International Conference on "Recent Trends in AI-driven Data Analysis, Machine Learning and Computational Design"

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Department of *AI&DS, AI&ML and CSD* Presents

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on 17th & 18th December 2024

(ICRAIML-2024) **PROCEEDINGS**

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Departments of AI&DS, AI&ML and CSD

International Conference on "Recent Trends in AI-driven Data Analysis, Machine Learning and Computational Design"

(ICRAIML-24)

Organized on 17th & 18th December, 2024

Patron, Program Chair

& Editor in Chief

Dr. P. SANTOSH KUMAR PATRA

Professor & Group Director, SMEC

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Professor & Head, Department of AI&DS, SMEC

Dr. K. SRINIVAS
Associate Professor & Head, Department of AI&ML, SMEC

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Assistant Professor & Head, Department of CSD, SMEC

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Sri. M. LAXMAN REDDY
CHAIRMAN

MESSAGE

I am extremely pleased to know that the Departments of AIML, AIDS, CSD, of SMEC is organizing **"International Conference on Recent Trends in AI-driven Data Analysis, Machine Learning and Computational Design" (ICIRAIML – 24)** on 17th and 18th of December 2024. I understand that the large number of researchers has submitted their research papers for presentation in the conference and for publication. The response to this conference from all over India and Foreign countries is most encouraging. I am sure all the participants will be benefitted by their interaction with their fellow researchers and engineers which will help for their research work and subsequently to the society at large.

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

M. Laxman Reddy

M.LAXMANREDDY
Chairman

Sri. G. CHANDRASEKHAR YADAV
EXECUTIVE DIRECTOR

MESSAGE

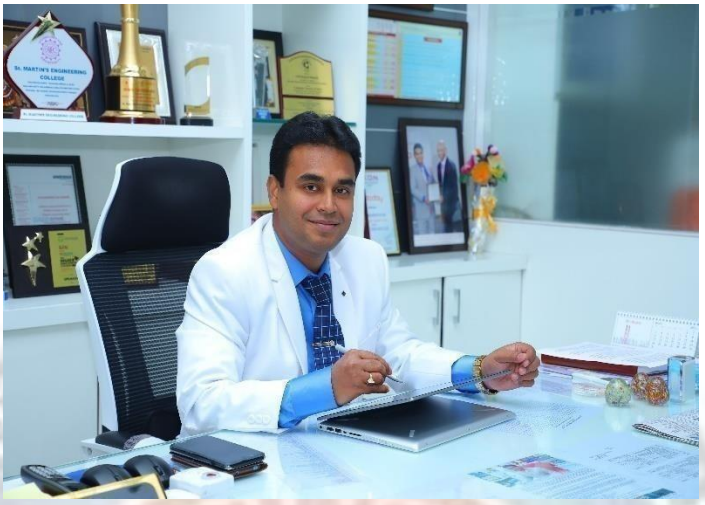
I am pleased to state that the Departments of AIML, AIDS, CSD of SMEC is organizing **"International Conference on Recent Trends in AI-driven Data Analysis, Machine Learning and Computational Design" (ICIRAIML – 24)** on 17th and 18th of December 2024. For strengthening the "MAKEIN INDIA" concept many innovations need to be translated in toworkable product. Concept to commissioning is along route. The academicians can play a major role in bringing out new products through innovations.

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

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

G. CHANDRASEKHAR YADAV
Executive Director

Dr. P. SANTOSH KUMAR PATRA
PROFESSOR & GROUP DIRECTOR



MESSAGE

I am delighted to be the Patron & Program Chair for the **"International Conference on Recent Trends in AI-driven Data Analysis, Machine Learning and Computational Design"** (ICIRAIML – 24) organized by the Departments of AI&DS, AI&ML and CSD on 17th and 18th of December 2024. I have strong desire that the conference to unfold new domains of research among the Artificial Intelligence, Machine Learning, Block chain Technology, Internet of Things, Deep Learning, Data Analytics and will boost the knowledge level of many participating budding scholars throughout the world by opening a plethora of future developments in the field of Computer Science.

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

I appreciate the faculties, coordinators and Department Heads of AI&DS, AI&ML and CSD for their continuous untiring contribution in making the conference a reality.

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

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Dr. M. SRINIVAS RAO
Principal

MESSAGE

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

International Conferences are a Perfect Platform for enthusiastic researchers to come up with their innovative ideas, and I am delighted that SMEC is organizing the **"International Conference on Recent Trends in AI-driven Data Analysis, Machine Learning and Computational Design"** (ICIRAIML – 24) this academic year as well to enhance the skills of desiring participants. The showcase of new ideas and the latest technological advancements through this Conference would facilitate the transfer of technology, helping participants to get updated with the latest tools and methodologies. I firmly believe that this Conference serves as the catalyst for change by bringing attention to pressing issues in different fields, encouraging discussions, fostering collaboration, and promoting initiatives that address different challenges on a global scale. It is an excellent opportunity to broaden our knowledge, establish meaningful connections, and contribute to advancing engineering research. I assure you that the commitment to excellence in education and research is reflected in this Conference, providing a unique platform for learning and growth.

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

I appreciate the continuous efforts and dedication of the HODs of AIDS, AIML, CSD and faculty members for their invaluable contribution to advancing global discourse. My most profound appreciation to the organizers and coordinators for organizing a conference of such caliber.

Dr. M. Srinivas Rao
Principal

Dr. SANJAY KUMAR SUMAN
Dean R&D

MESSAGE

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

I am delighted to acknowledge the **"International Conference on Recent Trends in AI-driven Data Analysis, Machine Learning and Computational Design"** (ICIRAIML – 24) organized by the Departments of AI&DS, AI&ML and CSD on 17th and 18th of December 2024. I appreciate organizing team for showing their keen interest in organizing a successful conference to provide a platform for contributors to explore new ideas and exchange research findings among researchers. I thank the support of all students, authors, reviewers, conference team, faculty members, and conference Convenor for making the conference a grand success.

