally recognizes future cost changes in the real estate market and makes sense of securities exchange unpredictability. Our initial admonition framework really recognizes the air pocket signal utilizing the LSTM neural network. We affirm that the LSTM approach performs better compared to other benchmark models, the irregular woodland and backing vector machine models. Our exact experimental outcomes propose that our initial admonition framework can at the same time recognize takes a chance in the lodging and securities exchanges.

INDEX TERMS Early Warning System; Housing Market Bubble; Long Short-Term Memory; Machine Learning; Stock Market Volatility.

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FLOWER END-TO-END DETECTION BASED ON YOLOV4 USING ARTIFICIAL INTELLIGENCE

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ABSTRACT

In this paper, a novel flower detection application anchor-based method is proposed, which is combined with an attention mechanism to detect the flowers in a smart garden in AIoT more accurately and fast. While many researchers have paid much attention to the flower classification in existing studies, the issue of flower detection has been largely overlooked. The problem we have outlined deals largely with the study of a new design and application of flower detection. Firstly, a new end-to-end flower detection anchor-based method is inserted into the architecture of the network to make it more precious and fast and the loss function and attention mechanism are introduced into our model to suppress unimportant features. Secondly, our flower detection algorithms can be integrated into the mobile device. It is revealed that our flower detection method is very considerable through a series of investigations carried out. The detection accuracy of our method is similar to that of the stateof-the-art, and the detection speed is faster at the same time. It makes a major contribution to flower detection in computer vision.

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BIOLOGICAL SYSTEM ADMINISTRATIONS FOR COMPELLING UTILIZE OF INFORMATION DRIVEN MODELING

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ABSTRACT

The principle point of this paper is the means by which viably Data Driven Modeling (DDM) can be adequately utilized for biological system administrations contrasting and the traditional displaying, the DDM (Data Driven Modeling) measure gives the best exactness. For going through preparing, tree order calculations were utilized like choice tree, packing, irregular woods with boosting angle like XGBoosting. The biological system datasetis contrasted here and all most appropriate calculations. In Random woods the way toward finding the root hub and parting the element hubs will run arbitrarily. The highlights assume a significant part in arbitrary backwoods calculation particularly tracking down the significant component for preparing the set. Over fitting is one basic issue that may aggravate the outcomes, yet for Random Forest calculation, if there are sufficient trees in the woodland, theclassifier will not over fit the model particularly for arrangement issues. Irregular backwoods with XGBoost (eXtreme Gradient Boosting) which an incredible, and lightning quick AI library where the trees are developed successively and the speed is expanded by equal preparing. This information is prepared utilizing Random Forest in XGBoosting with extra hyper boundaries and the exactness is anticipated.

***Keywords*:** Data pre-processing, XGBoosting algorithms, Random Forest algorithm, Predictive model.

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SEMANTIC BASED INFORMATION RETRIEVAL IN E-LEARNING DOCUMENTS WITH QIRSYSTEM

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ABSTRACT

The web contains a vast amount of records that can be useful to clients for businesses, organizations, etc. But for E-Learning, the Semantic-based information retrieval techniques give the most relevant concepts based on user query compared with the normal web. In this paper, a semantically driven E-learning framework is proposed. The main pillar of the Semantic Web is RDF and OWL, which extracts metadata from the web documents. In the normal web, the keyword-based search method provides an irrelevant huge amount of information, but our proposed semantic-based QIR (Querying, Indexing, and Ranking) system provides the relevant data in a short period with less time complexity. This work is implemented using Java Programming language. This proposed QIR system increases the performance of the result based on precision and recall compared with the existing one.

***Keywords*:** Information Retrieval, RDF, SPARQL, E-learning, Querying, Indexing, Ranking, Semantic Web

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DEVELOPMENT OF HYBRID HAZE REMOVAL ALGORITHM FOR ON-ROAD VEHICLES

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ABSTRACT

Roads are considered to be crucial infrastructure components in any country. However, bad roads, bad weather conditions or human factors leads to road accidents. To address this problem, images captured by digital cameras mounted in the cars are processedat real time to restore some visibility. In this paper, we propose a novel image processing based defogging algorithm which works on the captured foggy image as two input images initially and output obtained from two images is taken as input to a new module, and various enhancement techniques are operated on the image at each stage and outputs obtained at each module. Various techniques such as Discrete Wavelet Transform (DWT), Contrast Limited Adaptive Histogram Equalization (CLAHE) in HSV Model is employed. A computationally simple yet cost effective post processing is included to solve the problem of low contrast by employing DWT based image fusion. Experimental results both quantitative and qualitative evaluation such as higher value of entropy, evaluation of descriptors, PCQI, feature metric and visibility metric demonstrate the validity of proposed algorithm by virtue of restored natural images, colour fidelity and image sharpness.

