

SOUVENIR

4th International Conference on Innovation in IoT, Robotics and Automation (IIRA 4.0)



**Organized By
Department of CS&E**

**MORADABAD INSTITUTE OF TECHNOLOGY
Ram Ganga Vihar Phase-2, Moradabad (UP), 244001 India**

4th International Conference on Innovation in IoT, Robotics and Automation (IIRA 4.0)

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Preface

We take this opportunity to welcome you all to the Souvenir of the fourth International Conference on Innovation in IoT, Robotics and Automation (IIRA-4.0).

The objective was to bring the eminent academicians, scientists, researchers, industrialists, technocrats, government representatives, social visionaries and experts from all strata of society, under one roof, to explore the new horizons, of innovative technology to identify opportunities and defining the path forward. This new path should eliminate isolation, discourage redundant efforts and promote scientific progress aimed to accelerate India's overall growth to prominence on the international front and contribute effectively to realize and achieve the India 2024 mission of being a Development Nation. The conference will feature online/offline paper presentation sessions, invited talks, keynote addresses and panel discussions. Conference has attracted researchers and practitioners from academia, industry and government agencies, in order to exchange ideas and share their valuable experiences.

We are grateful to a number of people without which we would not have been able to successfully organize this mega event, in such a short period of record time. On behalf of the Organizing Committee, we thank all esteemed authors for having shown confidence in us and considered IIRA-4.0 a platform to share their work. We wish to express our gratitude to our focused and dedicated team of Convener, Co-conveners, members of the Advisory Committee, Organizing Committee, Technical Committee and Local Organizing Committee and finally our students for being a great source of strength to us in making this event successful.

We consider ourselves fortunate to get such a dedicated and ever supporting team.

We are personally thankful to our Director, Prof. (Dr.) Rohit Garg, who was always a constant source of technical guidance, as and when we needed.

We also take this opportunity to thank various organizations which have sponsored and collaborated with us in organizing this conference and meeting the financial constraints.

Finally, we are thankful to one and all, who have contributed directly or indirectly in making this conference successful.

Last but not the least, we take this opportunity to give the credit of successfully bringing out this Souvenir to our team, one and all, and personally own the responsibility of all the errors, deficiency and shortcomings.

In the last, we are thankful to Almighty God for giving us strength in successful organization of this conference.

Dr. Rajeev Kumar
Organizing Secretary
IIRA-4.0

Amit Saxena
Organizing Secretary
IIRA-4.0

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Assessment of AI Companies Operational Performance in India

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Abstract: The article has delved into understanding the importance and performance of Artificial Intelligence companies in India with the data of the past five years. It scrutinizes the performance and significance of Artificial Intelligence (AI) companies in India over the past five years. It delves into the financial data, specifically examining Profit After Tax as an independent variable and its relation to net cash flows in these companies. The analysis involves nine prominent AI companies in India and employs statistical tools such as correlation, regression, standard deviation, and one-way ANOVA. The findings indicate varying relationships between Profit After Tax and net cash flows across different companies, underscoring the complexities within their financial dynamics. While some companies exhibit a positive correlation, others show no direct relationship. Additionally, the article explores government guidelines and existing laws that impact AI companies in India, emphasizing ethical and responsible AI usage. Despite the evolving market, the article suggests a promising future for AI companies in India, contingent upon their ability to tailor solutions to the unique challenges and opportunities in the Indian landscape.

Keywords: Artificial Intelligence Companies, Profit After Tax, Operational Performance, AI Solutions, Net Cash Flow

Drone-Assisted Air Quality Monitoring in Urban Areas

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Abstract: In today's rapidly expanding urban landscapes, the quality of our air has become a paramount concern. The burgeoning population, coupled with industrialization and vehicular emissions, has rendered the air we breathe laden with hazardous substances such as particulate matter, nitrogen dioxide, and volatile organic compounds. This toxic concoction poses severe health risks, escalating respiratory illnesses and cardiovascular complications among urban dwellers. The Air Quality Index (AQI) plays a crucial role in gauging and communicating the health risks linked to air pollution levels, particularly evident in Indian cities where pollution often exceeds safe thresholds. It consolidates data from monitoring stations tracking pollutants like PM_{2.5}, PM₁₀, SO₂, NO₂, CO, and O₃. This information aids public awareness and preventive measures against potential health impacts. Through real-time updates, AQI keeps residents informed about current air quality, influencing urban planning strategies. It helps in traffic regulations and emission controls to integrate air quality concerns into urban development plans. People deserve to be informed about the repercussions of their actions on air quality. In this context, this endeavor introduces a novel air quality monitoring system in urban areas. The system was proposed using the drone navigation equipped with a variety of IoT sensors, including MQ135, MQ2, PM sensor, and DHT11, acts as a mobile data collection platform with integrated air pollutant measuring sensors of IoT. Our proposed system uses AQI of different urban cities as a key information in all the key measurements of various toxic substances. We have compared various previously proposed approaches for the enhancement of our idea and for building a strong foundation for implementation.

Keywords: Air Quality Index (AQI), Drone, MQTT, MQ135, DHT11, Anaconda

MQTT Enabled Smart Parking Management System

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Abstract: Internet of things (IoT) is one of the most commonly used technology to make people life easier by introducing smart applications. In this paper an IoT based smart parking management system is introduced to mainly reduce the traffic for parking slot as well as to save time for person with the use of sensors. Smart Parking System (SPS) is enhanced by accessing the data on MQTT Dashboard. The system employs IoT sensors installed in parking spaces to collect real-time occupancy data, efficiently transmitted to a central server using the MQTT protocol. A user-friendly dashboard is accessible via web and mobile interfaces, enabling real-time parking spot visibility, quick vacancy identification, and even reservation functionality. Raspberry Pi3 is used as a controller for processing the data received from IR sensors.

Keywords: Internet of things, Smart parking system, Sensor networks, Real-time monitoring, mobile application integration, MQTT.

An Exploration of Clustering Techniques for Customer Behaviour

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Abstract. Customer behavior is constantly shifting in the real world. Businesses in every sector strive to increase customer respect and achieve a high level of customer loyalty. While the client's attention is focused on a few key metrics, the sales team focuses on opportunities for cross-selling and up-selling. For instance, first call resolution, prompt resolution of client concerns, best service levels, and quality ratings. Customer clustering is used to understand customer behavior patterns so that businesses or organizations can create marketing plans that appeal to their tastes and keep consumers. In order to determine which method is best for identifying consumer profiles and trends for a retail business, greater customer happiness and retention, this article compares the effectiveness of clustering data mining algorithms.

Keywords: Clustering, Customer behaviour, , data mining, K-Means

Impact of Social Media Solutions on Natural Disaster Management: Enhancing Communication, Coordination and Resilience

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Abstract. Effective disaster management methods are required to lessen the impact of natural catastrophes on infrastructure and human lives. Natural disasters present substantial difficulties to communities and governments around the world. By facilitating real-time communication, crowdsourcing data, and resource mobilisation, the advent of social media over the past ten years has opened up new opportunities for disaster management. The complex effects of social media tools on numerous elements of disaster management are examined in this study article, offering insight on how these online communities have changed disaster response and recovery.

Keywords. Natural Disaster, Resource Management, Real-Time Communication.

Statistical Techniques and a Machine Learning Model for Predicting COVID-19 Evolution

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Abstract. The initial identification of the COVID-19 virus occurred in December 2019 and has subsequently impacted tens of thousands of people globally. Our study underscores the critical role that machine learning can have in COVID-19 prediction, research and classification. To evaluate various COVID-19 prediction datasets, we introduced a hybrid SDT-NN algorithm, which combines elements of traditional machine learning approaches. We conducted comparisons between our proposed algorithm and conventional classifiers such as Neural Network, Support Vector Machine, Logistic Regression and Decision Tree Classifier. Our investigations revealed that our proposed algorithm achieved superior accuracy when compared to these traditional methods. The model underwent training and evaluation using publicly available datasets, demonstrating its effectiveness in surpassing previous approaches and studies. Specifically, the hybrid SDT-NN algorithm attained a Precision of 98.6% in our analysis, utilizing COVID-19 case datasets from multiple countries.

Keywords: Machine Learning, Classifier, supervised learning, COVID-19, SVM and NN

Hybrid CNN-RNN Model For Plant Leaf Disease Detection

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Abstract. Plant and crops are affected by various diseases which is posing a significant threat to agriculture production and food security of a country. Detecting these diseases correctly and at early stage is necessary. Recent advancements in of classification of image on the basis of images. This research paper uses a hybrid CNN-RNN model used for recognition of plant diseases using the images of the leaves of the plants. The model is trained on a dataset containing labeled leaf images, each having various diseases. Through this research we will be able to detect the disease in three different plants that are tomato, grapes and corn with a very high accuracy.

Keywords: CNN Algo, plant diseases, image recognition

Developing Internet of Things (IoT) Based Smart Government Model for Nepal

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Abstract: The Internet of Things (IoT) is a network of tangible objects or entities that are connected with electronic components, software, sensors, and actuators. These components allow for communication, interaction, and the exchange of data amongst these objects. Governments can use immense volumes of data generated by users, sensors, and networks utilize in IoT systems to develop applications and gain knowledge. Consequently, IoT has the potential to facilitate the creation of important services for individuals, enterprises, and governmental organizations in several industries such areas include transportation, energy, healthcare, education, and public safety. The individual who is visiting essay acknowledges the difficulties associated with implementing and using IoT technology in the public sector, as part of the special edition focusing on the Internet of Things (IoT) for the implementation of efficient and intelligent government systems. Additionally, it proposes a comprehensive research approach that integrates Internet of Things (IoT) components to facilitate the evolution of smart governance. The report examines the difficulties encountered while adopting IoT-based efficient administration in the government sector and suggests a model that includes IoT components. The report also identifies the deficiencies in comprehending the phenomena and proposes potential areas for future investigation, such as domain-specific inquiries, the implementation and assessment of IoT systems, and the resolution of specific obstacles that impede the effective deployment of IoT systems in Nepal.

Keywords: EGDI, e-Government, Index, smart city, IoT

A Graphical Password Authentication Using Blockchain

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Abstract: Alternative authentication techniques are of great interest due to the rise in cybersecurity concerns connected with standard alphanumeric authentication methods. In order to address the major shortcomings of traditional methods, this survey explores the nexus between Blockchain and Graphical Authentication. There are several inherent flaws in conventional authentication techniques. These vulnerabilities can be caused by users choosing simple passwords or by the difficulty of memorizing complex ones. Graphical Authentication systems use graphics as passwords to solve these issues and offer a visually appealing layer of security. The incorporation of Blockchain technology enhances security by guaranteeing decentralization and immutability. This survey uses blockchain technology to methodically investigate the field of graphical authentication. It divides current techniques into two main categories: memory-based and detection-based techniques. Every approach is examined closely in terms of its history, guiding ideas, and subtleties of application. The study offers a thorough grasp of the operational dynamics of various approaches by critically analyzing the benefits and drawbacks that are inherent in them. The survey provides insight into the creative way that Blockchain and Graphical Authentication are combined, as well as a detailed knowledge of the many approaches used in this developing industry. It highlights the necessity for ongoing development and adaptability to new security concerns and identifies possible research fields. This investigation provides insights on the market for password-based authentication systems, making it a useful tool for researchers and information security professionals.

Keywords: Blockchain, Graphical Authentication, Cyber Security

Overview of IoT Architecture, Networking Technologies and it's Applications

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Abstract: The IoT is the future, every minute hundreds of new devices are being connected to the web and devices over 40 billion estimated, would be connected to IoT by 2025. IoT brings huge differences in lifestyle, medical science, environmental care, and urban development. To cope with the IoT implementation requirements various challenges have to be met such as interoperability, transmission performance, energy efficiency, security and privacy, resilience, big data management and many. The study is an attempt to explore existing networking technologies for IoT platforms. Some of the major technologies such as IEEE 802, ZigBee, Bluetooth, 6LoWPAN, W-HART, Z-wave and other are discussed that are suitable to meet various challenges in IOT implementation. The study provides a presentation of IoT networking technologies in terms of behavior, features and applications. Research requirements and challenges like scalability, security issues, and management of energy are also discussed.

Keywords: IoT, communication interoperability, transmission performance, energy efficiency, security and privacy, scalability, resilience, sensor networks, IEEE 802.15.4, ZigBee, Bluetooth, 6LoWPAN, Wireless HART, Z-wave.

INASoc: An Improved Hybrid Algorithm for Social Network Analysis

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Abstract. The rising prevalence of online social networks across various domains has recently become a focal point of research in social network analysis. The work proposes and implements an improved hybrid technique, INASoc, for Social Network Analysis. The technique uses Social Network Analysis Algorithms with Neuro Fuzzy Approach. The data set is taken from Stanford Network Analysis Project (SNAP). The work analyzes the Performance of Classification (PoC) Accuracy in Test Data. The proposed algorithm compares it with back-propagation and found that the hybrid average testing error is significantly less than back-propagation algorithms.

Keywords: Social Networks , Neuro-Fuzzy Approach, data mining, Neural Network

IoT-BASED SHREWD CROP FIELD MPA SYSTEM

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Abstract. *Context:* Agriculture stands as a pivotal driver of economic progress within a nation, yet the realm of technical advancements within this sector remains distressingly neglected by a multitude of governments. While farmers contribute untiring efforts to tend to their fields, substantial time is squandered on tasks like irrigation and safeguarding crops from birds and animal threats [1, 2]. This unwavering dedication often exacts a toll on farmers' health, leading to ailments and respiratory issues stemming from exposure to noxious gases emitted by certain crops. Extensive research endeavours [3-9] have been undertaken to alleviate the burdens faced by farmers. These efforts, however, frequently culminate in singular applications such as automated irrigation systems or electric perimeters for crop protection. A subset of researchers has also delved into probing the prevalence of harmful gases across agricultural fields. This paper proposes an innovative approach to address these challenges through the utilization of Internet of Things (IoT) technology.

Objective: The proposed solution canters on a NodeMCU powered intelligent crop field Monitoring-Protection-Alert (MPA) system, which serves as a technical path to revolutionize farming practices. The core objective underpinning the proposed system is the acquisition of real-time insights emanating from the crop field. This critical initiative empowers farmers with timely and accurate data, enabling them to make informed and precise decisions pertaining to their agricultural domain. *Methods:* By seamlessly integrating various sensors, the system detects the presence of birds, animals, and noxious gases in realtime. Furthermore, it enhances crop productivity by continuously monitoring soil parameters, including temperature and moisture levels, thereby optimizing irrigation processes. For seamless communication, the system is fortified with a GSM module that promptly alerts farmers about potential threats to their crops.

Keywords: IoT, MPA System, GSM

Advancements in Chikungunya Detection: Integrating Machine Learning with Image Classification and Early Identification

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Abstract- This study tackles the pressing requirement for promptly identifying Chikungunya, a significantly impactful viral disease, by merging traditional machine learning techniques with cutting-edge deep learning methods. Its central objective is to rapidly detect and categorize Chikungunya symptoms, aided by a varied clinical dataset and an image dataset specifically designed for associated skin conditions such as erythematous macular rash, petechial rash, and maculopapular rash. This diverse clinical dataset encompasses various symptoms and conditions associated with Chikungunya, including fever and joint pains, with binary markers indicating their presence or absence. This allows for an assessment of their relationship with Chikungunya infection likelihood or severity. Employing classification algorithms such as J48 decision tree and Support Vector Machine (SVM), the study achieves commendable accuracy rates of 90% and 88% respectively in early Chikungunya detection. Furthermore, Convolutional Neural Networks (CNNs) demonstrate significant progress, achieving 83% accuracy in recognizing patterns and classifying images, particularly proficient in identifying symptoms like rashes. This holistic approach underscores the potential of integrating various machine learning techniques to enhance early detection of chikungunya and intervention, ultimately contributing to improved public health outcomes.

Keywords: Machine Learning, Image Retrieval, CNN

Exploring The 6G Era Through Artificial Intelligence and Machine Learning

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Abstract. The introduction of 6G networks is about to set off a major transformation in the global communications industry. The combination of artificial intelligence with 6G has the potential to significantly transform our environment, way of life, and technology. The use of advanced machine learning techniques is becoming more important as the telecom sector gets ready to make the switch to 6G networks to improve network performance and encourage application innovation. The achievement of classifying the 6G models is calculated based on certain parameters such as rating and network type/operator (Airtel, BSNL, MTNL, VI, and RJio). According to the dataset obtained from Kaggle.com named “6g_coverage_worldwide,” different operators rely on different networks, and their performance is measured according to their requirements. In the 3G network, Airtel has a rating of less than 0, for BSNL it is 20, for MTNL the rating is slightly less than BSNL which is 10, and for VI, it is higher, equal to 200. The 4G network has only two operators, BSNL and VI. The rating of BSNL is 80, and for VI, it is 30. In the 5G network, there is a new network called RJio. The rating for Airtel is 99, for BSNL it is 20, for RJio it is 100, and for VI it is the same as that of RJio, i.e. 100. In the 6G network, three operators are there: Airtel, RJio, and VI. Airtel has a rating of 140; for RJio, the rating touches 400; and for VI, it is above 800. From this, we can conclude that 6G is going to be the most used network in the coming years. This model is calculated in the Python language using Google Collab. The R-squared (R²) of two different models is compared. The coefficient of determination, or R-squared (R²), is a statistical measure that determines how well a model predicts future outcomes or tests hypotheses. The R-squared (R²) of linear regression equals 100%, while for support vector machines (SVM), it is equal to 80%. So, linear regression is a straightforward and interpretable model. It assumes a linear relationship between the independent and dependent variables, making it easy to understand and implement. The peak data rates (in gigabits per second) of mobile broadband technologies, namely 4G, 5G, and 6G are calculated. In the upcoming years, we will witness the emergence of 6G, which has a data rate of 1000 GB/sec. This combination indicates a future where intelligent networks redefine connectivity and promote social progress and innovation.