Best Wishes

Dr. Sanjay Kumar Suman

Dean R&D

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Dr. S V S RAMA KRISHNAM RAJU
Dean Academics

MESSAGE

It gives me immense pleasure to know that St. Martin's Engineering College, **"International Conference on Recent Trends in AI-driven Data Analysis, Machine Learning and Computational Design"** (ICIRAIML – 24) organized by the Departments of AI&DS, AI&ML and CSD on 17th and 18th of December 2024. I am sure that this conference will provide a forum to national and international students, academicians, researchers and industrialists to interact and involve in Research and Innovation. Such academic eventsbenefit the students, teachers and researchers immensely and widen the horizons of their knowledge and work experience in the field of Deep Learning, Machine Learning, Data Mining Engineering and Innovation.

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

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

Best Wishes

Dr. S V S Rama Krishnam Raju

Dean Academics

Dr. D V SREEKANTH
Dean Administration

MESSAGE

I am delighted to acknowledge the **"International Conference on Recent Trends in AI-driven Data Analysis, Machine Learning and Computational Design"** (ICIRAIML – 24) organized by the Department of Computer Science and Engineering on 17th and 18th of December 2024 in St. Martin's Engineering College (SMEC), Hyderabad, India. The objective of this conference was to bring together experts from academic institutions, industries, research organizations for sharing of knowledge and experience in the recent trends and revolutionary technologies in Computer Science and engineering. The conference programme featured a wide variety of invited and contributed lectures from national and international speakers with expertise in their respective fields. The ICIRAIML-2024 has become one of the most extensive, spectacular international events hosted by St. Martin's Engineering College (SMEC), for itshigh-level quality and the large size of participation. Well- known international and national invited speakers addressed the audience, shared knowledge, and rich experiences on Revolutionary Technology in Computer Science and Engineering, AIDS, AIML, CSD.

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

Best Wishes

Dr. D V Sreekanth

Dean Administration

Dr. N. RAMCHANDRA
Dean Affiliations and Accreditation

MESSAGE

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Best Wishes

Ramchandra.

Dr. N. Ramchandra
Dean Affiliations and Accreditation

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Dr. K. SAMPATH

PROFESSOR & HOD/AI&DS

MESSAGE

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

The aim of the **"International Conference on Recent Trends in AI-driven Data Analysis, Machine Learning and Computational Design"** (ICIRAIML – 24) being conducted by the Departments AI&DS, AI&ML and CSD of SMEC, is to create a platform for academicians and researchers to exchange their innovative ideas and interact with researchers of the same field of interest. This will enable to accelerate the work to progress faster to achieve the individuals end goals, which will ultimately benefit the larger society of India.

We, the organizers of the conference are glad to note that more than 200 papers have been received for presentation during the online conference. After scrutiny by specialist 120 papers have been selected, and the authors have been informed to be there at the online platform for presentations. Steps have been to publish these papers with ISBN number in the Conference Proceedings and all the selected papers will be published in Scopus/UGC recognized reputed journals.

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

Dr. K. SAMPATH
HOD – AI&DS

Dr. K. SRINIVAS

ASSOCIATE PROFESSOR & HOD/AI&ML

MESSAGE

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Dr. K.SRINIVAS
HOD – AI&ML

Dr. S.LEELA KRISHNA

ASSISTANT PROFESSOR & HOD/CSD

MESSAGE

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S. Leela Krishna

Dr. S. LEELA KRISHNA
HOD – CSD

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ADVANCED DEEP LEARNING TECHNIQUES FOR DISEASE HYPOTHESIS SYSTEM

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ABSTRACT

Human flourishing depends on a number of factors, not the least of which is health. Because the healthcare industry is a capital incentive sector with complex entry barriers for investors, such as acquiring land for the purpose of building a hospital, paying stamp duties on the land, and a lack of human resources, the ability of the government to provide its citizens with universal access to high-quality healthcare is hindered. Cancer, diabetes, heart disease, malaria, and renal disease detection are just a few examples of the many medical conditions that can benefit from the use of artificial intelligence. Taking advantage of the possibilities afforded by the COVID and remembering the government's relaxations in Tele health regularization in the law of the land, we are developing a system for the management of chronic diseases that can be used by a person with limited medical knowledge and in the comfort of one's own home. Because our solution uses image processing technology to give the treating doctor an early understanding of the severity of the sickness, it will help to reduce the doctor's and healthcare system's patient load. Imaging, preprocessing, segmentation, feature extraction, and disease categorization are all part of the process. In this research, we presented a method through which a single online application could screen for and diagnose a wide range of illnesses, including but not limited to cancer, diabetes, cardiovascular disease, liver and kidney disease, malaria, and pneumonia. This is feasible if we have a firm grasp on the variables involved in the relevant diseases

Keywords: Convolutional neural network, machine learning, healthcare, disease detection.

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MULTI-LAYER BLOCKCHAIN-BASED IDENTITY AUTHENTICATION AND KEY AGREEMENT PROTOCOL FOR EDGE COMPUTING

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ABSTRACT

In the era of edge computing, secure and efficient identity authentication and key agreement protocols are critical for safeguarding sensitive data and ensuring seamless communication between edge devices. This paper proposes a novel protocol leveraging multi-layer blockchain technology to address the limitations of traditional authentication systems. The multi-layer structure enhances scalability, reduces latency, and provides robust security by decentralizing trust management and employing cryptographic techniques. The proposed protocol integrates distributed ledger technology with lightweight cryptographic operations to achieve secure identity verification and dynamic key generation. Performance evaluations demonstrate the protocol's efficiency in terms of computational overhead, communication cost, and resilience against common security threats, making it a viable solution for real-time applications in edge computing environments.

Keywords – Key Agreement Protocol, Edge Computing, Decentralized Security, Lightweight Cryptographic Operations.