***Keywords*:** visibility enhancement, image defogging, hazy image, contrast enhancement, DWT, image fusion

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UNDER WATER SONAR SIGNAL RECOGNITION BY INCREMENTAL DATA STREAMMINING USING MACHINE LEARNING

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ABSTRACT

Sonar signals are used to detect objects under water. The detection of submarines under water using this sonar signals helps in alerting the navy if any enemy submarine is found .The location of the object is also found .The traditional approach like classification algorithms of data mining are used for detecting the objects with good accuracy. But these approaches detect all the objects like rocks, fishes and some unwanted materials under the seaalong with submarines and noisy data causes disturbance .To overcome this problem we are implementing new algorithms using machine learning.

***Keywords*:** Sonar**,** data mining, fishes, under water.

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PAPER ID: ICIRTCS-23-159

PERFORMANCE COMPARISON AND EVALUATION OF THE ROUTING PROTOCOLS OFMANETS IN DIFFERENT SIMULATION RANGE

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ABSTRACT

In an ad hoc network, the nodes are connected through the wireless links. Communication between different nodes is made with the help of different routing protocols. In case of static or stationary nodes the performance of the routing protocols is better than that in case of moving (mobile) nodes. There are various number of routing protocols and the performance studies have been done on all. On the basis of update mechanism, the protocol are divided into reactive, proactive and hybrid protocols. The simulation is done on the simulator NS2. Many researchers have done the analysis and proposed their observation until this point. Among the various routing protocols based on update mechanism, we have taken three different protocols the first one is AODV (Ad-hoc On-request Distance Vector), next is DSR protocol also known as Dynamic Source Routing Protocol and the third one is DSDV protocol which stands for Destination-Sequenced Distance-Vector. Execution correlation of AODV, DSDV, DSR protocols are done in this research with varying number of nodes in two different cases (Simulation area of 400*400 and Simulation area of 500*500) by setting up the nodes on an irregular manner. Our analysis states that the throughput of the system andthe end-to-end delay shows variations in case of increasing number of nodes in the two different cases (Simulation area of 400*400 and Simulation area of 500*500) whereas the parcel thickness division, standardized steering load and vitality expended remains constant regardless of the simulation area.

***Keywords*:** AODV, DSR, DSDV, Routing.

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A NOVEL DESIGN AND DEVELOPMENT OF THE CONVEYOR CABINET WITH UV LIGHTCHAMBER AND DRY FOGGING SYSTEM FOR DECONTAMINATION OF OBJECTS FOR COVID -19 SAFETY

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ABSTRACT

Due to the Covid-19 pandemic, it has become hazardous to go out in crowded areas, specifically supermarkets, where items are touched by many people with unhygienic hands and act as a source for the transmission of the disease. Following World Health Organization's (WHO) guidelines and maintaining proper hygiene has become an essential part of our life. A novel system has been designed by us using the conveyor system with UV light chamber and dry fogging technology for decontamination. An effort has been made to design a conveyor system that carries objects into a sanitizing chamber, which cleans the items either by dry fogging method or by using UV lights based on categorization of objects. Almost 99% sanitization is achieved by making use of these two methods and this can be used as a base for any further work in this domain.

***Keywords*:** decontamination, conveyor system, dry fogging system

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PERFORMANCE EVALUATION OF CLOUD WORKFLOW SCHEDULING USING DEEPREINFORCEMENT LEARNING

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ABSTRACT

Cloud computing is a platform that provides refined services to a large number of users over a network. Scheduling is one of the fundamental solutions to enhance the efficiency of all cloud-based services. Cloud scheduling assigns accessible cloud resources to tasks and optimizes numerous performance metrics. The massive scale of workflow as well as the elasticity and heterogeneity of cloud resources make cloud workflow schedulingdifficult. In such a case, machine learning based scheduling models using neural networks can be leveraged to solve this challenging problem. The make span and execution cost are thetwo critical performance metrics in workflow scheduling. In this study, a scheduling strategy for workflow is proposed that uses a deep neural network model in a reinforcement learning setting. The proposed Deep Reinforcement Learning based Workflow Scheduling (DRLWS) model minimizes the make span and total execution cost. Simulated experiments show that the DRLWS model can find better results.

Keywords: Deep learning, Reinforcement learning, Cloud Computing, Workflow Scheduling, Deep Neural network.

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