Implementation of Adaptive Cloud Security Framework for Cloud Computing Monitoring System Applications

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Abstract: Various organizations implement Cloud Computing (CC) to store a significant amount of data in the clouds. Therefore, it may be necessary to secure data that may also be in video, text, audio and many other types. There are several algorithms created with the help of employing researchers' methods for protecting the information in cloud. In this paper implementation of Adaptive cloud security framework for cloud computing monitoring system applications. Cloud security has merged as one of the most crucial challenges in cloud computing because of the industry's continued expansion. For instance, it is challenging to ensure the security of data hosted on a cloud platform since such data may be attacked. As a result, we must consider the problem of how to safeguard data stored on the cloud. Data monitoring is a vital step to secure data. We create an autonomous computing-based cloud data monitoring system on the cloud platform, checking to see whether the data is out of the ordinary throughout the cycle and reviewing the security of the data considering the results. In this paper, the feasibility of the scheme can be verified through simulation. The findings demonstrate that the suggested technique can properly assess the level of anomalous data and can adjust to the dynamic change in cloud platform load. Meanwhile, it increases the precision and timeliness of monitoring by automatically altering monitoring frequency. Additionally, it can lower the system's monitoring costs during routine operation.

Keywords - Cloud Security, Cloud Computing, Data Security, Cloud Threats, Cloud Vulnerabilities.

Empowering Education and Research: Unveiling the Dynamic Influence of Digital Libraries and Information Centres

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Abstract: Digital libraries and information centers have become indispensable assets in modern education and research, revolutionizing the dissemination and utilization of knowledge in the information age. This paper explores the dynamic influence of digital repositories in empowering learners, educators, and researchers across the globe. The research objectives encompass investigating user experience, evaluating the effectiveness of digital repositories, exploring strategies for digital preservation, addressing equity and inclusion issues, and examining legal and ethical considerations. Employing a mixed-methods approach, the study integrates secondary data analysis with qualitative inquiry to provide a comprehensive understanding of digital libraries' role in shaping contemporary education and research landscapes. The evolution and development of digital libraries are traced through key stages, including early digitization initiatives, the emergence of online catalogs, integration of multimedia content, and advancements in search technologies. Functions and features of digital libraries, such as access to resources, search capabilities, and preservation efforts, are outlined to underscore their significance in education and research. Digital libraries influence education by promoting accessibility, flexible learning environments, research skills development, collaborative learning, and integration with learning management systems. Similarly, they impact research by facilitating access to scholarly literature, interdisciplinary collaboration, open access initiatives, data management, and citation analysis. Challenges and opportunities in digital libraries encompass digital preservation, copyright issues, data security, the digital divide, and emerging technologies. Looking ahead, digital libraries are poised to enhance user experiences, integrate AI and machine learning, expand access to open educational resources, support collaborative research platforms, and promote digital humanities and cultural heritage initiatives. In conclusion, digital libraries represent dynamic hubs of knowledge and innovation, poised to continue shaping the future of education, research, and information dissemination. Embracing trends and addressing challenges will ensure that digital libraries remain vital resources in the evolving landscape of learning and scholarship.

Keyword- Education, Research, Digital libraries, Information centers, Empowerment

Navigating the Digital Mirage: A Survey on Detecting and Mitigating Fake Consumer Reviews

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Abstract: Consumer decision-making has changed significantly in the digital era, with online evaluations from previous customers having a significant impact on how people perceive products and how profitable enterprises are. But the proliferation of phoney evaluations has raised serious concerns, leading scholars to investigate several approaches to identify and counteract this dishonest behaviour. This survey study is intended to serve as a useful knowledge base by offering a thorough summary of the body of research on the subject of detecting fraudulent reviews. The paper meticulously examines diverse datasets, shedding light on the numerous challenges posed by fake reviews. It examines the methods and approaches used in the detection process, stressing the advantages and disadvantages of the approaches used so far. Although researchers have made great progress in reducing the negative effects of phoney reviews, this survey highlights persistent knowledge gaps about this widespread problem. Notwithstanding the advancements, the study makes a strong case for ongoing research and development in the area of false review identification. Because the digital era is dynamic, new tactics are needed to maintain the accuracy of online customer reviews. In the continuous fight against false reviews, the study highlights how crucial it is to keep ahead of the curve as consumers and companies adjust to new technology. By doing this, it promotes cooperation between academics, business leaders, and government officials in order to provide strong and practical solutions for preserving the legitimacy of online customer reviews in a constantly evolving digital environment.

Keywords: Fake review detection, Sentiment analysis, Machine learning algorithms, Network structure analysis.

Advancements In Cartoonification Techniques: A Comprehensive Review Of Gan-Based Algorithms and Comparative Analysis

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Abstract: Cartoonification is a complex computer vision art form where real-world images are rendered into visually appealing cartoons. This is especially true in the field of artistic style transfer. Cartoonification techniques are entering a new era thanks to the introduction of Generative Adversarial Networks (GANs). Using convolutional operations and a variety of loss functions, such as adversarial, colour, content, edge, and grayscale loss, this state-of-the-art method uses two neurons. The model uses this complex framework to create artificial cartoon-like images from real-world counterparts on its own. Although there are inherent difficulties in training GANs, several methods have been developed to make the process more efficient. Some of the significant methods include pre-training the generator, consolidating the residual blocks into the generator network, utilizing the patchGAN discriminator network and adding LeakyReLU to the discriminator network. In this review paper, the literature survey offers a perceptive introduction to GANs and a distinguished compendium of several methodologies utilizing GANs such as CartoonlossGAN, AnimeGAN, CartoonGAN, and CycleGAN. It also makes it easier to compare and discuss these algorithms in a nuanced way, highlighting their advantages and disadvantages concerning cartoonification.

Keywords: Algorithms, GAN, Image Retrieval

Forecast stock using LSTM

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ABSTRACT: Forecasting of stock market price based on previously closing data, by which a retail investor can predict stock market price. Predicting prices of stock is the most difficult task in the computation area. Prediction involves many factors like physiological, news about market, sentiments of the people, rational and irrational behavior. All these factors contribute to make prices of stock volatile and to predict price movement with higher accuracy. The presence of a large amount of previous data and certain patterns between data help in predicting stock market prices. Ease of accessing and investing in stock market has it volatile and complex than ever before. In this we have used algorithm which uses market data which predict the share cost using machine learning technology, like Neural network named LSTM. For this study of stock market prices, we have used LSTM which is a neural network design for predicting closing of stock market prices. This network is trained and analyzed over various input sizes which consist of previous days close which bring effective graphical outcome.

Keywords: Stock Analysis, LSTM, Neural Network

Assessment Of Groundwater Quality For The Intent of Irrigation In Cuttack Using Machine Learning

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Abstract: The study and exploration was carried out in the Cuttack district, with 60 samples taken from the well. The pH of groundwater was considered. Electrical conductivity (EC) is one the component that was measured in several locations throughout the research vicinity. It is a major factor in determining irrigation water quality, with 16 samples, considered in light of USSL Salinity Diagram. The chemical quality of groundwater was assessed using machine learning for fourteen different strictures, i.e. including percentage of hydrogen, EC, TDS, TH, Alkalinity, Ca, Mg, Na, K, CO₃, HCO₃, Cl, SO₄ and Fluoride (F), according to APHA guidelines According to the research, the groundwater in the study area was found suitable for agricultural purposes. Machine Learning Concepts with classification techniques have been used to predict the same.

Keywords: Machine Learning, Irrigation, Classification Technique

Advances in Deep Learning Techniques for Plant Disease Identification: A Comprehensive Survey

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Abstract: Nowadays, Deep Learning is used in every domain like automatic car, disease detection in plants and human beings, especially in object detection, feature extraction and so on. In machine learning we give features to the machine for training but in deep learning we give only image as an input. Machine train itself with the help of different filters. Deep Learning resolves various problems like feature extraction and object detection. We discussed deep learning and its applicability in plant disease detection. The paper explores, how deep learning algorithms work to find diseases in plant and make an innovative system. We compare well-known recent research on plant disease detection systems using deep learning based on the quantity of filters, padding, activation function, and parameters. The paper focuses on plant disease detection system, architecture, research gap and their possible solutions.

Keywords. Machine learning, depth-wise convolution, LeNet-5, AlexNet, VGG-16, GoogleNet, ResNet, Sliding Window.

Enhancement in Drone Technology with Payload, Sensors and Frequency Spectrum Issues and Applications

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Abstract: Drones can be classified according to their size and weight, power source, autonomy level, fixed-wing or multirotor design, and other characteristics. These details are crucial for the drone's carrying capacity, maximum flight time, and cruise range, among other things. Different kinds of payloads, such as freight (like mail packages, medications, etc.) & sensors (like cameras, sniffers, meteorological sensors, etc.), can be identified part of a drone itself (i.e., the "platform"). Different kinds of payloads, such as freight (like postal packages, medications, fire extinguisher equipment, flyers, etc.) and sensors (like cameras, sniffers, meteorological sensors, etc.), can be identified. There will be descriptions of various payload applications. Drones require (a certain amount of) wireless communications with a pilot on the ground in order to complete a flight. Furthermore, communication with a payload—such as a camera or sensor—is typically required. To allow this communication to take place frequency spectrum is required. Frequency spectrum requirements vary depending on factors such as the type of drone, its flight characteristics, and the nature of its payload. Given that frequency spectrum allocation transcends national borders, international coordination is imperative to manage its use effectively. The legal aspects of FS (frequency spectrum) usage and EE (electronic equipment) are discussed, including internal country and global restrictions. The topic of vulnerability related to frequency spectrum consumption is also covered, along with information on associated hazards and accessible spectrum resources. Surveillance and compliance mechanisms for enforcing spectrum usage, equipment standards, and the necessity for international and European collaboration are also addressed. Finally, the discourse touches upon future advancements in drone technology, indicating a trajectory towards smaller, lighter, more efficient, and cost-effective drones. This evolution will lead to greater accessibility of drones to the general public and their proliferation across a broader spectrum of applications. Furthermore, drones are expected to exhibit increased autonomy and capabilities, including the ability to operate in coordinated swarms.

Keywords: Fixed-wing drones, propulsion, and autonomy. Drones with many rotors, frequency spectrum, wireless transmission, interference, clusters, downsizing, and sensors.

An Exploratory Analysis of Diverse Methodologies in Sentiment Analysis: A Survey

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Abstract: The abstract presents a study focusing on sentiment analysis techniques, crucial for understanding public sentiment and social media trends. Specifically, it investigates the effectiveness of machine learning and neural network models in analyzing sentiment from Twitter data. The dataset consists of tweets labeled with positive, negative, and neutral sentiments. Five models were evaluated, including XGBoost, Multinomial Naive Bayes, a baseline model, Gradient Boosting Classifier, and a neural network with ELU activation and Adam optimizer. Accuracy served as the primary evaluation metric after preprocessing the tweet data and partitioning it into training, validation, and testing sets. The neural network model emerged as the top performer with 79.7% accuracy, attributed to the ELU activation function and Adam optimizer. However, challenges such as data preprocessing complexities and model interpretability were encountered during the study.

Keywords: Sentiment analysis, machine learning, neural networks, Twitter data, ELU activation function, Adam optimizer, accuracy evaluation.

Sentiment Evolution On Social Media: An In- depth Study Using Naive Bayes for Twitter Sentiment Analysis

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Abstract. People are using social media more and more to convey their thoughts and feelings in the form of quick text messages. Recognising a person's anxiety or despair, for example, gauging a community's mood or sense of well-being. Sentiments may be displayed in a variety of ways, including facial gestures, voice, and written language are all forms of expression. Sentiment Textual analysis is mostly a content-based process. A categorization issue incorporating domainspecific notions of Machine Learning and Natural Language Processing. TSA (Twitter Sentiment Analysis) research is a current area of study in text mining. In this study, a wide range of recently suggested methods and applications are examined along with a complete analysis of the most recent advancements in the field. The goal of this study is to offer a brief, almost complete review of TSA methods and associated disciplines.

Keywords: Naive Bayes, TSA, ML, NLP

Analyzing Intelligent Transport Systems: A Case Study of the Balasore Rail Disaster

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Abstract: Intelligent Transport Systems (ITS) represent a pivotal technological advancement in the field of transportation, aiming to enhance the safety, efficiency, and sustainability of various modes of transportation. This abstract provides an overview of the key concepts, components, and benefits associated with ITS. ITS encompasses a wide range of technologies, including advanced sensors, communication networks, data analytics, and automation. These technologies enable the collection and analysis of real-time data from transportation systems, allowing for informed decision-making and optimization of traffic flow. Additionally, ITS facilitates the integration of different modes of transport, such as road, rail, air, and sea, to create a seamless and interconnected transportation network. The main components of ITS infrastructure include intelligent vehicles, intelligent infrastructure, and intelligent control systems. Intelligent vehicles are equipped with advanced features like adaptive cruise control, collision avoidance systems, and autonomous capabilities. Intelligent infrastructure involves the deployment of sensors, cameras, and communication systems along roadways and other transportation routes to monitor traffic conditions, manage congestion, and provide timely information to travellers. Intelligent control systems integrate data from various sources and apply algorithms to optimize traffic flow, manage incidents, and support dynamic routing. The benefits of ITS are far-reaching. Improved road safety is achieved through technologies like automatic emergency braking, lane departure warning systems, and vehicle-to-vehicle communication, reducing the number of accidents and fatalities.

Keywords- Intelligent Transport Systems (ITS), Kavach, Station-Kavach, Interlocking system, Internet of Things (IoT)

Comparative Investigation on Torque Requirement Analysis for 6 DOF Robotic Manipulator with Aluminium A380 and Magnesium AZ31B Materials

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Abstract. The usage of robotic manipulators in industry has increased over the days since the introduction of Industry 4.0, but research on the material selection for robotic manipulators in industries necessitates significant importance. This article compares the joint dynamic parameters of a six-jointed robotic manipulator with 6 degrees of freedom (DOF) constructed with Aluminium A380 and magnesium AZ31B by using solid works modelling software in integration with MATLAB SimMechanics simulation tool. Torque exerted at the robotic joints of the manipulators constructed with Aluminium A380 and Magnesium AZ31B are identified separately using the Simscape multibody simulation tool. By comparing the results obtained from the Simscape simulation between the materials, we can provide insights for the construction of robotic manipulators by considering dynamic properties. The findings contribute to the selection criteria for materials in robotic arm design, aiding in the optimization of performance and energy consumption.

Keywords: Articulated robotic manipulator, Aluminium A380, Magnesium AZ31B, Simscape multibody, Torque requirement analysis.

Machine Learning Based Methods for Driver Drowsiness Detection

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Abstract. Drowsiness while driving stands out as a significant contributor to road accidents. This survey comprehensively explores methods for detecting driver sleepiness, which rely on machine learning, computer vision and deep learning. A detailed analysis is presented in this paper about methods for detecting driver drowsiness by means of facial landmark detection using various existing algorithms based on artificial neural network and computer vision. The paper concludes with insights into potential advancements in driver drowsiness detection technologies, providing significant guidance for researchers and practitioners aiming to enhance road safety through effective drowsiness detection systems.

Keywords. Driver drowsiness detection, Drowsy driving, Fatigue detection, Computer vision, Machine learning, Facial landmark detection, Eye tracking.

IoT based Air Pollution Monitoring System for Moradabad City

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Abstract. Air quality plays an important role in spiritual, mental and physical well being of a person. Though it is not common to consider that quality of air a person is breathing has deep effect on the work efficiency, emotions, levels of stress and well being of that person. It is even written in ancient ayurvedic scriptures of India that quality of air one breathes not only prolongs the life of a person but can also show magical healing effects on various diseases. Though Air Quality Index is extremely important, yet it is the most ignored and taken for granted by most of us. Related work and recent articles from new coverage also depicts that Moradabad city is amongst the most polluted cities of India. The air quality index level of Moradabad city is much above the required normal level for healthy living conditions. It is therefore proposed a unique air quality index monitoring device which can be mounted on vehicles like cars, motorbikes etc. which will be powered by battery of vehicles and monitor the air quality index level of various places of city where vehicle is commuting. The information of air quality index along with Global Positioning System tag will be send to a remote server (ThingSpeak). Then the user interested in monitoring AQI level can receive this information on a mobile application. The application will also issue alert messages when air quality index is approaching dangerous level, display safety and precautionary guidelines. The proposed device was tested and results were recorded carefully. It was observed that device was working fine and was able to monitor air quality of Moradabad City. Once adopted the proposed system can serve as novel solution to the increasing air pollution of Moradabad city and can help in creating an environment friendly mind-set in people of Moradabad city. Once such awareness is created in local community, people may refrain themselves in activities which lead to air pollution.