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PAPERID: ICIRAIML-24-003

DEVELOPING AI TOOLS TOENHANCE ACCESSIBILITY FOR INDIVIDUALS WITH DISABILITIES, INCLUDING VOICE RECOGNITION AND COMPUTER VISION APPLICATIONS

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ABSTRACT

The development of AI tools to enhance accessibility for individuals with disabilities has emerged as a transformative area of research, aiming to bridge the gap between disabled individuals and the broader society. These tools utilize a combination of voice recognition and computer vision applications to offer innovative solutions that empower people with disabilities, enhancing their independence and improving their quality of life. AI-driven voice recognition technologies have shown immense potential in helping individuals with disabilities such as speech impairments, hearing loss, and mobility challenges. Voice-based systems, like speech-to-text (STT) and text-to-speech (TTS) applications, allow users to communicate more easily, reducing barriers to daily tasks. computer vision is playing an increasingly critical role in assisting individuals with visual impairments. By enabling machines to "see" and interpret the world, computer vision technologies can identify objects, read text, and even navigate complex environments. Applications such as object recognition and real-time navigation aids powered by AI can guide visually impaired individuals in unfamiliar settings, offering significant improvements in mobility and autonomy.

Keywords – Accessibility, Artificial Intelligence, Voice Recognition, Computer Vision, Assistive Technologies, Disabilities, Inclusive Design, Real-Time Object Recognition.

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ADVANCEMENTS IN ARTIFICIAL INTELLIGENCE AND DATA SCIENCE: MODELS, APPLICATIONS, AND CHALLENGES

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ABSTRACT

The text that follows gives an overview of the numerous uses of artificial intelligence (AI) and data science in a variety of fields, focusing on their potential advantages and drawbacks. Healthcare, finance, education, smart cities, and the development of disease therapies have all showed promise for AI. The study examines several AI models, such as ontological, statistical, hybrid, and biological models, in addition to the restrictions placed by deep learning techniques. The study on brain architecture and function is also included in the article, along with applications of multivariate pattern analysis, bioinspired systems, and machine learning to the analysis and processing of enormous datasets. The literature study emphasizes how critical it is to address societal and ethical issues with AI.

Keywords: Artificial intelligence, Machine learning, Data Science, Bioinspired systems, Smart cities.

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A COMPREHENSIVE REVIEW OF INTERPRETABILITY METHODS IN DEEP LEARNING: TOWARDS FUTURE INTERPRETABLE DC MODELS

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ABSTRACT

The rapid advancements in deep learning (DL) have led to the development of increasingly complex decision-making systems, often perceived as "black boxes." This lack of interpretability poses challenges in understanding, trust, and ethical deployment, especially in critical domains such as healthcare, finance, and autonomous systems. This study reviews existing methods for interpreting deep learning models, categorizing them into post-hoc interpretation techniques (e.g., visualization, saliency mapping, and perturbation analysis) and inherently interpretable architectures. Emphasis is placed on the trade-offs between model performance and interpretability, as well as the application of these methods in practical scenarios. By analyzing the strengths and limitations of current approaches, this review highlights gaps in research and proposes future directions, including the development of hybrid interpretability frameworks, integration of domain knowledge, and user-centric evaluation methods. The study aims to contribute to the design of more transparent, trustworthy, and effective deep learning systems.

Keywords - Interpretability in Deep Learning, Interpretable Deep Learning Models, Explainable Artificial Intelligence (XAI),Post-hoc Interpretation Methods, Model Transparency, Saliency Mapping.

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FROM SIGNS TO SPEECH: A DEEP LEARNING APPROACH

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ABSTRACT

Sign language serves as a vital communication medium for individuals with hearing and speech impairments. Leveraging advancements in deep learning (DL) techniques, this study proposes an efficient and robust system for sign language recognition. The approach employs state-of-the-art deep neural networks, including Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs), to process visual input from hand gestures and sequential motion data. The proposed system is trained on a diverse dataset to ensure high accuracy across different signs and languages. Through the use of real-time image processing and feature extraction, the model translates sign language into textual or auditory output, bridging the communication gap between sign language users and the wider community. Experimental results demonstrate the system's capability in achieving high recognition rates, indicating its potential application in accessibility technologies, education, and social integration.

Keywords - Sign Language Recognition, Deep Learning, Convolutional Neural Networks (CNNs, Recurrent Neural Networks (RNNs), Accessibility Technology, Gesture Recognition

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PAPERID: ICIRAIML-24-007

BUILDING INTELLIGENT CHATBOTS FOR ROBOT Q&A USING NLP AND AI

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ABSTRACT

The integration of natural language processing (NLP) and artificial intelligence (AI) has revolutionized the way humans interact with machines. This paper presents a chatbot system designed to handle robot questions and answers efficiently using NLP techniques and AI-driven models. The proposed system employs advanced machine learning algorithms, contextual understanding, and dynamic response generation to simulate natural conversations. By leveraging pre-trained language models like GPT or BERT, the chatbot can comprehend user intents, adapt to different conversation contexts, and provide meaningful, human-like answers. This innovation has potential applications in customer service, education, and automation, where seamless human-robot interaction is essential.

Keywords - Natural Language Processing (NLP), Artificial Intelligence (AI),Chatbot Systems, Question and Answering, Human-Robot Interaction, Machine Learning, Deep Learning Models.

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END-TO-END FACE RECOGNITION USING MACHINE LEARNING AND DEEP LEARNING

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ABSTRACT

Face recognition has emerged as a vital application in the fields of security, biometrics, and user authentication. This study investigates the implementation of machine learning (ML) and deep learning (DL) techniques for facial recognition tasks. Traditional ML algorithms such as Support Vector Machines (SVM) and k-Nearest Neighbors (k-NN) are employed for feature-based classification, whereas DL models, particularly Convolutional Neural Networks (CNNs), enable automatic feature extraction from raw images. Through a comparative analysis of ML and DL methods, the study highlights the advantages of DL techniques in achieving higher accuracy, robustness, and scalability for diverse real-world applications.