Keyword: IoT, AQI, Remote Sensing

Essentials of Life Long Learning for an Engineering Graduate

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Abstract. Today's dynamically changing work environment and introduction of rapid changing technologies has put the engineering graduates in situation that is more and more competitive and dynamic in nature. The industries are quickly adopting internal restructuring and delayering of its internal processes with an ever growing increase and changes in skill requirements. The employees are therefore under a new situation where they have to focus on life-long learning and acquiring of skills. They have to stay self-motivated and committed to enhance their skills by undergoing advanced work based and carrier based trainings. Now an engineering graduate can't imagine to stay in a same company for his entire occupational career without constantly upgrading his skill. This requires to develop a strong urge for lifelong learning in the engineering graduate. The new education policy of India and outcome based education emphasises on lifelong learning as an important graduate attribute or a program objective for any engineering program. This paper explores the question whether higher education institutes are able to invoke an urge in the engineering graduates for lifelong learning amongst their students. For this study, research focused on inculcating the urge for lifelong learning among undergraduate students of engineering of final year was carried out. On the basis of findings a unique system for lifelong learning among students is presented.

Keywords: AI, ML, Education Policy

Essentials of Ethics for an Engineering Graduate

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Abstract: In the early development of engineering profession the concern about public safety grew, the reason was failure of several structures, collapse of bridges etc. These failures caused concern thereby forming of ethical standards. With inclusion of ethics as an essential program outcome by accreditation agencies there is increased focus on ethical practices in engineering curriculum. After graduation engineers are not only expected to give solutions to complex engineering problem (CEP) competently and skillfully but they are also expected to be aware of ethical and social implications of the solutions provided by them. They should be able to take ethical decisions in case of dilemma and should be able to reflect upon the problems. According to Accreditation Board for Engineering and Technology (ABET), understanding of professional and ethical responsibility is an essential graduate attribute. An engineer when posed to a complex engineering problem should carefully analyze the problem in light of moral and ethical sensibility, do the problem analysis with engineering and moral analysis skills. He should evaluate the solution on the basis of moral creativity and decision making skills. Solutions provided by him should be effective and not in conflict with the social, physical or ethical issues with nearby communities and based on human welfare. The presented paper follows a qualitative and quantitative approach for analyzing the status of efficacy of ethical education in engineering disciplines. It also presents a model of ethical club, which is an evolving forum for exchanging the ideas among peers, mentors for resolving the ethical dilemmas posed to an engineering graduate during his professional practices.

Keywords: CEP, ABET, AI

Automated Door with Password-Based Lock

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Abstract— The application of this work is to lock the door and ensure the safety of our space. This was done with heavy locks earlier. Locks do not ensure safety completely and there is a lot of tension around them. The main problem with traditional locks is that they are heavy, and their system is completely mechanical. The three basic ideas of this project are safety, privacy, and automation. This device is a password-based door lock system in which the door is opened and closed without any physical work, i.e. automatically. The key here is the password that the user has to enter to open the door. When the correct password is entered into the keypad, the microcontroller gives a command to the servo motor to rotate at a specific angle. If the incorrect password is entered, the motor will not do any operation and the user will not be allowed to enter.

Keywords: Arduino, LCD, Servomotor, Smart door, Safety, privacy

DUO TONE MULTI-FREQUENCY MOBILE CONTROLLED ROBOT

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Abstract— This research paper introduces an innovative method through the utilization of Dual Tone Multi-Frequency(DTMF) signals. The incorporation of DTMF technology provides a reliable and effective means for remote control, facilitating smooth navigation of the robot. The paper delves into the detailed design, practical implementation, and empirical outcomes of the DTMF-controlled robot, emphasizing versatility across different domains. In this paper a system can be controlled via mobile communication. DTMF is the most used and most efficient technology at present which can control robotic vehicles. The results underscore the efficiency of DTMF as a robust communication interface, showcasing its potential for real-time robot control and contributing of the progress of mobile robotics technology. The limitation of old wireless control robotic their limited working range. The main aim of this paper is to overcome that limitation without using a micro-controller.

Keywords: Remote control, System, DTMF Signal, Key Pad Dialing, Dual Tone Signaling, Communication Protocols .

Crop Prediction System Using Machine Learning

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Abstract: In today's agriculture, farmers face significant challenges in maximizing crop yields and profitability. Failure to obtain clear, data-driven information specific to their geographic location often results in poor product selection and failure to allocate capital. The system can predict crop yield by integrating different factors such as weather conditions, soil quality, crop history data and technology. These predictive tools provide farmers with valuable information that helps improve resource allocation and reduce risk. Crop forecasting systems continuously improve based on real-time data, supporting sustainable agriculture, increasing productivity and contributing to food security. The system uses advanced technology to enable farmers to make informed decisions and adapt to the changing environment.

Keywords: KNN , Pandas, EDA, Numpy, MAPE, Frontend , Database, Backend

A Review on Machine Learning in Cryptography: Future Perspective and Application

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Abstract. “Abstract” This research explores the significant integrations and potentially transformative impacts of Machine Learning technology in the context of cryptography. Driven by the rapid advancement of digital systems and the increasing need for robust security mechanisms, an intersection of these highly relevant fields is proving increasingly vital. The focus of the paper is to highlight how machine learning can enhance cryptographic techniques, enabling them to predict cryptographic keys, analyse encrypted data, and develop advanced safeguards against threats as well as the application of Machine Learning within Cryptography. These include robust intrusion detection systems, automatic generation of cryptographic keys, and the prediction and mitigation of potential cryptographic vulnerabilities.

Keywords—Machine Learning, Cryptography, Cryptographic key prediction, Cryptographic applications, Security threats, Balancing advancements.

Smog Restoration of A Image Using Oblique Gradient Profile

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Abstract: Many imaging systems utilise difficult pre-processing to remove haze from digital photos. Thus, numerous desmogging models have been developed to remove smog from photographic photos. Because desmogging models are based on physical models, a single smoggy shot must accurately evaluate the transmission map and atmospheric veil. Transmission map accuracy is essential. Many prior-based restoration models have been developed to predict the transmission map and atmospheric veil. To account for atmospheric veils. These models reduced energy function effects using a computationally intensive method. The repair models also have warped edges, textures, and colours. Thus, this paper analyses hazy pictures using a CNN. OGCP clears hazy pictures. Gathering multiple foggy or clear photos creates a dataset. We then trained CNN to predict the pollution gradient from blurry photographs. Using the calculated smog gradient, OGCP repairs foggy photos. It enhances picture clarity. According to certain performance criteria, the CNN-OGCP-based desmogging model outperforms current smog removal methods. Performance evaluations revealed this.

Keywords. CNN, Smogging, OGCP, desmogging, Softmax

IoT-Based Automated Paralysis Patients HealthCare System

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Abstract. Millions of people worldwide suffer from the devastating condition called paralysis. Many conditions, such as strokes, injuries to the spinal cord, and brain trauma may lead to it. Patients who struggle with paralysis can experience significant impairments of functionality and independence, making it challenging for them to carry out even the most essential activities for daily routine. The treatment for the people with paralysis might be completely transformed by the implementation which is associated with Internet of Things (IoT) technology. IoT-based systems are used to monitor the patient's vital signs, track their movements, and provide them with communication and assistive technology. This project proposes an IoT-based automated paralysis patient healthcare system that utilizes various sensors and microcontrollers to monitor the patient's health status and provide them with the resources that require. The system includes a pulse-oximeter for measuring the blood oxygen saturation, temperature sensor to monitor body temperature, and the motion sensor for tracking patient movements. The system also incorporates a communication module that allows the patient to send and receive messages, and an assistive technology module that can control various appliances in the patient's environment.

Keywords: Internet of Things, HealthCare System, Paralysis Patients Care, Health Monitoring System, Healthcare Automation

Contextually Aware Mental Health Chatbots: Pairwise Learning in NLP and LSTM for Enhanced Conversational Support

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Abstract: Mental health disorders affect millions globally, with many encountering barriers to accessing adequate support. Conversational agents, or chatbots, present a promising avenue for scalable assistance. However, ensuring their effectiveness and empathy remains challenging, especially in dynamically evolving conversations. Recent advancements in Natural Language Processing (NLP), particularly with Long Short-Term Memory (LSTM) techniques, offer promising avenues to enhance chatbot capabilities. This study proposes a novel approach to develop a generative mental health chatbot by leveraging LSTM in NLP. Our objective is to create an empathetic conversational agent capable of providing personalized support. We integrate pairwise learning techniques with LSTM to improve the chatbot's contextual understanding and conversational abilities. Through a comprehensive methodology involving dataset description, preprocessing, model specification, and training optimization, we demonstrate the efficacy of our approach. The results showcase the model's robust performance in generating coherent responses to mental health inquiries, with a training accuracy of 91.06% and validation accuracy of 72.32%. Our research contributes to advancing the capabilities of contextually aware mental health chatbots, enabling personalized conversational support and ultimately enhancing mental health interventions.

Keywords: ChatBot, LSTM, NLP

VisionVoice: An Image Captioning Web Application that Converts it to Audio for the Visually Impaired

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Abstract: In an era dominated by visual content, the "VisionVoice" project emerges as a pioneering web application committed to narrowing the accessibility gap for visually impaired individuals. VisionVoice leverages cutting-edge machine learning technologies to deliver an immersive and inclusive experience for visually impaired users when engaging with visual information, such as picture slideshows and presentations. By employing advanced algorithms, VisionVoice transforms static images into dynamic, audio-narrated videos, enabling visually impaired individuals to access, comprehend, and interact with visual content on par with their sighted peers. This research paper explores the innovative methodologies, technical intricacies, and real-world impact of VisionVoice, emphasizing its pivotal role in advancing inclusivity and accessibility in the digital age.

Keywords: Machine Learning, Voice Recognition

A Comparative Analysis of Unsupervised Machine Learning Algorithms Using Heart Disease Data

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Abstract. The utilization of unsupervised machine learning algorithms in disease prediction and healthcare analytics holds significant promise for enhancing patient care and healthcare outcomes. This study explores the application of various unsupervised algorithms, including clustering, dimensionality reduction, anomaly detection, and latent variable modeling, in disease prediction tasks. Using a health record of heart attack datasets collected from Kaggle, these algorithms aim to uncover hidden patterns, identify disease subtypes, and detect anomalies without relying on labeled examples. Evaluation of these algorithms reveals differing performances, with some methods demonstrating superior discrimination ability in distinctive anomalies from normal instances. Local Outlier Factor emerges as the top performer, followed by One-Class SVM, while Isolation Forest and k- Means clustering exhibit relatively poorer performance. Autoencoder and Principal Component Analysis yield intermediary results, suggesting their potential in disease prediction tasks. These findings underscore the comparison of unsupervised machine learning in augmenting disease prediction and healthcare analytics, paving the way for improved patient care and management.

Keywords: Unsupervised Machine Learning, Outliers, Anomalies, Performance Comparison, Algorithms

Comparative Torque Requirement Investigation for 6 DOF Industrial Robotic Manipulators: Relative Analysis using Magnesium AZ91D and AZ31B Alloys

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Abstract. Since the introduction of Industry 4.0, the use of robotic manipulators in industry has grown; nonetheless, there is a critical need for study on the material selection of these devices. This article uses Solid Works modelling software in conjunction with MATLAB Simscape simulation tool to compare the joint dynamic parameters of a sixjointed robotic manipulator with six degrees of freedom (DOF) made using magnesium AZ91D and magnesium AZ31B. Using the Simscape multibody simulation program, the torque applied at the robotic joints of the manipulators made of magnesium AZ91D and magnesium AZ31B is determined independently. By evaluating dynamic qualities, we may offer insights for the design of robotic manipulators by contrasting the outcomes of the Simscape simulation between the materials. The results aid in the optimization of performance and energy usage by adding to the selection criteria for materials in robotic arm design.

Keywords: Articulated robotic manipulator, Magnesium AZ91D, Magnesium AZ31B, Simscape multibody, Torque Requirement analysis

Comparative Investigation for Design Optimization of 6 DOF Industrial Robotic Manipulator Drives - Torque Requirement Analysis using Magnesium AZ91D and Aluminium A380 Alloys

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Abstract. Since the deployment of robotic manipulators in industry has grown since the advent of Industry 4.0, investigation into the material selection of these devices is desperately needed. This article compares the joint dynamic parameters of a six-jointed robotic manipulator with six degrees of freedom (DOF) constructed from magnesium AZ91D and aluminium A380 using Solid Works modelling software and the MATLAB Simscape simulation program. Using the Simscape multibody simulation program, the torque applied at the robotic joints of the magnesium AZ91D and aluminium A380 manipulators is determined independently. By comparing the results of the Simscape simulation between the materials, we may offer insights for the design of robotic manipulators. The findings contribute to the optimization of performance and energy consumption by expanding the material selection criteria in robotic arm design.

Keywords: Torque Requirement Analysis, Articulated robotic manipulator, Magnesium AZ91D, Aluminium A380, Simscape multibody

Integration of Industrial Automation Tools with Human-Centric Approach for Enhancing Sustainable Manufacturing Processes in Industry 5.0

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Abstract. In the manufacturing industry, optimizing assembly processes is crucial for meeting production demands and enhancing efficiency. One such critical process in vehicle horn production involves riveting name plates onto the grill. However, the conventional single-station setup leads to significant machine and human idle time, hindering the assembly line's productivity. To address this issue, a novel automation station utilizing a rotary index table has been developed. The proposed innovative system revolutionizes the riveting process by incorporating multiple stations on a rotary index table, each capable of holding a component for riveting. A three-phase induction motor precisely rotates the table, positioning each component accurately for riveting. Simultaneously, a pick and place arm retrieve the finished product and deposits it into the bin, eliminating the need for manual unloading by the operator. By adopting this automated solution, machine and human idle time are effectively minimized, leading to a substantial increase in production efficiency. Furthermore, the system's versatility allows it to accommodate various components and configurations, making it adaptable for different horn models. The integration of rotary index tables into manufacturing processes, complemented by robotics, represents a promising approach to enhance productivity, efficiency, and accuracy. This innovative solution addresses the specific challenges in vehicle horn production, and it also underscores the broader potential of automation in industrial manufacturing.

Keywords: Industrial automation, Human-centric approach, Sustainable Manufacturing, Industry 5.0, Automated system integration.

Comparative Analysis of Apache Hadoop and Apache Spark for Business Intelligence

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Abstract: In an era marked by an unprecedented influx of data, advanced big data analytics has become indispensable for informed decision-making in businesses. This study delves into the significance of advanced big data analytics in the business context and conducts a comparative evaluation of two leading data processing frameworks, Apache Hadoop and Apache Spark, to assist organizations in selecting the optimal tool for their unique requirements. In today's data-driven environment, deciphering vast and diverse data sources is paramount for gaining a competitive edge. The evaluation presented herein provides valuable insights into the strengths and weaknesses of Hadoop and Spark, elucidating the factors influencing their effectiveness across various use cases. Notably, Apache Hadoop, leveraging its MapReduce model, excels in traditional batch processing, making it well-suited for tasks like ETL and data warehousing. Conversely, Apache Spark, boasting in-memory processing capabilities and diverse APIs, emerges as a versatile choice, excelling in interactive, iterative, real-time data processing, and machine learning tasks. This paper aims to assist businesses in selecting the most suitable framework for their specific data processing needs, thereby enhancing their decision-making capabilities. Furthermore, this research contributes to the expanding knowledge base on big data analytics and its pivotal role in shaping the future of business intelligence through illustrative case studies.

Keywords: Big data, Analytics, Apache Hadoop, Apache Spark

Transformative Trends: The Impact of Artificial Intelligence (AI) On Modern Education

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Abstract: The amalgamation of Artificial Intelligence (AI) with modern education is heralding transformative trends that are reshaping the landscape of learning and teaching. This paper investigates the profound impact of AI on education, examining its influence on pedagogical practices, learning methodologies, and administrative processes. From customized learning experiences to intelligent analytics systems, AI is revolutionizing the way knowledge is imparted, acquired, and managed in educational settings. By delving into emerging trends such as adaptive learning algorithms, virtual learning environments, and AI-driven assessments, this paper illuminates the innovative potential of AI to enhance educational outcomes and foster equitable access to quality education. Furthermore, it addresses the ethical contemplations and challenges that accompany the incorporation of AI in education, emphasizing the importance of responsible AI deployment and equitable access to AI-powered educational resources. Through an exploration of transformative trends, this paper seeks to provide insights into binding the full prospective of AI to generate more effective, inclusive, and future-ready educational ecosystems.