Keywords - Facial feature mapping, Pattern recognition, Identity verification, Face detection, Dataset preprocessing, Model training, Real-time applications.

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PAPERID: ICIRAIML-24-009

INTEGRATED FOOD CALORIE ESTIMATION USING DATABASE AND IMAGE TECHNIQUES

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ABSTRACT

Food calorie estimation is critical for health-conscious individuals and medical dietary planning. This study focuses on developing a dual-approach system for food calorie estimation by combining ingredient-based analysis and image processing techniques. The ingredient-based method leverages a database of nutritional information to calculate calories based on the identified ingredients, ensuring accuracy in prepared dishes. Complementarily, the image processing approach employs machine learning algorithms to analyze visual features of food items, such as shape, size, and texture, for calorie estimation. By integrating these two methods, the system ensures greater accuracy and flexibility for diverse food types. This work highlights the potential of combining computational techniques for improved dietary assessment tools.

Keywords - Food calorie estimation, Ingredient-based analysis, Image processing, Nutritional database, Caloric calculation, Dietary management, Health monitoring, Machine learning (ML)

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PAPERID: ICIRAIML-24-010

EARLY DETECTION OF PARKINGSON'S DISEASE USING DEEP LEARNING

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ABSTRACT

Parkinson's disease is a neurodegenerative disorder that often remains undiagnosed in its early stages due to subtle and variable symptoms. This research explores the application of deep learning algorithms for the early detection of Parkinson's disease. Using datasets comprising vocal features, motor signals, and sensor data, the study implements and compares various deep learning models to identify disease-specific patterns. The results highlight the superiority of deep learning methods in analyzing complex data, providing a sensitive and reliable diagnostic framework. This approach can aid clinicians in early identification, ensuring timely treatment and improved quality of life for patients.

Keywords - Parkinson's Disease, Early Detection, Deep Learning, Neural Networks, Automated Diagnosis, Feature Extraction.

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LEVERAGING MACHINE LEARNING FOR CONTEXT-AWARE EMOTION DETECTION IN TEXT

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ABSTRACT

Emotion detection in textual data has gained significant attention in recent years due to its applications in sentiment analysis, customer feedback analysis, and human-computer interaction. This study explores the use of machine learning techniques to identify and classify emotions embedded in contextual text. By employing feature extraction methods such as Term Frequency-Inverse Document Frequency (TF-IDF) and word embeddings, the study evaluates the performance of various classifiers, including Support Vector Machines (SVM), Naïve Bayes, and Neural Networks, in detecting emotions like joy, anger, sadness, and surprise. Results indicate that deep learning models, particularly Recurrent Neural Networks (RNNs) and their variants, outperform traditional methods in capturing contextual nuances, thereby improving classification accuracy. This work contributes to the advancement of emotion-aware systems and highlights the importance of context in emotion detection.

Keywords - Emotion detection, contextual text, machine learning, deep learning, text classification, sentiment analysis.

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AUTOMATED ROAD DAMAGE DETECTIONUSING UAV IMAGES AND DEEP LEARNING TECHNIQUES

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ABSTRACT

This paper presents a novel automated road damage detection approach using Unmanned Aerial Vehicle (UAV) images and deep learning techniques. Maintaining road infrastructure is critical for ensuring a safe and sustainable transportation system. However, the manual collection of road damage data can be labor-intensive and unsafe for humans. Therefore, we propose using UAVs and Artificial Intelligence (AI) technologies to improve road damage detection's efficiency and accuracy significantly. Our proposed approach utilizes three algorithms, YOLOv4, YOLOv5, and YOLOv7, for object detection and localization in UAV images. We trained and tested these algorithms using a combination of the RDD2022 dataset from China and a Spanish road dataset. The experimental results demonstrate that our approach is efficient and achieves 59.9% mean average precision mAP@.5 for the YOLOv5 version, 65.70% mAP@.5 for a YOLOv5 model with a Transformer Prediction Head, and 73.20% mAP@.5 for the YOLOv7 version. These results demonstrate the potential of using UAVs and deep learning for automated road damage detection and pave the way for future research in this field.

Keywords: Artificial Intelligence, YOLOv4, DEEP LEARNING, Unmanned Aerial Vehicle (UAV)

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TWO STAGE JOB TITLE IDENTIFICATION SYSTEM FOR ONLINE JOB ADVERTISEMENTS

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ABSTRACT

Data science techniques are powerful tools for extracting knowledge from large datasets. Analysing the job market by classifying online job advertisements (ads) has recently received much attention. Various approaches for multi-label classification (e.g., self-supervised learning and clustering) have been developed to identify the occupation from a job advertisement and have achieved a satisfying performance. However, these approaches require labelled datasets with hundreds of thousands of examples and focus on specific databases such as the Occupational Information Network (O*NET) that are more adapted to the US job market. In this paper, we present a two-stage job title identification methodology to address the case of small datasets. We also propose a novel document embedding strategy to address the issues of processing and classifying job ads. Our experimental results show that the proposed two-stage approach improves the job title identification accuracy by 14% to achieve more than 85% in some sectors. Moreover, we found that incorporating document embedding-based approaches such as weighting strategies and noise removal improves the classification accuracy by 23.5% compared to approaches based on the Bag of words model. Further evaluations verify that the proposed methodology either outperforms or performs at least as well as the state-of-the-art methods. Applying the proposed methodology to Moroccan job market data has helped identify emerging and high-demand occupations in Morocco.