Keywords: Artificial Intelligence, Technology, Education, Learning, Growth

Efficient Image Preprocessing Pipeline for Accurate Text Extraction using OCR and Pattern Matching

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Abstract: This research paper proposes an integrated approach to enhance image preprocessing, text extraction, and metadata organization for improved retrieval and utilization of image content. It employs advanced algorithms and OpenCV for efficient image preprocessing, leading to enhanced clarity and extractability of textual and structural information. The focus lies in developing robust techniques for accurate recognition and management of image metadata, facilitating tasks such as image search and content analysis. Detailed examination of methodologies and system architecture enables seamless extraction and organization of various metadata facets, contributing to the advancement of a sophisticated framework for supporting diverse applications in fields such as image search and archival systems.

Keywords: Image preprocessing, Text extraction, Meta data organization, Optical character recognition (OCR), Pattern matching, OpenCV integration

Hate Speech Detection using Machine Learning: An Ensemble Technique

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Abstract: Hate speech and offensive words are wrong because they can cause harm and offense to individuals or groups of people. Hate speech is particularly harmful because it can incite violence and prejudicial action against or by a particular individual or group. This paper addresses the critical need for hate speech detection in online platforms due to its impact on social cohesion and individual well-being. It presents an ensemble model for hate speech detection model using three pre-trained machine learning techniques, including (SVM, Naive Bayes, Decision Trees). A novel hate speech detection model tailored to online discourse nuances is introduced, combining feature engineering with machine learning mechanisms. Experiments on benchmark hate speech datasets evaluate model performance using metrics like accuracy 89.534%. Results highlight superior performance of our model over other machine learning architectures. The research contributes insights for developing robust hate speech detection systems to foster safer online environments and promote inclusive discourse.

Keywords: Hate Speech, Machine Learning, Random Forest (RF), Decision Trees (DT), Logistic Regression (LR) Exploratory Data Analysis (EDA), Support Vector Machine (SVM)

Decoding Emotions: LSTM-Based Sentiment Analysis for Movie Reviews and YouTube Comments

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Abstract: Sentiment analysis helps computers understand how people feel about something by examining the words and expressions they use in their writing or speech. This concept helps to gain insights into public opinion and sentiment on different topics, especially in real world applications such as customer feedback analysis, social media monitoring and product reviews. Nowadays, there are numerous social media platforms exist, and YouTube is one among them. YouTube has become a primary platform for releasing movie trailers, songs and movies too. The audience, viewers express their sentiments in the comment section. To assess the sentiments with the help of the user's comments, this paper performs sentiment analysis. It investigates Long Short-Term Memory (LSTM) model performance on two different datasets, IMDB Movies dataset and YouTube video comments dataset given on GitHub, with the objective of examine the effectiveness of a single model on two different but related datasets. The model is giving testing accuracy of 88% and 89% on respective datasets which is competitive with other approaches.

Keywords: Sentiment Analysis, Deep Learning (DL), Convolution Neural Network (CNN), Long short-term memory (LSTM), Classification

Unveiling the Mysteries of Vedic Mathematics: A Comprehensive Study

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Abstract: Vedic Mathematics, an ancient Indian system of mathematics, offers a unique and efficient approach to solving mathematical problems. This paper explores the principles of Vedic Mathematics and its relevance and importance in modern daily life. It discusses how Vedic Mathematics can enhance mental math skills, improve problem-solving abilities, and streamline calculations in various aspects of daily life, including education, finance, and professional endeavors. Through a review of literature and practical examples, this paper demonstrates the practicality and effectiveness of Vedic Mathematics in simplifying complex computations and fostering an in-depth understanding of topics pertaining to mathematics.

Keywords: Vedic Mathematics, Comparative Analysis

Bio-Inspired Animal Mating Features: A Study in Evolutionary Adaptations

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Abstract: A bio-inspired algorithm is a computational method or optimization technique that draws inspiration from principles and mechanisms observed in biological systems or natural processes. These algorithms represent the efficiency and adaptability and different common features i.e. Intelligence, Mating, Learning, Adaptation, Territorial Behavior, Adaptive Communication etc. Found in living organisms to solve complex problems in various domains. These algorithms are used to solve difficult issues across a range in different regions by imitating the effectiveness and flexibility of living things. These algorithms provide a novel approach to problems in fields including optimization, machine learning, robotics, and data analysis by making use of the self-organization, adaptation, and parallelism seen in biological systems. Genetic algorithms, neural networks, ant colony optimization, particle swarm optimization, and other algorithms that take their cues from the ways in which live thing's function are examples of bio-inspired algorithms. The paper is based on the study of different animals or birds who is having common mating feature i.e. peacock algorithm, Emperor penguin, Barnacle, Honey Bee, Bird algorithm. In this paper the study of mating features of animal's based on bio inspired algorithms.

Keywords: Mating features, bio inspired algorithm, Emperor Penguin algorithm, butterfly algorithm, peacock algorithm

Fuzzy Logic-Based Analysis of Student Behavior Patterns in Educational Environments

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Abstract: Students from various backgrounds face multiple challenges in pursuing higher education, so students need proper attention to perform better. The student's performance depends on several factors: background, knowledge level, language, culture, career, social life, family Pressure, sports activity, Behavior, eating Behavior, Social Behavior, and other demographic parameters. The constraints in these various areas are students' poor and good performance. This work emphasizes the target reason for under performance or better performance of the students. We use a questionnaire survey form that constrains questionnaires, and evaluation precisely determines the cause and generates AI-based solutions to counsel the students so that their performance can be improved. Fuzzy logic is applied in this work to analyze student behavior patterns in educational contexts. The inclusion of uncertainty and ambiguity into a flexible and understandable framework for describing the intricacies inherent in human behavior is provided by fuzzy logic.

Keywords: Fuzzy Inference System, FLC (Fuzzy logic controller), Behavior Analysis

Deep Learning-based Multi-Modal Surveillance System for Camera Coverage, Accident Detection, and Fight Detection using CNN Algorithm

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Abstract: In response to the escalating crime rates amidst the ubiquitous presence of CCTV cameras worldwide, governments are turning to advanced technologies to bolster their surveillance capabilities. One promising avenue is the utilization of deep learning algorithms to develop an intelligent crime detection system. The objective of this initiative is to autonomously identify criminal activities using real-time photos and videos captured by surveillance cameras, thereby eliminating the need for constant human monitoring and expediting the intervention process. Enter the Crime Detection system, which leverages deep learning techniques to analyze visual data and flag potential criminal behavior. Upon detecting suspicious activities, such as individuals brandishing weapons like guns or knives, the system promptly alerts human supervisors or local law enforcement authorities. This proactive approach enables swift response to unfolding incidents, enhancing public safety.

Keywords: Deep Learning, CNN Algorithms, Crime Detection System

Leaf Disease Detection Using Deep Learning

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Abstract. The agriculture industry has witnessed a tremendous increase in the incorporation of sophisticated technology, particularly deep learning, to address challenges such as crop diseases affecting yield and quality. Automated disease detection through deep learning offers promising solutions to enhance crop management practices. This research focuses on evaluating the efficiency and accuracy of developed deep learning models beforehand, such as VGG19, DenseNet201, DenseNet121, ResNet50, and AlexNet, in detecting 15 different classes of diseases in pepper bell, tomato, and potato crops. By conducting comparative analyses of these models using the PlantVillage dataset, we aim to identify their strengths and weaknesses for practical deployment in agricultural settings. The approach makes use of convolutional neural networks (CNNs) for feature extraction and categorization. Model performance is evaluated using a variety of measures, including precision, recall, F1 score, and classification accuracy. Experiments are carried out on a computer equipped with a GPU, using Python and frameworks like Keras and TensorFlow.

The PlantVillage dataset consists of 15 disease classes, enabling comprehensive training and evaluation of the models. Through rigorous experimentation and analysis, this research contributes valuable insights to the development of robust tools for agricultural disease management, thereby enhancing resilience and productivity in agricultural systems.

Keywords: Leaf disease detection, pre-trained networks, convolution neural networks, deep learning.

Obesity Classification and Prognosis Using Machine Learning

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Abstract - Community advocacy is now vital to health-related solutions problems that can be solved by medical research using new technologies. Obesity is becoming a global health concern as it becomes a threat to the lifesaving future. It is a common global health issues and integrated with many diseases, risks and death. Early, the prognosis of this disease will help both doctors and patients to act and minimize the life threats, if not completely eradicate root cause or work to prevent further worsening of disease symptoms. Experiencing, the patient's medical history is the most time-consuming process of identifying the disease manually and this involves error-prone analysis and costs. Therefore, there is a need scientifically develop a prognostic model of the occurrence of the disease or its existence with the help of an automated machinery as it is becoming the need of the day. This paper has implemented the automated computational methods on a publicly available clinical data set to predict obesity status using different machine learning algorithms as Gboost, Random Forest, Decision Tree, K-nearest neighbour, and Support Vector Machine. By using these algorithms it classify the obesity level of patient and the complexity of the diseases that varies for the models amongst proposed approaches are 94% to 99%, with a precision value of 95 % to 98 %, sensitivity from 96 % to 99 %. The performance of the model and computational result is very promising as the Gboost classifier achieves the highest accuracy of 99 percent for classification and diagnosis which is always support for both doctors and patient.

Keywords: Obesity; Machine learning; Gboost; Random Forest; Decision Tree; Support Vector Machine

Average of Objectives Method to Solve MOTP

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Abstract. For a businessperson, transportation is a fairly regular issue. Every businessperson wants to cut transportation costs, time, distance, etc. There are various approaches for solving transportation problems with a single goal, however, transportation problems are not usually solved with a single goal. A typical assignment is to solve a transportation problem with many objectives. In this study, we investigated an innovative strategy for solving multi-criteria TP called the Average of Objectives Method for Solving Multi-Objective TP. We tackled the problem of transportation (TP) with four goals. We calculated the average of the objectives and applied our technique. A procedure was also employed to find out the pareto optimum solution. The present method produces superior objective measures over alternate techniques. To illustrate the idea, two numerical examples are given, as well as a comparison to several current methods.

Keywords: Multi-objective, Optimization, Transportation, Average, Pareto optimality.

Comparative Study of Supervised Machine Learning Techniques: A Review

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Abstract: Mining means to predicate the useful information from the usage amount of a data set. Machine learning provides kinds of algorithms (SVM KNN, Random Forest, Naïve Forest) that effectively mine the data. In this paper, we will learn about Supervised learning and its categories of algorithms. And, we will compare the algorithm and find out how an algorithm can give the best performance reviewed by published research papers.

Keywords: SVM, Naive Bayes, Machine learning, Classification, Random Forest.

A Smart Protective Headgear for a Rider

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Abstract: Smart protected gears have revolutionized the world of riding by incorporating cutting-edge technology to increase rider safety. The implementation of these helmets not only enhances the safety of the rider but also send alert notification to family members. In this paper we have proposed a smart helmet are equipped with sensors that not only detect whether the rider has worn the helmet properly, but also detect alcohol when rider inhale or exhale and communicate with the bike to prevent it from starting if necessary. Additionally, a piezoelectric sensor that detects falls and sends an alert to the rider's loved ones or emergency services. Furthermore, proposed smart protected gears utilize RF communication to send encoded signals to the circuit and take appropriate action according to the data received. With these features, smart protected gears act as a protective headgear for riders and drastically reduce the likelihood of head injuries in case of an accident. We have also proposed a website dashboard for riders, which contains rider's basic details to rider's important vehicle documents and sensors data like in how many accident rider's got, how much rider travelled and how much cashback he got based on kilometres he travelled.

Keywords: GSM Module, Force Sensing Sensor, Alcohol Detection, RF Communication, Piezoelectric Sensor

Exploring Consumer Behavior and Evolving Marketing Trends in Robo-Advisor Research: An In-depth Bibliometric Study for Future Strategic Insights

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Abstract: This chapter presents a thorough examination titled "Exploring Consumer Behavior and Evolving Marketing Trends in Robo-Advisor Research: An In-depth Bibliometric Study for Future Strategic Insights". Employing bibliometric methods, the study scrutinizes the scholarly landscape surrounding Robo-advisors' integration in Consumer Behavior and Evolving Marketing. Through meticulous quantitative assessment, critical trends, influential authors, and emerging research themes within Robo-advisory systems are identified. The analysis encompasses a comprehensive review of academic publications, citation patterns, and collaborative networks, offering insights into knowledge evolution and idea interconnectedness. By mapping the field's intellectual structure, the study enhances our understanding of impactful contributions, guiding future research directions. It emphasizes identifying seminal works, evolving research frontiers, and potential literature gaps. Additionally, the abstract underscores the practical implications of bibliometric analysis for academics, researchers, and industry practitioners, aiding in navigating the vast landscape of Robo-advisors in Consumer Behavior. Through its systematic approach and comprehensive insights, the chapter advances scholarly discourse and informs research trajectories in this evolving domain, fostering knowledge expansion and innovation in Robo-advisor research.

Keywords: Robo-advisors, Consumer engagement, Bibliometrics, Technology, Marketing Trends

Sentimental Analysis using Natural Language Processing

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Abstract: Sentiment analysis, a subfield of Natural Language Processing (NLP) plays a crucial role in extracting subjective information and sentiments from textual data. With the exponential growth of user-generated content on social media, online reviews, and other platforms, the need to automatically analyze and understand sentiment has become increasingly important. This research paper presents a comprehensive study on sentiment analysis using NLP techniques. The primary objective of this study is to explore the effectiveness of different methods for sentiment analysis and to identify the strengths and limitations of each approach.

Furthermore, emerging trends and future research directions in sentiment analysis with NLP are identified, pointing towards areas of improvement and opportunities for further investigation.

Keywords: Natural Language Processing, Social Media Analysis, Sentiment analysis, Customer feedback analysis, online reviews.

PulseVisioGuard : Touchless Blood Pressure and Heart Rate Estimation

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ABSTARCT: An individual's vital signs may be gleaned from their heart rate (HR), a key physiological metric. By using a consumer-grade camera to record movies of faces, our novel method avoids the need for bulky sensors. The acquired data is checked against ground truth BP and HR readings taken from the OMRON HBP1300 BP monitor, which has been authorised for clinical use. The metrics used for evaluation, such as the standard deviation of errors, mean absolute error, and normalised mean square error, follow the exacting guidelines laid forth by the Association for the Advancement of Medical Instrumentation. In addition, the two-tailed dependent sample t-test confirms that our method's predicted BP and HR are not significantly different from the OMRON values. As we move away from hypertension and towards a more generalised picture of health, heart rate (HR) becomes one of the most important physiological indicators. In our hands-free system, a camera serves as the principal instrument for a real-time application. The basic idea is to use the ever-changing process of blood circulation to detect changes in face skin colour and use that information to calculate heart rate. One area where this noninvasive device really shines is in tracking the vital signs of drivers. This technique allows for continuous and real-time evaluation by using variations in face skin colour as a surrogate for heart rate fluctuations. Its potential uses in improving driver safety include the early identification of irregular heart rate patterns that may be signs of stress, exhaustion, or other medical issues.

Keyword: Plusrate, Heart-rate, OMRON

Anonymizing Data to Avoid Privacy Breach

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Abstract: Health care providers are working day and night to ensure good health of all. However, in this endeavor a major privacy breaches also have occurred due to availability of data in public mode or due to open access of data or due to some or the other reasons. Healthcare departments are publishing personal details of susceptible persons over web. In this work, one such dataset has been taken and anonymization techniques have been applied to it for reducing the privacy breach.

Keywords: Health Care, Data Privacy, Data Analytics

Detection and Recognition of Handheld Armaments Based on Video Surveillance using Deep Learning Technique

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Abstract: This research tackles a crucial component of security in the modern world by introducing a revolutionary weapon detection method based on YOLOv8. The surveillance footage that can either be recorded for live viewing while the activity is happening or replayed after it has been captured and tested on the YOLOv8 model. Every aspect of life is impacted by the current trend toward "automation," and video analytic is no exception. To guarantee system reliability and lower the possibility of needless alarms, a strong emphasis on high accuracy with few false positives is focused. It is significant that the focus on helping to create intelligent security solutions is in line with the continuous endeavour to utilize cutting-edge technologies for the benefit of society. Encouraging safer communities is a common objective, and this research helps to meet the pressing demand for reliable threat detection systems in the dynamic security environment of today. Emphasizing the system's adaptability to different security needs is a way to highlight its versatility in deployment in a variety of environments, including stadiums, schools, airports, and urban centers. Preventing possible security breaches and guaranteeing people's safety in public areas require proactive security measures.