Keywords: Occupational Information Network, state-of-the-art methods

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ENHANCED FILE SYSTEM USING MULTIPLE IMAGE STEGANOGRAPHY

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ABSTRACT

In this paper, we propose a novel approach that involves slicing the secret data into multiple segments, each of which is embedded into a different cover image in a batch fashion. The sliced data is encoded in such a way that it cannot be reconstructed or interpreted without access to all of the relevant cover images. This adds an additional layer of security, as an attacker would need to obtain the entire set of images to extract and decrypt the secret information, making the data retrieval process significantly more difficult. We also discuss the retrieval mechanism on the destination side, which ensures that the secret data can be reconstructed seamlessly from the multiple cover images. The slicing technique not only enhances the security of the transmission but also makes it extremely challenging for unauthorized parties to detect or extract the secret message without the proper decoding method. The proposed method ensures secure transmission of vital data by distributing the hidden information across different images, mitigating the risk of unauthorized interception. The system relies on encryption to protect the integrity of the data slices, further complicating any attempts at decryption by intruders without the necessary cryptographic details. This approach presents a promising solution for applications where high levels of confidentiality and data protection are required, such as in military, governmental, or corporate communications.

Keywords: Image Steganography, encryption, cryptographic.

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TRANSFER LEARNING-BASED AUTONOMOUS LANDING SCENE RECOGNITION FOR DRONES

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ABSTRACT

We study autonomous landing scene recognition with knowledge transfer for drones. Considering the difficulties in aerial remote sensing, especially that some scenes are extremely similar, or the same scene has different representations in different altitudes, we employ a deep convolutional neural network (CNN) based on knowledge transfer and fine-tuning to solve the problem. Then, the LandingScenes-7 dataset is established and divided into seven classes. Moreover, there is still novelty detection problem in the classifier, and we address this by excluding other landing scenes using the approach of thresholding in the prediction stage. We employ the transfer learning method based on the ResNeXt-50 backbone with the adaptive momentum (ADAM) optimization algorithm. We also compare the ResNet-50 back bone and the momentum stochastic gradient descent (SGD) optimizer. Experiment results show that ResNeXt-50 based on the ADAM optimization algorithm has better performance. With a pre-trained model and fine-tuning, itcanachieve97.8450%top-1accuracyon the LandingScenes-7 dataset, paving the way for drones to autonomously learn landing scenes.

keywords: Restnext50 with ADAM optimization, CNN, Deep learning and High Predictive Accuracy.

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REAL-TIME FACIAL EXPRESSION RECOGNITION VIA WEB CAM

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ABSTRACT

Facial expression emotion recognition is an intuitive reflection of a person's mental state, which contains rich emotional information, and is one of the most important forms of interpersonal communication. It is said that a person's personality, mind, goodness, and badness can be showed by his face. However, due to the complexity and variability of human facial expression emotion features, traditional facial expression emotion recognition technology has the disadvantages Specifically, the feature extracted using convolutional neural network (CNN) ignores the problem of subtle changes in facial expressions. The first path of the proposed algorithm takes the Gabor feature of the ROI area as input. In order make full use of the detailed features of the active facial expression emotion area, first segment the active facial expression emotion area from the original face image, and use the Gabor transform to extract the emotion features of the area. Focus on the detailed description of the local area. The second path proposes an efficient channel attention network based on depth separable convolution to improve linear bottleneck structure, reduce network complexity, and prevent overfitting by designing an efficient attention module that combines the depth of the feature map with spatial information. It focuses more on extracting important features, improves emotion recognition accuracy, and outperforms the competition on the FER2013 dataset.

KEYWORDS: convolutional neural network (CNN), emotion recognition, Gabor feature of the ROI.

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FACE IMAGE SYNTHESIS FROM SPEECH USING CONDITIONAL GENERATIVE ADVERSARIAL NETWORK

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ABSTRACT

This paper proposes to build a framework with Generative Adversarial Network (GANs) to synthesize a person's facial image from audio input. Image and speech are the two main sources of information exchange between two entities. In some data intensive applications, a large amount of audio has to be translated into an understandable image format, with automated system, without human interference. This paper provides an end-to-end model for intelligible image reconstruction from an audio signal. The model uses a GAN architecture, which generates image features using audio waveforms for image synthesis. The model was created to produce facial images from audio of individual identities of a synthesized image of the speakers, based on the training dataset. The images of labelled persons are generated using excitation signals and the method obtained results with an accuracy of 96.88% for ungrouped data and 93.91% for grouped data.

Keywords: Generative Adversarial Network, Face Image Synthesis.

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CRICKET BALL TRAJECTORY PREDICTION AND TRACKING USING HYBRIDTRANSFER LEARNING WITH RESNET50, ALEXNET, RESNET18, AND CUSTOM CONVOLUTIONAL NEURAL NETWORK

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ABSTRACT

This research presents a novel approach to identifying cricket delivery types based on bowler finger grips. A dataset of 5573 grip images was created from real-time videos, encompassing 13 distinct grip classes. Deep learning models, including a preliminary CNN architecture and pre-trained transfer learning models (Vgg16, Vgg19, ResNet101, ResNet152, Dense Net, Mobile Net, Alex Net, Inception V3, and NasNet), were employed to train and classify the grip images. The results demonstrate the effectiveness of deep learning in accurately predicting delivery types from grip images, with the preliminary CNN model achieving a maximum validation accuracy of 98.75%. This research contributes to the growing application of deep learning in sports analytics, providing valuable insights into the intricacies of cricket deliveries.

Keywords: CNN architecture, Mobile Net, Alex Net, transfer learning models.