Keywords: Deep Learning, YOLO, Automation

A Novel Machine Learning Hybrid Model for Heart Disease Risk Assessment

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Abstract: In over a hundred nations, millions of people lose their lives to heart disease (HD) every year. According to a report by the World Health Organization (WHO), HD has emerged as one of the leading causes of death worldwide. Angina pectoris, congestive heart failure, cardiomyopathy, congenital heart disease, arrhythmias, myocarditis, heart attacks, and heart cancer are just a few of the illnesses that can cause heart attacks. HD presents a significant global health challenge, prompting extensive research into early detection and preventive measures. This study introduces a predictive model leveraging advanced machine learning (ML) techniques to assess HD risk. The model development process encompasses several phases, including data preprocessing, feature selection, and model training employing state-of-the-art algorithms like logistic regression, decision trees, random forests, artificial neural networks, naïve Bayes, KNN, and support vector machines. Additionally, feature importance analysis and model evaluation techniques are utilized to refine interpretability and performance. The results exhibit the model's efficacy in accurately predicting HD risk, offering valuable insights for early detection and personalized healthcare strategies. Overall, this research emphasizes the potential of data-driven methodologies in constructing predictive models for HD, presenting a promising avenue for enhancing patient outcomes and alleviating the burden on global healthcare systems.

Keywords: Heart Disease Prediction, Machine Learning, SVM, ANN, Logistic Regression

A Transfer Learning Based Model for Brain Tumor Detection Using Magnetic Resonance Imaging

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Abstract: Rapid and uncontrolled proliferation of cells is the cause of brain tumors. If treatment is not carried out early, death can occur. A major challenge in detecting a brain tumor is that it originates from variations in size, shape, and location. Since tumor cells are diverse, it might be difficult for radiologists to classify brain tumors, which are malignant diseases. The overall survival of patients, treatment planning, and risk factor identification depend on robust and accurate tumor classification and prediction. In the medical field, deep learning (DL) and machine learning (ML) are often employed to diagnose illnesses. Various tools have been developed that are used to diagnose different diseases such as heart disease, lung cancer, and many more. In this study, a DL-based transfer learning technique has been used to build a model that can easily identify whether a patient is suffering from a brain tumor or not. Brain tumors have been categorized into four types of categories based on the characteristics of the tumor. Patients who are suffering from the first and second categories of tumors can be saved by treatments that include surgery, radiation therapy, and chemotherapy. The third and fourth categories of tumors are more dangerous because these categories of tumors spread very fast, so if it is diagnosed early stage then the patient can be saved or increase the patients life span. Glioma, Meningioma, and Pituitary are a dangerous form of tumors, and the survival rate of patients who are suffering from these is very low. The developed system can predict that a patient is suffering from a brain tumor or not using MRI, and also predict the type of tumor such as Glioma, Meningioma, and Pituitary.

Keywords: MRI, InceptionV3, ResNet101V2, VGG16, VGG19.

An Analytical Study On Safety Measures Concerns In Cloud Computing Technology

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Abstract: Using a network of remote servers that are accessible via the internet to store, manage, and process data on demand even as charging based on usage is recognized as cloud computing knowledge. Instead of local servers or PCs, it offers access to a pool of shared resources. As it doesn't truly obtain the products, it keeps association's time and funds on oversight. Distributed computing is a entirely web-based innovation in which customer data is stored and managed on the server farms of cloud providers such as Google, Amazon, Microsoft, and many others. The area of cloud technology is expanding and receiving praise internationally. A number of security flaws are emerging when using cloud-based administration services. This research paper offers a summary of distributed computing idea and security concerns that occur in the context of cloud computing technology and distributed computing. This paper also offers most excellent apply to experts' helpful and hard work wishing to employ cloud administration to improved their main concern presently environment and enhance it's utilize. It as well as systematically studies the key research and concerns that here in cloud computing. Our assessment mainly spotlight is on accepting the concept of multi-occupancy security issues and existing literature.

Keywords: Cloud Computing, Cloud Models, Cloud security and Distributed Computing

Netflix Stock Market Price Prediction

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Abstract: The Netflix Stock Price Prediction System aims to leverage advanced ML and data analytics techniques to predict the future stock prices of Netflix, Inc. (NASDAQ: NFLX). Netflix's stock performance is influenced by a myriad of factors, including subscriber growth, content strategy, competitive landscape, and overall market conditions. This predictive system employs a multifaceted approach, integrating historical stock data, financial indicators, and macroeconomic variables to enhance the accuracy of predictions. The system comprises several key components: Data Collection and Preprocessing, Feature Engineering, Machine Learning Models, Validation & Optimization and Real-time Monitoring & Adaptation. The Netflix Stock Price Prediction System represents a sophisticated integration of machine learning, data analytics, and financial expertise. Its predictive capabilities aim to assist investors, financial analysts, and other stakeholders in making informed decisions in the dynamic and competitive landscape of the stock market. While acknowledging the inherent uncertainties in financial markets, the system provides a valuable tool for risk management and strategic planning related to Netflix stock investments.

Keywords: Netflix stock price prediction, Netflix, ML, stock price, data analytics, stock investments

Cyberbullying Detection Using Machine Learning

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Abstract: The use of social media has grown exponentially through the years with the growth of the internet and has ended up being the most influential networking platform within the twenty-first century. However, the enhancement of social connectivity often creates bad impacts on society that make contributions to more than one bad phenomena such as online abuse, harassment, cyberbullying, cybercrime and on-line trolling. Cyberbullying often leads to critical mental and physical distress, specially for women and children, and even every now and then forces them to try suicide. On-line harassment attracts interest due to its sturdy negative social impact. Many incidents have currently taken place worldwide because of on-line harassment, which includes sharing personal chats, rumours, and sexual comments. Consequently, the identity of bullying textual content or message on social media has received a growing quantity of interest among researchers.[1] The cause of this study is to design and expand an effective method to discover on-line abusive and bullying messages by way of merging natural language processing and deep learning. Two distinct features, namely Bag-of words (BoW) and time period frequency-inverse text frequency (TFIDF), are used to examine the accuracy degree of 4 awesome machine learning algorithms.

Keywords: Support vector, Deep learning, Machine learning algorithms, Social networking, Merging, Media Feature extraction, Cyberbullying Detection, Text Classification.

Empowering Edge Computing: The Critical Role of Blockchain in Cybersecurity Defense

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Abstract: In modern computing, edge computing has become a key concept that allows data processing and analysis to occur closer to the point of generation. Edge computing systems are scattered and decentralized, which presents substantial problems for cyber security defense and calls for creative ways to protect sensitive data and maintain operational integrity. Blockchain's promise to improve cyber security in edge computing ecosystems has attracted a lot of attention. This study examines how blockchain technology can be used to strengthen cyber security defenses in edge computing environments. Edge devices may safely authenticate and connect with one another, build trust, and confirm the integrity of transactions and data exchanges by utilizing blockchain's immutable ledger and consensus processes. Additionally, blockchain makes it easier to build audit trails, access control, and decentralized identity management, which reduces the risk of data breaches and unauthorized access. Smart agreements also make it possible to automate security regulations and enforcement procedures, which improves the effectiveness and resilience of edge cyber security protection. This study emphasizes the complementary link between blockchain and edge computing in strengthening cyber security defenses, addressing issues, and realizing the full potential of decentralized computing environments through a thorough analysis of the available literature and case studies.

Keywords: Blockchain, Edge Computing, Cyber Security

The Evolution of Industry 5.0: Harnessing Artificial Intelligence and Communication Technology

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Abstract: Industry 5.0, which integrates cutting-edge technologies like artificial intelligence (AI) and communication technology (CT), represents a big paradigm shift in manufacturing and industrial processes. This study explores the deep implications of AI and CT on the development of Industry 5.0, with a focus on how these technologies are revolutionizing industrial productivity, efficiency, and teamwork. AI is revolutionizing Industry 5.0 decision-making processes with its capacity to analyze massive volumes of data and extract actionable insights. In order to streamline operations and cut downtime, machine learning algorithms improve quality control procedures, forecast maintenance requirements, and optimize production workflows. AI-driven robotics and automation technologies also supplement human labor, freeing up workers to concentrate on creative and strategic work.

Simultaneously, CT is essential for enabling smooth communication and teamwork in dispersed production settings. Real-time monitoring and control of production processes are made possible by the combination of cloud computing, modern networking infrastructures, and Internet of Things (IoT) devices. Industry 5.0's synergistic interaction of CT and AI breaks down conventional barriers to allow for the development of agile supply chains and smart manufacturing. In this study, examines previous studies to clarify the complex effects of AI and CT in Industry 5.0.

Keywords: AI, Communication Technology, Decicion Making

Fire Detection under Suspicious Activity Recognition in Video Surveillance using Deep Learning Algorithm

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Abstract: This study presents a deep learning model-based real-time fire detection system using YOLOv8 technology. The system uses a combination of deep learning, machine learning, and computer vision to detect fires in real-time video surveillance. The research focuses on the complex techniques used in deployment, validation, and data preparation. The system mimics the human fire detection process, handling video data generated by regular cameras. The results show the system is effective in spotting flames or fire, reducing false alarms and security threats. The system also improves assessments, reduces security threats, and continuously learns from previous incidents to adapt to new situations. This approach, which incorporates YOLOv8 which is a significant advancement in fire protection measures, improving public safety and safeguarding lives and property. When a fire is detected in the frame, an alarm is sent along with a confidence score and a time instance.

Keywords: Fire recognition, Fire object detection, YOLOv8, Roboflow, Ultralytics, Deep learning, cls loss, box loss, dfl loss, mAP

SMART PARKING AND GREEN CHARGING

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ABSTRACT: The rapid urbanization of cities worldwide has led to significant challenges, particularly in traffic congestion and environmental pollution. Traditional transportation systems, heavily reliant on fossil fuels, exacerbate these issues, leading to deteriorating air quality and increased greenhouse gas emissions. The urgency to find sustainable solutions for urban mobility is paramount. This research paper presents an innovative approach to addressing these challenges through a smart parking and green charging system. The proposed system integrates renewable energy sources and advanced Internet of Things (IoT) technologies to optimize urban mobility, enhance efficiency, and reduce environmental impact. The smart parking system utilizes a combination of IR sensors, RFID technology, and IoT devices like Arduino and NodeMCU to streamline parking management. IR sensors detect vehicle presence in parking slots, while RFID tags and readers facilitate secure access control, ensuring only authorized vehicles can park. An LED display provides real-time information to users about parking slot availability, enhancing user experience and reducing the time spent searching for parking. Central to this system is the green charging infrastructure for electric vehicles (EVs). Solar panels generate renewable energy, which is stored in a 12-volt battery system. This stored energy powers the entire smart parking system and is used for wireless EV charging through resonant coils. The integration of MOSFETs and IC4047 timers allows for the generation of precise pulse-width modulation (PWM) signals, which drive the transmitter coils. These coils create an alternating magnetic field that induces a current in the receiver coils embedded in the EVs, enabling efficient wireless charging through electromagnetic induction. The control circuitry, managed by microcontrollers such as Arduino, regulates the operation of MOSFETs and monitors the charging process. Feedback from sensors ensures optimal charging efficiency and safe operation, making the system both user-friendly and reliable. Additionally, the NodeMCU ESP8266 module facilitates remote monitoring and control, allowing

users to manage parking and charging through a mobile application seamlessly. This research highlights the potential of integrating renewable energy with advanced IoT technologies to create a holistic solution for urban transportation challenges. The smart parking and green charging system not only addresses the immediate issues of traffic congestion and pollution but also promotes the adoption of sustainable transportation methods. By improving air quality, reducing greenhouse gas emissions, and enhancing the overall user experience, this system represents a significant step towards creating smarter, greener cities. This paper underscores the need for continued innovation in this field and suggests avenues for further research and development to refine and expand these technologies.

KEYWORDS: IoT, Electric Vehicles (EV), Smart Parking, Renewable Energy Source, Wireless Charging, Magnetic Induction

A lightweight Machine Learning Based Intrusion Detection System for Edge Computing

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ABSTRACT: Edge computing refers to a decentralised computing environment where data is processed in close proximity to the end user, resulting in decreased latency and reduced bandwidth use. Privacy and security concerns persist in spite of the wide range of uses for edge computing. Edge computing poses a heightened vulnerability to network security breaches due to the transmission of data over several networks and its processing on various devices. There are several safe solutions available for this, including a firewall, robust authentication techniques, and an intrusion detection system (IDS). IDS are employed to identify zero-day attacks or detect previously undisclosed cyber-attacks in edge networks. This paper presents an IDS that utilises ML techniques and is trained on the UNSW-NB 15 dataset. The IDS model being suggested utilises a Filter-Based feature selection method and classification algorithm to accurately detect and classify harmful network events. The feature selection process is conducted using the relevance score approach, as well as the Decision Tree, Extra Tree, Random Forest, and Extended Gradient Boosting classification algorithms. The results indicate that the classification model, based on a smaller feature set, achieves improved accuracy by having a higher Detection rate and a lower False Positive Rate. The efficacy of the suggested IDS paradigm for edge computing is demonstrated, since it ensures a secure network environment for users.

KEYWORDS: Edge Computing, Network Security, Feature Selection, ML

SmartSpray: Autonomous Pesticide Spraying Drone for Precision Farming

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Abstract: Apart from military and commercial applications of drones. Unmanned aerial vehicles, or drones, are being used more and more often across a wide range of industries. To gain the greatest benefits in the future, developed nations like the USA have been spending more and more in their drone technology. Since the use of UAVs will usher in the next great revolution, emerging nations like India have begun to explore this sector's potential. This paper focuses on applications of drone in the field of agriculture. We know and it has been evident that India is an Agriculture dependent country because almost 50% of its national income comes from agriculture and it is the biggest source of employment to the people of India directly or indirectly. Agriculture has been the main focus of the Government of India also since the Independence as during the early 50s when the five-year plan was being implemented the main focus in the first five years plan was put on agriculture only and India produced record number of crops that led to the growth of the country and showed us the importance of agriculture in the development of the nation. But, with the agriculture to be the backbone of the country's economy, there comes many challenges that we have to face to keep our crops protected from many environmental problems which are now being tackled with the use of various technology. The problem of insects and pests is also one of the many problems that can be solved with the spreading of insecticides and pesticides with the help of drone that can perform the task with the least amount of man force and time. Drones can aid the spreading of these insecticides in a more convenient and efficient manner.

E-CLINIC : IOT BASED VIRTUAL OPD PLATFORM FOR REMOTE CONSULTATION

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ABSTRACT: This research introduces an innovative concept for a smart telemedicine system allowing patients to consult with the doctors from a remote place. The initiative offers an Internet of Things (IoT)-based real time online OPD and consultation system. Online OPD system provide the facility of screening of patient by monitoring vital signs such as heart rate, oxygen saturation, ECG, skin temperature, eyes, tongue as well as audio and video system for online consultation. Doctors can recommend/prescribed medicine, pathological test and consultation through cloud based data sheet .Vital sign details are recorded in e- datasheet for future purposes. Developed Online OPD system are tested and verified in presence of senior doctor on 15 patients. The results are as expected as per clinical needs.

Keywords: Online OPD, e-Datasheet, telemedicine, Online prescription.

GESTURE CONTROLLED COMPUTER SYSTEM

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Abstract: Gesture Controlled Computer System is a utility software to cater to the daily needs of various working professionals including teachers, educators etc. by providing a comprehensive solution of the basic problems. The software comes with various utilities like touch less keyboard, mouse and whiteboard, all just controlled with the help of our hand gestures. Minimization of hardware has been one major focus of this software thus minimizing overhead cost associated with the general computer system. The GCCS software is easy to install, making it extremely user friendly and sound for meeting daily needs.

WEAPON DETECTION SYSTEM USING DEEP LEARNING ALGORITHM

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ABSTRACT: The escalating threats posed by firearms necessitate advanced weapon detection systems for enhanced security. Our research introduces a novel weapon detection system based on YOLOv8, capable of real-time threat identification. By leveraging deep learning, our system provides high accuracy with minimal false positives, augmenting surveillance measures in diverse environments. It can be deployed in airports, schools, stadiums, and urban centers, offering proactive security measures to protect lives and prevent potential security breaches. This research contributes to the development of intelligent security solutions, fostering safer communities and addressing the urgent need for robust threat detection systems.

KEYWORDS: FPN, CNN, YOLO, mAP

SIGN LANGUAGE DETECTION USING MACHINE LEARNING IN PYTHON

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ABSTRACT: This study explores Sign Language Detection through Machine Learning in Python. Leveraging computer vision and deep learning techniques, the model interprets sign gestures, offering a bridge for communication with the hearing-impaired. The research enhances accessibility and inclusivity by providing an efficient and accurate means of sign language interpretation.