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PAIN DETECTION THROUGH PHYSIOLOGICAL SIGNALS WITH MULTI LEVEL CONTEXT INFORMATION

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ABSTRACT

Automatic pain recognition is essential in healthcare. In previous studies, automatic pain recognition methods preferentially apply the features extracted from physiological signals for conventional models. These methods provide good performance but mainly rely on medical expertise for feature extraction of physiological signals. This paper presents a deep learning approach based on physiological signals that have the role of both feature extraction and classification, regardless of medical expertise. We propose multi-level context information for each physiological signal discriminating between pain and painlessness. Our experimental results prove that multi-level context information performs more significantly than unlevel context information based on Part A of the Bovid Heat Pain database and the Emo pain 2021dataset.For Part A of the Bio Vid Heat Pain database, our experimental results for pain recognition tasks include Pain 0 and Pain 1, Pain 0 and Pain 2, Pain 0 and Pain 3, and Pain 0and Pain 4. In the classification task between Pain 0 and Pain 4, the results achieve an average accuracy of 84.8 B1 13.3% for 87 subjects and 87.8 B1 11.4% for 67 subjects in a Leave-One-Subject-Out cross-validation evaluation. The proposed method adopts the ability of deep learning to outperform conventional methods on physiological signals.

Keywords: Physiological Signals, Heat Pain database, Emo pain

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FLOOD FORECASTING MODEL USING FEDERATED LEARNING

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ABSTRACT

Floods are one of the most common natural disasters that occur frequently causing massive damage to property, agriculture, economy and life. Flood prediction offers a huge challenge for researchers struggling to predict floods since long time. In this article, flood forecasting model using federated learning technique has been proposed. Federated Learning is the most advanced technique of machine learning (ML) that guarantees data privacy, ensures data availability, promises data security, and handles network latency trials inherent in prediction of floods by prohibiting data to be transferred over the network for model training. Federated Learning technique urges for onsite training of local data models, and focuses on transmission of these local models on the network instead of sending huge data set towards central server for local model aggregation and training of global data model at the central server. In this article, the proposed model integrates locally trained models of eighteen clients, investigates at which station flooding is about to happen and generates flood alert towards a specific client with five days lead time. A local feed forward neural network (FFNN) model is trained at the client station where the flood has been expected. Flood forecasting module of local FFNN model predicts the expected water level by taking multiple regional parameters as input. The dataset of five different rivers and barrages has been collected from 2015 to 2021 considering four aspects including snow melting, rainfall-runoff, flow routing and hydrodynamics. The proposed flood forecasting model has successfully predicted previous floods happened in the selected zone during 2010 to 2015 with 84 % accuracy.

Keywords: Machine learning, Feed Forward Neural Network, natural disasters.

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BUILDING AN NLP MODEL FOR EFFICIENT SUMMARIZATION OF LEGAL AND FIANNCIAL DOCUMENTS

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ABSTRACT

The availability of legal judgment documents in digital form offers numerous opportunities for information extraction and application. Automatic summarization of these legal texts is a crucial and a challenging task due to the unusual structure and high complexity of these documents. Previous approaches in this direction have relied on huge labeled data sets, using hand engineered features, leveraging on domain knowledge and focused their attention on a narrow sub-domain for increased effectiveness. In this paper, we propose simple generic techniques using neural network for the summarization task for Indian legal judgment documents. We explore two neural network architectures for this task utilizing the word and sentence embedding for capturing the semantics. The main advantage of the proposed approaches is that they do not rely on hand crafted features, or domain specific knowledge, nor is their application restricted to a particular sub-domain thus making them suitable to be extended to other domains as well. We tackle the problem of unavailability of labeled data for the task by assigning classes/scores to sentences in the training set, based on their match with reference summary produced by humans. The experimental evaluations establish the effectiveness.

Keywords: NLP Model**,** Indian legal judgment documents, data sets.

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EXPLORING DEEP LEARNING FOR FOREST WILDFIRE ANALYSIS

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ABSTRACT

As an interdisciplinary course, Machine Vision combines AI and digital image processing methods. This paper develops a comprehensive experiment on forest wildfire detection that organically integrates digital image processing, machine learning and deep learning technologies. Although the research on wildfire detection has made great progress, many experiments are not suitable for students to operate. Also, the detection with high accuracy is still a big challenge. In this paper, we divide the task of forest wildfire detection into two modules, which are wildfire image classification and wildfire region detection. We propose a novel wildfire image classification algorithm based on Reduce-VGGnet, and a wildfire region detection algorithm based on the optimized CNN with the combination of spatial and temporal features. The experimental results show that the proposed Reduce-VGGNet model can reach 91.20% in accuracy, and the optimized CNN model with the combination of spatial and temporal features can reach 97.35% in accuracy. Our framework is a novel way to combine research and teaching. It can achieve good detection performance and can be used as a comprehensive experiment for Machine Vision course, which can provide the support for talent cultivation in machine vision area.

Keywords: Machine Vision, VGGnet, digital image processing, Forest Wildfire.

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PAPERID: ICIRAIML-24-023

SECURE HEALTHCARE: CONTENT-AWARE DNA COMPUTING FOR MEDICAL IMAGE ENCRYPTION

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ABSTRACT

There exists a rising concern on security of healthcare data and service. Even small lost, stolen, displaced, hacked, or communicated in personal health data could bring huge damage to patients. Therefore, we propose a novel content-aware deoxyribonucleic acid (DNA) computing system to encrypt medical images, thus guaranteeing privacy and promoting secure healthcare environment. The proposed system consists of sender and receiver to perform tasks of encryption and decryption, respectively, where both contain the same structure design, but perform opposite operations. In either sender or receiver, we design a randomly DNA encoding and a content-aware permutation and diffusion module. Considering introducing random mechanism to increase difficulty of cracking, the former module builds a random encryption rule selector in DNA encoding process by randomly mapping quantity of medical image pixels to outputs. Meanwhile, the latter module constructs a permutation sequence, which not only encodes information of pixel values, but also involves redundant correlation between adjacent pixels located in a patch. Such design brings awareness property of medical image content to greatly increase complexity in cracking by embedding semantically information for encryption. We demonstrate that the proposed system successfully improve cybersecurity of medical images against various attacks in robustness and effectiveness when transmitting data in wireless broadcasting scenarios.

Keywords: DNA, content-aware, permutation, DNA encoding, image pixels.