KEYWORDS: KeyPoints, LSTM^[1], MediaPipe, Tensorflow, OpenCV

A Voice Assisted Traffic Sign Board Recognition System: A Survey

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Abstract: The purpose of this research study is to investigate the use of convolutional neural networks (CNN) in the creation of a voice-activated traffic sign board recognition system. The system's voice instructions and ability to recognize traffic signs are intended to help drivers. Images taken by an onboard camera are used to properly categorize traffic signs using the CNN model. A voice assistant is also integrated into the system to provide the driver feedback in real time. A number of studies are used to assess the system's performance, and the findings show that the suggested strategy has the potential to improve road safety. Keywords- TSR (Traffic Sign Recognition), Driver Assistance Systems (DAS), Automated Driving, Convolutional Neural Networks (CNN), Pre-Processing Techniques, Image Classification

DINE SCAN: AUTOMATED ORDER PLACING SOFTWARE FOR RESTAURANTS USING QR CODE, ORDER MANAGEMENT, AND BILLING MANAGEMENT

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ABSTRACT: Our research introduces an automated order placing software for restaurants, utilizing QR code technology for seamless ordering. Patrons scan QR codes at tables to access a user-friendly menu on their smartphones, facilitating easy ordering and secure online payments. The system integrates order placement, billing, and real-time insights for restaurant owners through a web application. According to a survey conducted by the National Restaurant Association, 79% of restaurant operators agree that technology can help increase sales. Establishments with technology-driven solutions reported an average increase in order accuracy by 23% and a reduction in order processing time by 17%. Tech-enabled restaurants experienced an average of 25% growth in revenue. These statistical insights underscore the transformative impact of technological innovation in the restaurant industry. Powered by modern technologies like HTML5, CSS, JavaScript, PHP, SQL Server, and Azure cloud it ensures efficient communication and data management. Python programming language and flask framework are used for data analytics purpose, python libraries like NumPy, matplotlib, seaborn, pandas are used. This solution optimizes the dining experience for customers while providing restaurateurs with comprehensive business management tools, Outstanding results are expected to be achieved like reduction in customer wait times by 25%, revenue increase by 30% and operational costs reduces by 20% through automation. Concluding it to be a scalable, efficient and streamlines the restaurant operations in a very technologically justified manner.

KEYWORDS: Automated Ordering, QR Code Integration, Restaurant Management, SMS APIs, Real-time Analytics, Order Analytics.

SYSTEM FOR MARKING ATTENDANCE THROUGH FACIAL RECOGNITION UTILIZING OPENCV

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ABSTRACT: This paper presents a Facial Recognition Attendance System using OpenCV, offering precise results and thorough performance evaluation. Traditional attendance systems are prone to inaccuracies and inefficiencies, necessitating automated solutions. Leveraging facial recognition technology, our system integrates detection, extraction, recognition, and logging functionalities. Through meticulous implementation and evaluation, we validate its effectiveness across various conditions, including diverse lighting and facial expressions. Quantitative metrics such as accuracy, precision, and efficiency exceed 95%, ensuring reliable attendance recording. The system's user-friendly interface enables seamless integration into existing frameworks, catering to educational and organizational needs. Our study highlights scalability, adaptability, and practical utility, surpassing traditional methods. Future research directions include optimizing real-time performance and addressing privacy and security concerns in facial recognition technology deployment.

KEYWORDS: OpenCV, HAAR, Cascade, LBPH

AN EXPLORATION OF DEEP LEARNING FOR MEDICAL IMAGE ANALYSIS

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ABSTRACT: The Methodology of capturing pictures of inner organs for medical reasons, like diagnosing or identifying diseases is called medical imaging. The primary goal of Imaging data analysis in medicine is to enhance the effectiveness of medical research and medicament decisions. Deep learning and Machine learning has revolutionized Clinical image analysis, by delivering exceptional output in works like feature extraction, categorization and differentiation. The development of deep convolutional neural networks and the availability of advanced technological resources are key factors driving this progress. Deep learning methods excel at identifying hidden patterns in images, aiding medical professionals in making accurate diagnoses. These methods have proven to be the most effective for computer-assisted diagnosis, disease classification, organ segmentation, and cancer detection. Numerous deep learning techniques have been described for analyzing medical pictures for diverse diagnostic reasons. In this study, we examine research utilizing the latest advancements in DL techniques for healthcare image processing. We start survey by reviewing convolutional neural network-based medical imaging research projects. Second, we go over widely used pre trained models and generic adversarial networks that help boost the efficiency of convolutional networks. Finally, we collect performance data from Deep learning techniques that objective is detecting COVID-19 and analysis the maturity of children's bones to enable direct evaluation.

KEYWORDS: CNN, GAN, ALEXANET, GOOGLNET

SAFEDRIVE GUARDIAN: A Multi-Model Safety System.

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Abstract: SafeDrive Guardian is a cutting-edge multi-model safety system designed to enhance driver safety through the integration of advanced detection technologies. This research paper explores the various components of SafeDrive Guardian, including drowsiness detection, yawning detection, age detection, and driver distraction detection. By combining these mechanisms, SafeDrive[1,2] Guardian offers comprehensive protection for drivers and passengers on the road. The paper discusses the significance of each detection feature in preventing accidents and minimizing risks associated with driver fatigue, distraction, and age-related impairments. Furthermore, it examines the challenges and limitations faced by SafeDrive Guardian, as well as its real-world applications across different industries. Future developments in SafeDrive Guardian technology are also discussed, highlighting ongoing efforts to improve accuracy, reliability, and compatibility. Overall, SafeDrive Guardian represents a significant advancement in driver safety technology, promising to reduce accident rates and save lives on the road.

KEYWORDS: Drowsiness Detection, Yawning Detection, Age Detection and Driver Distraction Detection.

The Boat: A Smart Garbage Collection & Waste Technique Using IOT

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ABSTRACT: The problem of drinking water insecurity in coastal areas stems from complex hydrogeological structures. Natural disasters and transboundary river problems make the supply of safe water more difficult than in other regions. The potential threat of industrial pollution increases the difficulty and hinders efforts to establish widespread and adequate access to safe and affordable drinking water in these coastal areas. Knowing that access to clean water close to home is a human right to maintain a healthy life demonstrates the urgent need to address water-related diseases and prevent pollution. To adequately address these issues, water parameters such as pH, turbidity, temperature, dissolved oxygen, and salinity must be carefully monitored. Our answer to these needs is an IoT-based water quality measurement system designed for efficiency and sustainability. The core of the solution is an intelligent sensor interface device with the ability to detect water quality parameters and transmit real-time data directly to an online system. Integrating multiple sensors with Arduino provides a comprehensive approach to monitoring water quality indicators. A serial communication link was established between the Arduino and the water TDS to ensure data transfer and display information on an online platform or web interface. To increase user access, each water source has a QR code, allowing individuals to quickly assess the safety of their water with a simple scan. This innovative system not only provides people with information about drinking water quality, but also provides governments with a valuable tool to monitor water quality in specific areas. In addition to home use, this adaptive system can also be used in agricultural and industrial environments. The design, development and implementation of these IoT-based solutions will enable authorities to take proactive measures and implement effective solutions in areas facing water quality issues.

KEYWORDS: Real Time System, IoT, Arduino Nano, pH Sensor, WI-FI Module, Salinity, Dallas Temperature Sensor, Esp Sensor, Water Quality, Humidity Sensor.

ECOMENTOR USING MACHINE LEARNING

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ABSTRACT: EcoMentor represents a groundbreaking initiative at the intersection of environmental science and machine learning, poised to address the pressing challenges posed by environmental degradation. This project encompasses four essential modules: air pollution monitoring, water pollution assessment, weather monitoring, and rainfall prediction. By seamlessly integrating live and historical data, coupled with purpose-built machine learning models leveraging Python libraries, EcoMentor establishes an adaptive system capable of dynamically responding to environmental fluctuations. Going beyond traditional monitoring approaches, EcoMentor signifies a fundamental shift towards sustainable environmental management. By demonstrating the efficacy of technology-driven solutions, it advocates for informed decision-making to foster a healthier and more resilient planet. EcoMentor stands not merely as a project but as a testament to the transformative potential of interdisciplinary collaboration and technological innovation in environmental stewardship.

KEYWORDS: Environmental Science, Machine Learning, Sustainability, Air Pollution, Water Quality, Weather Forecasting, Rainfall Prediction

CONTENT MODERATION ON SOCIAL MEDIA PLATFORM

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ABSTRACT: This research paper introduces a comprehensive methodology for detecting plant leaf diseases employing deep learning techniques in image analysis. The proposed system amalgamates a robust deep learning model for precise disease identification, a well-structured front-end facilitating user interaction, and a scalable back end for efficient data processing. Leveraging the growing availability of image datasets, particularly the Plant Village dataset, a deep convolutional neural network is trained, achieving notable accuracy in recognizing various crop species and their associated diseases. The system not only displays technical viability but also tackles practical challenges in automating plant disease diagnosis. Through experimental evaluation, the system's effectiveness is demonstrated, laying a solid foundation for its potential application in the agricultural domain. These findings significantly contribute to ongoing endeavors aimed at augmenting food production quality and curbing economic losses through early and accurate plant disease detection. The insights derived from this research are distilled from various sources, shedding light on the utilization of deep learning methodology in plant disease classification and the advancement of mobile-based systems for automated diagnosis. This abstract encapsulates the key elements of the research paper, including deep learning utilization, the fusion of front-end and back-end components, and the practical ramifications of the proposed plant leaf disease detection.

KEYWORDS: Content Moderation , Social Media , Online safety, NLP, Deep learning , image and video classification

AI CONTENT MODERATION ANALYSIS

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ABSTRACT: The rising user-generated content on online platforms has necessitated robust content moderation systems to maintain community standards and foster a safe environment online. In this paper, we propose an AI-powered content moderation system designed to effectively identify and filter out inappropriate or harmful content across a variety of digital platforms. Leveraging machine learning algorithms and natural language processing techniques, our system aims to automate the content moderation process, reducing burden on human moderators while improving efficiency and accuracy excessively! Through a combination of keyword detection, image recognition, and nonsensical sentences, our model strives to adapt to evolving online content trends and effectively moderate diverse forms of user-generated content. We present the architecture, implementation, and evaluation of our AI content moderation system, highlighting the potential impact on enhancing online safety and fostering healthier digital communities.

Keywords: Artificial Intelligence, Machine Learning, Deep Learning, Convolution Neural Networks, Image Recognition, Audio Recognition, Video Recognition, Pattern/Text Recognition

Meta Metrics: Web Analytics Prodigy

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ABSTRACT: MetaMetrics is a cutting-edge web application revolutionizing website analytics in today's digital era. Leveraging the robust MERN stack, it empowers users with comprehensive insights to optimize marketing, boost traffic, retain visitors, and enhance SEO strategies. With customizable KPI tracking and real-time data updates, MetaMetrics enables informed decision-making tailored to specific website categories. Its user-friendly dashboard presents complex analytics in an accessible manner, bridging the gap between data and action. The project encompasses essential modules such as user registration, sample and comparison dashboard, payment integration, client documentation, and a robust data analytics dashboard. MetaMetrics caters to diverse industries, offering tailored solutions for e-commerce, healthcare, SaaS platforms, and influencers. By providing actionable insights and seamless integration, MetaMetrics is poised to become an indispensable tool for businesses and individuals seeking to thrive in the competitive online landscape. In summary, MetaMetrics represents a groundbreaking advancement in website analytics, empowering users to unlock the full potential of their digital assets and drive success in the digital age.

KEYWORDS: MetaMetrics, website analytics, MERN stack, comprehensive insights, marketing optimization, traffic boost, visitor retention, SEO strategies, customizable KPI tracking, real-time data updates, user-friendly dashboard, data-driven decisions, digital era, actionable insights, seamless integration, diverse industries, competitive online landscape, digital assets, success.

TRUTHGUARD TECHNOLOGY FOR RECOGNIZING UNAUTHENTIC TRANSFORMED IMAGES AND VIDEOS

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Abstract: This project aims to tackle the challenges posed by deepfakes by proposing an innovative method for detecting them. It involves using the Xception model, which's a powerful convolutional neural network architecture known for its effectiveness in complex image classification tasks. The choice of Xception Net demonstrates our commitment to leveraging deep learning capabilities to distinguish between videos and those generated by AI. Additionally, we have given importance to the user interface of the project by utilizing the Python QT front end library creating a userfriendly platform. The detection process involves analyzing each video frame, in which Xception excels. By scrutinizing each frame, the model can accurately determine whether the video content is authentic or not. The integration of Python QT enhances the user experience making it easy and intuitive to use our detection application. In a society where false information and online dangers can lead to real world impacts this project highlights the significance of progress in managing the hazards linked to the use of artificial media. To sum up combining Xception Net and Python QT presents a remedy.

Keywords: Deep Learning, XceptionNet, Python QT, CNN.

Exploring A Healthcare Monitoring System For Advanced Digital Health By Using IOT

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ABSTRACT: The mix of Internet of Things (IoT) tech has pushed big progress in digital health. This study aims to look at and judge different IoT health monitoring systems in electronic health monitoring, trying to make digital health infrastructure work better, thus improving patient care and well-being with new methods. Starting with a full review of IoT-based digital health systems, this research shows the need for new solutions to fix the problems of old healthcare ways. Next, different IoT health monitoring setups, like wearable devices, smart sensors, and linked healthcare systems, are found and studied for their functions, data collection methods, and connectivity choices. This article looks at several new methods to make sure electronic health monitoring works well. It explores machine learning and deep learning to allow exact data study, timely health monitoring, and early spotting of health problems. The research also looks at edge computing and fog computing methods, which aim to make data processing better, cut down delay, and improve how IoT health monitoring systems perform. The research method includes a full review of past studies, plus case studies and checks of current IoT health monitoring setups. By comparing different IoT health monitoring setups, this study aims to find the best practices, uncover problems, and spot areas to improve. The results of this research are expected to drive new ways for IoT-based digital health monitoring, pushing the wide use of advanced tech in healthcare systems. These findings are expected to guide healthcare providers, researchers, and policymakers in setting up IoT health monitoring systems, improving patient outcomes, and allowing more personal healthcare services.

Keywords: Internet of Things health monitoring, wearable technology, intelligent sensors, machine learning, edge computing, fog computing, data security.

TRAFFIC RULES VIOLATION DETECTION AND CHALLAN GENERATION SYSTEM

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ABSTRACT: The growing number of automobiles in cities can lead to traffic jams and shows that traffic infractions are getting worse these days in India and many other countries. This causes more accidents that could endanger people's lives as well as significant property destruction. Therefore, Traffic violation detection systems are required to address this issue and stop such unfathomable outcomes. The system presented in the research makes use of camera footage to automatically identify traffic rule violations. The proposed system unveils a blend of OpenCV, Convolutional Neural Networks (CNN), You Only Look Once (YOLO), and KD Tree Algorithms. It integrates OpenCV's precision in image processing, CNN's adeptness in feature extraction, YOLO's real-time object detection prowess, and the KD Tree's preciseness in nearest neighbor searches. Together, these elements form the core of an intricate system set to tackle the complex challenges of traffic violation detection and enforcement. Diving deep into the role of each component, we elucidate their symbiotic relationship in optimizing system accuracy, speed, and scalability.

NEXTJS E-COMMERCE WEB APPLICATION WITH BLOCKCHAIN PAYMENT PROCESSING

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Abstract: In today's digital age, the significance of e-commerce websites has surged, especially with the growing demand for online shopping experiences. This research paper delves into the development of an e-commerce website using Next.js, a React framework known for its efficiency in building robust and scalable web applications. The integration of payment processing mechanisms is a crucial aspect of any e-commerce platform, ensuring secure transactions for both buyers and sellers. By leveraging Next.js along with payment processing solutions such as Stripe or PayPal, this paper explores the implementation process, addressing key challenges and considerations. Through thorough analysis and practical examples, this research provides insights into the architecture, functionality, and benefits of Next—Js— based e-commerce websites with seamless payment processing capabilities. Simultaneously, the research acknowledges and dissects the challenges associated with utilizing Next.js. These include issues related to version compatibility, the quality of available documentation, and the dynamic and evolving nature of the framework. In conclusion, the research offers a comprehensive evaluation of the advantages and disadvantages encountered while employing Next.js in conjunction with JavaScript, MongoDB, and React for full-stack development. The thesis serves as a valuable resource for developers seeking to leverage this technology stack, offering a nuanced understanding of the tradeoffs and best practices for better decision-making.

The Effect of Innovation Resistance and Face Recognition Payment System Features on Intention to Use

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Abstract: New technologies brought forth by the fourth industrial revolution, such facial recognition, have greatly improved customer convenience by being implemented in a variety of industries, including customs, attendance, and payment systems. Face recognition payment services have emerged as a result of the financial industry's recent use of this technology. In under five seconds, transactions are completed with this approach, which scans a person's face, analyses important facial traits, and compares the data with recorded information to verify identity. By examining the features of settlement systems and innovation resistance, this research seeks to comprehend the uptake of face recognition payments and any opposition to their application.

Contactless transactions, dependability, security, and convenience are all provided by the facial recognition payment system. Using Smart partial least squares 2.0 structural equations to assess a survey of Chinese consumers, the following outcomes were obtained: User innovation resistance is adversely connected with system convenience, dependability, and security. On the other hand, the system's contactless feature helps reduce users' aversion to innovation.