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PAPERID: ICIRAIML-24-024

BLOCKCHAIN-BASED CROWDSOURCING LOAN PLATFORM FOR FUNDING HIGHER EDUCATION IN DEVELOPING COUNTRIES

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ABSTRACT

In developing countries, funding is a significant obstacle to receiving higher education. Brilliant but needy students cannot complete their studies since their parents are unemployed and their countries' economies are poor. As a result, the students' talents are not harnessed to their full potential. In order to help students obtain higher education and harness their full potential, governments provide student loans to students in higher education. The government provides loans to students through the ministry of education. The students pay back the loan with interest when they start working. Governments have been the sole funders of student loans. The emergence of COVID-19 and the Russia-Ukraine war have resulted in a global economic crisis. Because of the global economic crisis, the government's spending has increased. In order to help reduce the burden of government and thereby reduce spending, we intend to revolutionize the student loan program through blockchain and crowd sourcing. The platform will allow students to apply for loans from investors through registered financial institutions. The students will pay back the loans with interest when they enter the workforce. The proposed platform will allow students to fund their education, investors will get interest on the money they invest, and governments can channel the money they put into student loan programs into other avenues.

Keywords: Higher Education, COVID-19, blockchain, **Crowdsourcing**

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DETECTING NOVELTY SEEKING FROM ONLINE TRAVEL REVIEWS: A DEEP LEARNING APPROACH

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ABSTRACT

Data science techniques are powerful tools for extracting knowledge from large datasets. Analysing the job market by classifying online job advertisements (ads) has recently received much attention. Various approaches for multi-label classification (e.g., self-supervised learning and clustering) have been developed to identify the occupation from a job advertisement and have achieved a satisfying performance. However, these approaches require labelled datasets with hundreds of thousands of examples and focus on specific databases such as the Occupational Information Network (O*NET) that are more adapted to the US job market. In this paper, we present a two-stage job title identification methodology to address the case of small datasets. We use Bidirectional Encoder Representations from Transformers (BERT) to first classify the job ads according to their corresponding sector (e.g., Information Technology, Agriculture). Then, we use unsupervised machine learning algorithms and some similarity measures to find the closest matching job title from the list of occupations within the predicted sector. Applying the proposed methodology to Moroccan job market data has helped identify emerging and high-demand occupations in Morocco.

Keywords: Deep Learning, Occupational Information Network, Bidirectional Encoder Representations from Transformers (BERT)

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PAPERID: ICIRAIML-24-026

FACE DETECTION & RECOGNITION IN ORGANIC VIDEO: A COMPARATIVE STUDY FOR SPORT CELEBRITIES DATABASE

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ABSTRACT

The project reports on an experimental study carried out under the applicative field of organic video processing and related to the possibility of identifying soccer celebrities in video content. In contrast to common state-of-the-art studies, special attention is paid to the cases in which the face is not completely included in the frame (lateral views, partial occlusions, etc.) and/or in which arbitrarily lighting conditions occur. To this aim, after a state-of-the art study, we consider two conventional types of face detection algorithms (Haar Cascade Classifier, and MMOD – Max-Margin object detection) coupled to two conventional face recognition models (LBPH – Local binary pattern histogram, and CNN-based Pruned ResNet). The experimental work consists of evaluating the performances of the four possible combinations among the abovementioned two face detection and two face recognition methods. An organic video database of about 1 hour is organized for this study. In addition, a public image database with 31 celebrity's frontal face images is also considered. As an overall conclusion, we brought to light that the MMOD coupled to a Pruned ResNet model seems to better suit the organic video processing use-case constraints, being able to reach an accuracy of 85%. The study also brings to light and discusses the differences in the quantitative results obtained for the two types of databases content (organic video content vs. celebrity's face images).

Keywords: detection algorithms (Haar Cascade Classifier, and MMOD, conventional face recognition models.

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DRUG TRACEABILITY IN HEALTH CARE SUPPLY CHAINUSING BLOCK CHAIN TECHNOLOGY

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ABSTRACT

Healthcare supply chains are complex structures spanning across multiple organizational and geographical boundaries, providing critical backbone to services vital for everyday life. The inherent complexity of such systems can introduce impurities including inaccurate information, lack of transparency and limited data provenance. Counterfeit drugs is one consequence of such limitations within existing supply chains which not only has serious adverse impact on human health but also causes severe economic loss to the healthcare industry. Most existing track and trace systems are centralized leading to data privacy, transparency and authenticity issues in healthcare supply chains. In this article, we present an Ethereum blockchain-based approach leveraging smart contracts and decentralized off-chain storage for efficient product traceability in the healthcare supply chain. The smart contract guarantees data provenance, eliminates the need for intermediaries and provides a secure, immutable history of transactions to all stakeholders. We present the system architecture and detailed algorithms that govern the working principles of our proposed solution. We perform testing and validation, and present cost and security analysis of the system to evaluate its effectiveness to enhance traceability within pharmaceutical supply chains.

Keywords: Multiple organizational and geographical boundaries, Block Chain Technology.

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QUANTUM CRYOTOGRAPHY BASED EMAIL COMMUNICATIONTHROUGH INTERNET

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ABSTRACT

With recent advances on the capabilities of quantum computers and the seminal work by Shor on the prime factorization of integers with quantum algorithms, the threat of quantum computers is looming over public-key based cryptographic systems. Two distinct areas of research – post quantum and quantum cryptography – provide the technical means to secure cryptographic systems against potentially powerful enough quantum computers. As both technologies are now becoming readily available, integration in a wide range of applications to understand their characteristics and trade-offs and the associated evaluation is of importance. In this work, we investigate the integration of quantum-resistant cryptography into secure messaging applications. Specifically, we target Delta Chat which is an end-to-end secure and opensource messaging application. We integrate both post-quantum secure digital signature schemes and public-key encryption schemes to keep the end-to-end secure messaging properties of the system, whereas the server-to-server communication is additionally secured via secret keys provided by a metropolitan quantum key distribution network. Since Delta Chat transports messages via the users' email accounts, we thus also obtain a quantum-resistant email infrastructure. As such we also analyse mechanisms commonly employed to secure email communication and the required implementation steps to ensure quantum-system for users of S/MIME and OpenPGP.