Traffic Sign Board Recognition And Voice Assisted System: Using Convolutional Neural Network

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Abstract: Traffic sign recognition is necessary for intelligent transportation systems to offer road safety and traffic control. In this paper, we propose a Convolutional Neural Networks (CNN) based traffic sign board recognition system with a voice-assisted interface. The CNN architecture for image classification in the system is trained and evaluated using the German Traffic Sign Benchmarks Dataset. Additionally, a voice-assisted system is put into place to provide vocal input in accordance with the recognized traffic sign. The proposed method exhibits promising results in terms of accurately recognizing and comprehending traffic signs, which might enhance road safety and driver assistance.

Keywords: Traffic sign recognition, Convolutional Neural Networks, Voice assistance, Intelligent transportation systems

A REVIEW ON SENTIMENT AND EMOTION ANALYSIS FROM SOCIAL MEDIA TEXT

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ABSTRACT: Sentiment analysis is an area in the field of Natural Language Processing (NLP), where text, audio or video data is analyzed for recognition of a person's interest and likeliness. Its basic purpose is to obtain the inclination of people towards a lesson, product, a politician, a service. It also helps in identification of positive, negative or neutral feeling of persons. This can be achieved using a dataset and some sentiment and emotion analysis tool. The dataset itself can be of varying nature, like text-based, audio, video or a combination of multiple nature. Sentiment analysis can be used as a customer feedback for a product or service to identify the quality of a product of service. In this paper a survey on various approaches available in the literature for sentiment and emotion analysis has been provided. Such surveys are helpful for businessmen to enhance the quality of their product or service, and hence their business. Nowadays sentiment analysis is widely used in subjective and unstructured dataset also. This paper reviews the approaches for sentiment and emotion analysis over the textual data from social media platforms.

KEYWORDS: Sentiment Analysis, Emotion Analysis, Natural Language Processing, Textual Data Mining, Social-Media, Web Mining

PREDICTION OF LUNG CANCER AND COVID-19

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ABSTRACT: In recent years, there has been a growing trend in the use of deep learning (DL) and Convolutional Neural Network (CNN) algorithms for COVID-19 and lung cancer prediction. These prediction models' main goal is to improve prognosis and early identification, which might lead to better patient outcomes and healthcare management techniques. By analyzing complicated medical imaging data linked to COVID-19 and lung cancer, DL and CNN approaches use sophisticated computer algorithms to offer important insights on the course, severity, and response to therapy of these diseases.

DETECTION OF CHRONIC KIDNEY DISEASE

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Abstract: Chronic Kidney Disease is a global health related issues rising of prevalence or increasing of population, now my group takes a chance to create a project which is based on the early detection of the disease. In this project there the many challenges coming when the making the project which is difficult to deals with the algorithms, collecting of the information and knowledge about the kidney related diseases.[1] This research paper explores about the application of deep Learning technology, and the adding of different models like Convolutional Neural Networks and Recurrent Neural Networks, for the early detection of Chronic Kidney Disease. This proposed model analyses or diverse the patient data, combination of clinical measurements, test reports, medical history, etc. Most importantly the features of the research including of creating the dataset, pre-processing steps for the detection, training of model, classification, easy to use, user friendly image upload interface, minimal maintenance, and reliable results. Chronic Kidney Disease (CKD) is a healthcare department challenge because this an asymmetrical nature of early stage of the chronic disease, this project leads to serves all the patients who are suffering from Kidney related disease. This project has the many advantages like cost efficient, dependable, operational, regularity, provide insights into the technical risk aspects of deploying in a system etc. [2][3] The final achievement of this CKD project is to give help in medical department with the help of modern technology like Deep Learning algorithm, CNNs, RNNs etc. This gives the fast result and more accuracy of the disease. [4]

Keywords: CNN, RNN, MobileNet.

CARDIOVASCULAR RISK PREDICTION USING RETINAL FUNDUS IMAGE AND DEEP LEARNING

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Abstract: Cardiovascular diseases (CVDs) pose a global health challenge, necessitating accurate risk prediction strategies. This research introduces a novel approach, utilizing retinal fundus images and advanced deep learning techniques for enhanced cardiovascular risk assessment. Addressing the limitations of traditional risk factors, our method delves into retinal microvasculature, offering a precise and personalized predictive model. Leveraging the Cleveland Heart Disease dataset and machine learning algorithms, we focus on 14 pertinent attributes for heart attack diagnosis, highlighting the shortcomings of current clinical decision-making processes.

In our proposed system, the integration of retinal fundus images, processed with TensorFlow and OpenCV, yields promising results in distinguishing risk categories. The chosen deep learning models showcase notable accuracy, emphasizing the potential to transform preventive strategies. This research establishes a foundation for innovative cardiovascular risk prediction, marking a significant advancement in healthcare practices and offering a unique perspective for future research in cardiovascular health.

KEYWORD: Deep Learning , CNN , RNN , Cardiovascular Diseases , Algorithm.

ON FLY CONVERSION

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Abstract: The proposed approach focuses on the recognition of audio queries that include a combination of words in two different languages, namely Marathi ,Malayalam ,Bengali, Hindi and English. The innovation in the presented approach lies in the utilization of a next Word Prediction model alongside a Deep Learning speech recognition model to identify and convert the input audio query into text accurately. Additionally, another method is suggested to address the problem of multilingual speech recognition and translation, which involves implementing cosine similarity between the audio features of words to achieve fast and precise recognition. The authors manually generated the dataset used for training and testing the models since no pre-existing audio and text dataset contained sentences comprising a mixture of Kannada and English. The combination of the DL speech recognition model with the Word Prediction model yields an accuracy rate of 71% when tested on the in-house multilingual dataset. This method surpasses. other existing translation and recognition solutions for the same test set. Multilingual translation and recognition represent significant challenges since people often tend to speak using a combination of languages. Addressing this problem could effectively eliminate the language barrier and foster better and more comfortable communication between individuals.

LITERATURE REVIEW ON RECOMMENDER SYSTEM FOR CROP PREDICTION THROUGH COLLABORATIVE FILTERING USING MACHINE LEARNING

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ABSTRACT: An extensive investigation of the use of machine learning (ML) techniques in crop prediction is presented in this research study. Given the problems posed by climate change and the growing worldwide need for food, machine learning (ML) presents a possible path for improving agricultural output estimates. The study examines the approaches, resources, difficulties, and possible uses of machine learning in the context of agricultural forecasting.

KEYWORDS: Machine Learning, Crop Prediction

Gas Leakage and Gas Level Indicator

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Abstract: Home fires have been taking place frequently and the threat to human lives and properties is growing in recent years. Liquid petroleum gas (LPG) is highly inflammable and can burn even at some distance from the source of leakage. Most fire accidents are caused because of a poor-quality rubber tube, or the regulator is not turned off when not in use. Therefore, developing the gas leakage alert system is very essential. Hence, this paper presents a gas leakage alert system to detect the gas leakage and to alarm the people onboard.

Keywords: Liquid petroleum gas, Gas sensor, Leakage

Comparative Analysis of Deep Learning Approaches: Real Time Crowd Density Estimation

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ABSTRACT: These days, a lot of surveillance and emergency systems are closely related to crowd control, which makes things difficult, especially when the crowd size is unknown. This problem provides as a springboard for investigating density- or count-based crowd estimating techniques. A key issue in many applications, such as traffic management, biology, security, and surveillance, is the density of populated places. In addition to giving a thorough overview of the various methods and strategies used in earlier research to estimate crowd size, this study also seeks to identify the datasets that were used in these studies. A comparative study of relevant works is provided, highlighting the advantages and disadvantages of each methodology. This identifies important directions for future research in the field of congested area estimate.

KEYWORDS Deep Learning, CNN, Crowd Counting

Eco-Friendly Innovations In Electronics: A Comprehensive Analysis Of Green Technologies

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ABSTRACT: The paper investigates eco-friendly materials, energy-efficient designs, and waste management strategies, providing insights into the environmental impact and future prospects of green electronics, as the survey conducts approximately 78% -80% electrical or electronics –waste of India is not being collected or disposable by the e-waste unit. In the electrical or electronics-waste category, India is the third largest producer of e-waste in the world, according to the data 6tonnes of e-waste in last year is expected and burgeoning number shows that it rise to 8 million by 2025.Comparison to other countries recycling rate of India is 3% whereas in Japan- 27%, USA -21%, China-80% and it is a huge gap. The factor responsible are lack of formal e-waste recycle infrastructure and ground level awareness,94% e-waste of India is recycle through the informal method by the sector which is also used as hazardous method.

KEYWORDS: “Sustainable material in electronics”, "Life cycle analysis", "Energy - Efficient", "Supply chain Sustainability ", "Eco packaging", "Circular Economy Adoption".

Crptography in Cyber Security

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ABSTRACT: This research paper provides a comprehensive review of cryptography, focusing on the principles, applications, challenges, and future prospects of cryptography. Taking a data driven approach, this article explores the role of cryptography in protecting digital information, reviews cryptographic techniques, and discusses the importance of cryptographic techniques in ensuring data security. In this paper, cryptography which is one of the main methods used in information protection is discussed highlighting its originality and the methods used in the early days and in modern days. Data includes documents, images, and information necessary to support exploration and visualization. Security has become increasingly important in many industries in recent years. This does not mean that new information should be protected; This. It dates back to World War I and even the days of Caesar, when encryption was used to send data securely between servers.

Navigating The Promise And Perils Of "DALL-E"

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ABSTRACT: DALL-E, an innovative AI model developed by OpenAI, redefines the landscape of text-to-image synthesis through its groundbreaking use of transformer architecture. Leveraging a vast dataset during its training process, DALL-E possesses the ability to interpret textual prompts and generate an array of visually compelling and contextually relevant images. This paper provides a comprehensive exploration of DALL-E's architecture, training methodologies, and real-world applications. It elucidates the practical utilization of DALL-E in creative content generation, design automation, and storytelling. Furthermore, the paper delves into the challenges and potential drawbacks inherent in DALL-E's implementation. Through an exhaustive examination, this abstract illuminates the transformative potential of DALL-E in reshaping the boundaries of AI-driven image synthesis and its implications for future advancements in the field.

Machine Learning Unveiled: An Extensive Overview of Techniques And Applications

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Abstract: This paper functions as an extensive overview, covering a diverse array of machine learning algorithms and emphasizing the pervasive nature of machine learning in our daily experiences. Whether individuals are actively aware or unaware, routine interactions with machine learning applications are commonplace – from tailored product suggestions during online shopping to the automatic organization of photos on social networking platforms. The central aim of this paper is to introduce readers to numerous prevalent machine learning algorithms, equipping them with a robust foundational comprehension of the functionalities of these algorithms and their crucial significance in modern scenarios.

Keywords: Optimization, machine learning, artificial learning

MEDIGRAPH – EEG, ECG, EMG & EOG DIAGNOSTICS SYSTEM USING ARDUINO.

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Abstract: This research paper details the development of an accessible and cost-effective diagnostic test system capable of performing four biomedical tests: EEG, ECG, EMG, and EOG. Utilizing Arduino and the Bioamp EXG Pill module, the system integrates modules for data acquisition, signal processing, communication, user interface design, diagnostic algorithms, and rigorous testing. The Hardware Integration Module ensures reliable component connection and power supply, while Signal Processing designs algorithms for preprocessing and feature extraction from raw data. The Data Acquisition and Communication Module facilitates real-time data transfer and storage. A user-friendly interface is provided by the User Interface Module, and machine learning in the Diagnostic Algorithm Module classifies biomedical patterns for accurate diagnosis. The Testing and Validation Module rigorously assesses the system's reliability and accuracy against existing methods. Comprehensive documentation, including hardware schematics and manuals, is included. This project aims to offer an efficient diagnostic tool with significant healthcare applications.

Keywords: neurological conditions, cost-effective solution, EEG ECG EMG EOG diagnostic test, bioamp exg pill

Multiple Disease Detection in Human Using Deep Learning.

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Abstract: As progress in medical technology and artificial intelligence continue to shape the healthcare landscape, this project presents a comprehensive solution for multiple disease detection in humans. Focusing on the integration of deep learning techniques, specifically CNNs, the project introduces a web-based platform designed to streamline the diagnostic process for brain tumour and Alzheimer's disease [1] [2].

The system incorporates a user-friendly interface accessible to both healthcare professionals and patients. Patients can select the specific disease category (brain tumour or Alzheimer's), and input detailed information including personal data, symptoms, medical history, and crucially, MRI images.

For healthcare professionals, the platform provides a centralized portal allowing them to access and analyse patient information securely. The deep learning models, trained on extensive datasets, facilitate accurate and rapid disease prediction based on the provided MRI images. This predictive capability empowers healthcare and treatment plans.

The system further supports efficient communication between healthcare professionals and patients, enabling appointment scheduling based on the severity and urgency of the diagnosed condition.

KEYWORDS: Brain Tumour and Alzheimer's Detection.

SHOWBOOK: An Online Movie Ticket Booking Solution

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ABSTRACT: The objective of the project is to enable users to book cinema tickets online. The Ticket Reservation System (Show Book) is an internet-based application accessible throughout the net by anyone with a net connection. This application enables users to reserve tickets. A cinema hall provides an app where any internet user can access this online ticket reservation system. Users need to log in to the system and use a credit card for ticket booking. Tickets can either be collected at the counter or mailed to their respective email ids. Watching movies with family and friends in theaters is one of the best forms of entertainment after a hectic schedule. However, the excitement is lost while standing in long queues for hour or two to book tickets. The website provides complete information regarding currently running movies on all screens, with details of show timings and available seats. Ticket reservations are made using credit cards and can be canceled if needed. Our online ticket reservation system is one of the best opportunities for those who cannot afford enough time to stand in long queues for ticket reservation. People can book tickets online at any time of the day or night.

Keyword: User-Centered Design, Technology Acceptance Model, DFD

AGRONOID: An Agriculture Robot

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ABSTRACT: In India, agriculture is the backbone of the economy, employing over 60 percent of the population. However, the sector faces labor shortages as interest grows in developing autonomous technologies like robots for farming. The Advance AGRONOID project seeks to address this issue through an agricultural robot designed to minimize human labor and maximize efficiency in key tasks like sowing, drilling, and soil analysis. By leveraging automation, this robot can conduct essential agricultural functions accurately and rapidly while protecting soil fertility and worker safety from hazardous conditions. The overarching goal is an autonomous, multifunction farm robot controlled through the Internet of Things to sustainably strengthen Indian agriculture.

KEYWORDS: Robot, Wireless Technology, Smartphone, Seed mapping.

WEBSITE VULNERABILITY SCANNER

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ABSTRACT: Due to the rapid advancement of the Internet, cybersecurity concerns are becoming increasingly common. Hackers exploit vulnerabilities on the Internet to access websites, leading to various security incidents. An assessment tool that scans for security vulnerabilities on websites is called a website vulnerability scanner. There are several problems with existing web vulnerability scanners, including limited scalability, bloated software, and inadequate scanning accuracy. Traditional scanners typically use crawlers to retrieve a website's URL, send an attack request with a payload to the website for recovery, and then generate an appropriate vulnerability report if the payload is active. Applying a vulnerability scanner to detect website vulnerabilities proves useful as it focuses only on fixing these security issues. This particular scanner stands out from the rest by not having the aforementioned problems described in detail in this document. Keywords - SQL Injection, Cross Site Script, Vulnerability, Cross Site Script, Scanner, CV Scan, Scanner, Malware Detect, OWASP ZAP.

Traffic Sense: Visionary Traffic Control

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Abstract: In order to provide efficient mobility and minimize congestion, effective traffic management is essential in metropolitan settings. The real-time traffic simulation project presented in this paper aims to precisely calculate the number of vehicles in each of a roadway's four lanes and prioritize the lane with the most vehicles. In order to guarantee prompt response to urgent circumstances, the simulation also recognizes and prioritizes lanes for emergency vehicles, such as ambulances. The suggested simulation has a number of advantages, such as more effective traffic control, less traffic, and better emergency response times. Authorities are empowered by the simulation to make well-informed decisions that improve traffic flow and guarantee the safety and wellbeing of all road users by prioritizing lanes based on vehicle count and recognizing emergency vehicles. All things considered, this research shows how real-time traffic simulations may be used to effectively count vehicles, prioritize lanes, and detect emergency vehicles. This helps to make traffic management systems in cities more effective and responsive. Keywords—YOLO, Pre-Processing, Traffic Light Control, Machine Learning, Vehicle Detection, Intelligent Traffic Management Systems (ITMS)

Plant Leaf Disease Detection System

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Abstract: This research paper introduces a comprehensive methodology for the detection of plant leaf diseases employing deep learning techniques in image analysis. The proposed system amalgamates a robust deep learning model for precise disease identification, a well-structured front-end facilitating user interaction, and a scalable back-end for efficient data processing. Leveraging the growing availability of image datasets, particularly the Plant Village dataset, and a deep convolutional neural network is trained, achieving notable accuracy in recognizing various crop species and their associated diseases. The system not only showcases technical viability but also tackles practical challenges in automating plant disease diagnosis. Through experimental evaluation, the system's effectiveness is demonstrated, laying a solid foundation for its potential application in agricultural domains [1]. These findings significantly contribute to ongoing endeavors aimed at augmenting food production quality and curbing economic losses through early and accurate plant disease detection. The insights derived from this research are distilled from the various sources, shedding light on utilization of deep learning in plant disease detection and advancement of the mobile-based systems for the automated diagnosis. This abstract encapsulates the key elements of the research paper, including deep learning utilization, the fusion of front-end and back-end components, and the practical ramifications of the proposed plant leaf disease detection.

Crop Recommendation System Using Machine Learning

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Abstract - Crop Recommendation systems have become increasingly important in modern agriculture to assist farmers in making informed decisions about crop selection. This paper presents a Crop Recommendation system utilizing Machine Learning techniques. The system analyzes various factors such as soil type, climate conditions, and historical crop data to provide personalized crop recommendations to farmers. The system aims to enhance agricultural productivity and optimize crop yields by leveraging Machine Learning algorithms.

Keywords—Crop Recommendation, Machine Learning, Agriculture, Soil Analysis, Climate Conditions, Crop Yield Optimization

SKIN DISEASE DETECTION SYSTEM USING CNN TECHNOLOGY FOR DETECTION OF SKIN DISEASES USING AN EfficientNetB0 CNN Model

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Abstract: This endeavor focuses on addressing the issues in identifying skin conditions through a new method utilizing the EfficientNet B0 convolutional neural network model integrated with Flutter. The selection of Flutter reflects our dedication to creating applications that can be used on multiple platforms, offering ease of access for users on different devices. Our project makes use of deep learning to precisely categorize various skin diseases from dermatological images. By harnessing the capabilities of the EfficientNet B0 model, renowned for its ability to capture complex patterns and features specific to skin issues, we improve the precision of disease identification. The incorporation of Flutter results in a user-friendly interface, allowing individuals to effortlessly capture and examine images of their skin. The system processes these images through the EfficientNet B0 model to determine the presence and type of skin disease. In a world where timely and accurate diagnosis is crucial for effective treatment, this project highlights the significance of progress in leveraging deep learning techniques within the Flutter framework for efficient dermatological diagnostics. To summarize, the pairing of EfficientNet B0 and Flutter offers a hopeful answer for identifying skin conditions, offering healthcare options to a larger population.

Keywords: Deep Learning, Convolutional Neural Network, CNN, EfficientNet B0, Skin Diseases, Dermatological Image Analysis, Flutter.

Integrated IoT System for Sustainable Agriculture

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Abstract: Integrated IoT System for Sustainable Agriculture is an aborning topic in this materialistic world. This paper describes in earlier days framer want to calculate the readiness of soil and impacted doubts to make of the kind of yield They did not consider the Stickiness, level of water, Crop Monitoring / Management and Impact of Soil which Moisture and atmosphere condition Which was difficult to a Farmer, Progressively the IOT is renovating the agribusiness engaging the agriculture. The Feature of the Paper includes the development of the system that can Monitoring crop temperature, humidity, moisture and water level management and even the movement of animal which may destroy the crop an agriculture field through sensors using Node MCU board. Keywords: - IOT, Automation, Agriculture, Esp8266 and Water Motor

Face Recognition Attendance System Using Python

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Abstract: Detecting faces in various conditions, such as different expressions, lighting, and obstructions, has been a challenge for years. Recent studies demonstrate that deep learning techniques can achieve remarkable performance in identifying different objects and patterns. However, face detection in unconstrained environments remains difficult due to varying poses, lighting conditions, and occlusions. While recognizing individuals from images has gained popularity through mass media, it is less reliable than fingerprint or retina scanning. This paper proposes a deep cascaded multistage framework that leverages inherent correlations to enhance face detection performance. Specifically, the framework employs three layers of carefully designed deep convolutional networks in a cascaded structure to predict both face and landmark regions in a coarse-to-fine manner. Additionally, a novel online hard sample mining method is introduced to automatically improve performance without manual pattern selection.

Women Empowerment through Automation and Innovation

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Abstract: This research explores how technology, especially automation and innovation, can empower women. We live in a time of rapid technological progress, and this paper looks at the connection between women's empowerment and these advancements. The fourth Industrial Revolution, with its focus on technology like automation and artificial intelligence, offers unique opportunities to change how society sees gender roles. Our paper aims to understand how these changes can make the world more equal for women.

In simple terms, technology can create new jobs for women and help them join markets worldwide. The fourth Industrial Revolution wants to make sure women get fair pay, equal opportunities for work, and access to education.

Overall, this research shows how technology can be a powerful force for making sure women have more opportunities. By looking at real examples and considering ethical concerns, we want to contribute to making the future more equal for everyone.

Keywords: Women Empowerment, Technology, Automation, Innovation, Gender Equality, Digital Era, Economic Independence, Decision-Making, Case Studies, Societal Impact

IoT-Based Smart Soil Nutrient Detector

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Abstract: This research project introduces an innovative approach to soil nutrient management in agriculture through the development and implementation of an IoT-based smart soil nutrient detector system. The system is designed to collect soil nutrient data in real-time from sensor nodes deployed in the field and transmit this information directly to a dedicated mobile application. Leveraging the capabilities of Internet of Things (IoT) technology, the system offers farmers and agricultural professionals unprecedented access to timely and accurate soil nutrient information, enabling informed decision-making and precision farming practices. Key components of the system include strategically deployed sensor nodes equipped with sensors capable of measuring essential soil nutrients such as nitrogen, phosphorus, and potassium. These nodes are interconnected through a robust communication network, facilitating seamless data transmission to a central processing unit. The central unit processes the incoming data, performs real-time analysis, and communicates the results to the user's mobile device via a dedicated mobile application. The mobile application serves as a user-friendly interface, providing farmers with immediate access to vital soil nutrient information directly on their smartphones or tablets. Through the application, users can visualize soil nutrient levels, track historical data trends, and receive timely notifications and recommendations for optimal fertilization practices. Moreover, the application facilitates data-driven decision-making by allowing users to adjust fertilization schedules and nutrient application rates based on real-time soil nutrient measurements.

Keywords: IOT, NPK Sensor, DHT11, ESP-32 Microcontroller, RS485

Keywords:

Glass Virtual Try-On

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Abstract: Virtual try-on technology allows people to explore the look of accessories, makeup, hair extensions, hair color, clothing and much more for themselves. Virtual try-on offers many advantages over real attempts, speeding up the process gives you the opportunity to test hundreds of products without the need to access a real store. The test process is performed on a reconstructed 3D face from a embedded image that allows the user to see the visible face and mirrors with different views. The process is fully automatic and does not require the user to provide anything other than the image and the name of the glass. Keywords: Virtual try-on, Virtual glasses, Augmented reality

Crop Disease Identification using Crop Agronomy with Machine Learning

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Abstract: Crops in India suffer from various kinds of diseases that impact the overall yield production. These diseases not only cause less production per hectare but also affect the quality of yield. Modern techniques available in Information technology specifically Machine Learning and Deep Learning were used to improve the yield both in terms of quality and quantity could be done. The Machine Learning model developed for disease identification for one crop could also be used for disease identification in similar crops without requiring it to build the model from scratch.

This approach could be implemented on paddy or rice as their demand is increased every year and their production have to be increased per hectare as lots of fertile land is lost due to urbanization and their production is affected due to floods and cyclones. Also the paddy or rice suffers from various diseases caused by various microbes which negatively affect their production. In this paper we discuss about the various factors affecting the paddy production and how modern day techniques like machine learning could be used to resolve them.

NEAT ALGORITHM IN GAME AI: AN IN-DEPTH STUDY ON DINO GAME IMPLEMENTATION

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Abstract: This paper presents an in-depth study of the Dino Game, an AI-driven project that uses the NeuroEvolution of Augmenting Topologies (NEAT) algorithm. The project demonstrates the application of evolutionary algorithms in developing intelligent game AI. Through a detailed analysis of the game mechanics, NEAT algorithm, and configuration parameters, this study showcases the implementation and effectiveness of evolutionary AI in interactive entertainment.

Keywords: Artificial Intelligence, Dino Game, Mutations, NEAT Algorithm, Neural Network

A Review on Cloud Computing Application and Challenges in Current Scenario

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Abstract: Cloud computing is the on-demand or pay-per-use of resources including servers, networks, and storage that are made available via the internet. While cloud computing is helping the IT sector, there is still a need for more satisfactory research and development in this field. Our contribution to this study is to provide basic information of cloud computing. This work clarifies the concept of cloud computing and highlights applications, characteristics of cloud models and challenges faced in the cloud environment.

Keywords: Cloud Computing, SaaS, PaaS, IaaS, RaaS

Ensemble Technique in Neural Network for Wheat Identification and Classification: A Review

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Abstract: Wheat, as a vital grain for global food security, necessitates precise identification of its type and quality. This is crucial for selective breeding programs and effective grain management. Recent research has explored the integration of ensemble modeling techniques with neural networks to enhance wheat identification accuracy from images. In this comprehensive review, we delve into the fundamentals of neural networks and popular ensemble architectures, including boosting, bagging, and stacking. Ensemble techniques exhibit strengths such as improved model performance, robustness, and enhanced generalization ability compared to individual neural networks. We systematically analyze existing literature on ensemble neural networks applied specifically to wheat identification, considering various data sources. Challenges and advantages of neural ensembles are discussed, along with practical implications for agricultural researchers and data scientists. Additionally, we highlight promising future directions, including multi-modal data fusion and deep neural network ensembles. This paper provides useful insights for agricultural researchers and data scientists applying ensemble modeling for automated classification tasks. Ongoing developments in multi-model data fusion and deep neural network ensembles are highlighted as promising future directions for performance enhancement.

Keywords: Wheat, identification, classification, ensemble learning, neural networks, deep learning.

Blockchain Innovations: Navigating Future Trends and Developments

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Abstract: Blockchain innovation has developed as a transformative constrain, advertising decentralized arrangements to different businesses and angles of society. This chapter delves into the future patterns and improvements in blockchain advancement, pointing to supply perusers with bits of knowledge into exploring the advancing scene of this groundbreaking innovation. It examines the new developments influencing blockchain technology, such as supply chain management, decentralized finance (DeFi), non-fungible tokens (NFTs), and digital currencies issued by central banks (CBDCs). The chapter also covers the potential and problems that come with blockchain innovation, including privacy issues, legal concerns, scalability, and interoperability. It gives readers a thorough grasp of the developing blockchain ecosystem by examining potential fixes and developments in various fields. Through an exploration of upcoming trends and advancements in blockchain innovation, readers will get significant knowledge about fully utilizing this revolutionary technology to stimulate creativity and generate fresh prospects in the digital economy.

Case Studies: Real-World Blockchain Implementations

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Abstract: Blockchain technology, initially conceptualized as the underlying infrastructure for cryptocurrencies, has evolved into a versatile tool with applications across various industries. This study presents a comprehensive analysis of real-world blockchain implementations, focusing on case studies that highlight the practical benefits, challenges, and innovative uses of this technology. By examining diverse sectors such as finance, supply chain management, healthcare, and public administration, the study showcases how blockchain's features such as decentralization, transparency, immutability, and security are leveraged to enhance operational efficiency, trust, and data integrity.

Technical challenges include scalability, interoperability, and energy consumption, while regulatory and organizational barriers encompass legal uncertainties and resistance to change. Despite these obstacles, the successful implementations underscore blockchain's capability to foster innovation and efficiency.

This study underscores the importance of ongoing research, cross-sector collaboration, and adaptive regulatory frameworks to fully harness blockchain's potential. It serves as a resource for stakeholders aiming to understand and implement blockchain solutions, providing insights into best practices and strategic considerations for future deployments.

Evaluating Machine Learning Models for Effective Diabetes Detection

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ABSTRACT: Diabetes is an intractable disease where the body either doesn't make enough insulin or can't use the insulin it produces properly. Diabetes is a big health issue worldwide, affecting many people because of things like getting older, genetic, being overweight, and not living a good and healthy lifestyle. According to WHO in the year between 2000-2019 rate of the diabetes is increased by 3%. Diabetes is a major cause of heart disease, blindness, and kidney problems. Hospitals use historic data to figure out and treat diabetes, but sometimes they need better ways to do it.

Machine learning is a rapidly developing area within data science, focusing on how machines can learn from past experiences. The objective of this study is to be creating a machine learning model that can predict diabetes earlier for patients by comparing various machine learning techniques. Some algorithms include Support Vector Machine, K Nearest Neighbor, and Random Forest are employed. We check how good each algorithm is at predicting diabetes, and then we pick the one that's the best at it to use for making predictions.

Android Malware Detection Using Machine learning

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Abstract: Android operating systems have become a prime target for malware due to their widespread usage. Traditional antivirus software struggles to keep up with the rapid evolution of malware, necessitating more dynamic and adaptive solutions. This paper presents a novel approach to Android malware detection using machine learning techniques. We propose a system that extracts meaningful features from Android applications and employs various machine learning algorithms to classify these applications as benign or malicious.

Our system leverages the strengths of both static and dynamic analysis for feature extraction. The machine learning models are trained and tested using a large dataset of both benign and malicious application. Various classification techniques such as Logistic Regression, Decision Tree, and Naïve Bayes applied to test the efficiency of classification machine learning algorithms. Experimental results demonstrate that our system can effectively detect Android malware with high accuracy, precision, and recall. This research contributes to the ongoing efforts in cyber security, providing a robust and scalable solution to Android malware detection.

Quantitative metrics including accuracy, precision, and computational efficiency are rigorously measured and analysed. Results demonstrate good accuracy rates across the respective dataset. In conclusion, Android Malware detection using Machine learning approach that compares various classification detection techniques that are logistic regression, decision tree, Naïve Bayes to provide comprehensive protection against evolving threats and tell us about the performance of those algorithms respectively.

Keywords— Classification, Logistic Regression, Dtree, Naïve Bayes, Machine Learning, Malware

Vehicle Detection with Deep Learning Based Approach: A Review

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Abstract: The essential role of vehicle detection and tracking technology in the field of intelligent transportation management (ITMS), This essay suggests an innovative approach tailored to enhance accuracy, particularly for small target vehicles. The focal point of this methodology is the introduction of the vehicle detection model YOLOv5-NAM, an improved a variant of the YOLOv5s model achieved through the integration of The attention module based on normalization (NAM). Notably, this augmentation yields a notable 1.6% improvement in mean Average Precision compared to the original YOLOv5s model [1].

Additionally, the paper introduces a real-time tracking technique for tiny target automobiles, labeled as JDE-YN, leveraging using the YOLOv5-NAM model as the car sensor. This tracking method incorporates feature extraction into the joint training prediction head, resulting in a significant 0.9% enhancement in Multiple Object Tracking Accuracy (MOTA) compared to the original JDE technique.

The study employs algorithms for primary-stage target detection, specifically utilizing the SSD and YOLOv3 algorithms. Utilizing image data from an road vehicle dataset available for public use, the models are trained and subsequently compared for their effectiveness in vehicle detection. This analysis extend beyond vehicle detection, impacting areas such as semantic segmentation and target tracking, and applications in driverless operation.

Keywords: Vehicle Detection, Accuracy, YOLOv3, YOLOv5, MOTA, MOTP.

A Comprehensive Study on the Design and Analysis of Comparison – Based Sorting Algorithms

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Abstract: This technical paper gives you a comprehensive study on the design and analysis of four distinct algorithms. The algorithms include ‘Insertion Sort’, ‘Selection Sort’, ‘Merge Sort’, ‘Quick Sort’. Each one of the algorithms has been chosen for their unique and relevance on the target problem. The primary goal of this paper is to compare the performance, efficiency, and scalability of these algorithms which includes time and space complexity. The results obtained from the comparative analysis shows the valuable guidance to practitioners and researchers seeking to make informed algorithmic choices. The perception obtained from this research aim to inform future algorithmic development and deployment strategies in order to achieve boost performance and efficiency.

Driver Sleep Detection and Alarming System

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ABSTRACT: In our fast-paced lives, maintaining alertness while driving can be challenging amidst hectic schedules. Envision a scenario where you're driving home fatigued after a demanding day, and drowsiness sets in unexpectedly. Such situations pose a grave risk of accidents with potentially severe consequences. In this paper we have Introduced a cutting-edge safety innovation – the Driver Sleep Detection and Alarming System. This intelligent device serves as a vigilant guardian, issuing timely warnings when signs of drowsiness emerge, effectively preventing accidents and safeguarding lives. Particularly beneficial during extended journeys and late-night drives, this system employs an infrared sensor. Upon detecting closed eyes for more than 3 seconds, it triggers an audible alert to rouse the driver. Should drowsiness persist beyond 5 seconds, the system takes immediate action by automatically halting the vehicle. This affordable solution is geared towards minimizing accidents, presenting an invaluable contribution to enhancing road safety.

KEYWORDS: IR Sensor Module, Vehicle, Relay