KEYWORDS:

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CHEQUE VERIFICATION AND CLEARANCE SYSTEM USING BLOCKCHAIN TECHNOLOGY

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ABSTRACT

Cheque Truncation System (CTS) is an image-based cheque clearing framework used in Sri Lanka. This semi manual process has certain limitations and takes up to 3 working days to clear an inter-bank national cheque in Sri Lanka. This research portrays an automated solution, which is feasible for any commercial bank in Sri Lanka, to address above-mentioned issues. The proposed system is based on the blockchain where all banks willing to take an interest in this framework must connect the proposed blockchain based system to supply the quicker cheque clearance to its clients. Answers were proposed with a complete framework consisting of four main phases: (i) paper cheque clearing process, (ii) digital cheque issuing and clearing process, (iii) cheque fraud detection process and (iv) cheque transaction securing process. Python along with Flutter framework and Ethereum were the major technologies used for implementing the system. The proposed system is highly scalable as Ethereum provides added integrity to the system. The approach advocates the customer as well as the bank with much simpler and speedier cheque clearing process with increased security. It also contributes with a paper cheque fraud detection system with faster and reliable results. The proposed system provides benefits to the user as well as the bank by addressing the requirement of producing a secure, effective and environment friendly system. Finally, CheckMate permits a consistent stream of cheque clearance operation for the payer and the payee without any mediators.

Keywords: Cheque Truncation System (CTS), Blockchain Technology

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SQL INJECTION ATTACK DETECTION IN WEB APPLICATIONS

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ABSTRACT

In today's present time, SQL injection has become a significant security threat over the web for diverse dynamic web applications and websites. SQL Injection may be a sort of associate injection attack that produces it doable to execute malicious SQL statements into an online application consisting of SQL information. Attackers use these SQL Injection Queries or Statements specified if an Internet site or an application hosted on web contain SQL vulnerabilities to bypass application security measures. The Attacker will even go around authentication associated with authorization of an online page or Internet application and might bypass these methods and retrieve the content of the whole SQL information of an online application. The purpose of the proposed system is to predict the occurrence of a SQL injection attack on a particular server where an application is deployed from a given supply at a particular point in time. This predictive experiment is managed using the JMeter tool. From network logs, you can now pre-measure, exclude choices, analyze, and feed machine learning models to predict SQLIA.

Keywords: Malicious SQL, Web Applications, Doable to execute malicious.

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PAPERID: ICIRAIML-24-031

BLOCKCHAIN BASED AUTONOMOUS NOTARIZATION SYSTEM USING NATIONAL EID CARD

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ABSTRACT

In recent years, the spread of information and communication technology has led to the emergence of e-government, which is the electronic replacement of government services. E-government is said to be compatible with blockchain technology, which has led to various studies on the possibility. Notarization, one of the functions of the government, has particularly been examined for the potential adoption of blockchain technology. However, because the notary public must authenticate the document's contents during the notarization process, they have been difficult to replace with smart contracts. In this study, we focus only on fixed date notarizations and propose a fully automated notarization system by combining a national eID card with Public Key Infrastructure and smart contracts. A fixed date is a notarization that allows a notary public to guarantee that a document existed, regardless of the authenticity of the document's content. Therefore, it can be replaced by a smart contract. Specifically, our proposed system automatically authenticates the creator and the document for electronic documents signed with a national eID card and uses the transaction receipt generated when the information is stored on the blockchain as a certificate of notarization. Verification of the signed data is done inside the blockchain by smart contracts, which eliminates the need for a verification authority. We further demonstrate the effectiveness of the proposed method in a Japanese use case as proof of concept.

Keywords: Blockchain, E-government, Autonomous Notarization

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A BLOCK CHAIN TECHNOLOGY APPLICATION FOR MANAGING FORENSIC EVIDENCE

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ABSTRACT

Evidence management is crucial in the field of forensic science. Evidences obtained from a crime scene are important in solving the case and delivering justice to the parties involved. Hence, protecting these evidences from any form of alteration is of utmost important. Chain of Custody is the process which maintains the integrity of evidence. Inability to maintain the chain of custody will make the evidence inadmissible in court, eventually leading to the case dismissal. Digitalization of forensic evidence management system is a need of time as it is an environment friendly model. Blockchains are digitally distributed ledgers of transactions signed cryptographically in chronological order that are sorted into blocks and is completely open to anyone in the blockchain network. Hyperledger Fabric is a consortium blockchain framework created by the Linux foundation and is mainly used for enterprise use. Based on the concept of Hyperledger Fabric, present study aimed to create a framework and further propose an algorithm to implement Blockchain Technology to digitalize forensic evidence management system and maintain Chain of Custody.

Keywords: Digitalization of forensic evidence, Blockchain Technology, Hyperledger Fabric

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BLOCKCHAIN TECHNOLOGY – ENABLED DIGITAL VAULT FOR LEGAL DOCUMENTS

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ABSTRACT

Blockchain-based centralized file-sharing platforms are not capable of providing security and privacy to data which leads to an increase in security attacks, single points of failure, and censorship. As we know the digitization of legal documents has taken a rapid growth which results in the transformation of the legal industry and provided efficiency, accessibility, and security to a multitude of stakeholders. However, there is a need for a trusted and immutable system for storing, sharing, and verifying these documents remains is a challenge. The paper is based on this concept of "Blockchain-Based Evault for Legal Documents," It leverages blockchain technology to address the issues of document authenticity, data security, and legal document managing. The proposed Evault is designed to act as a secure repository for legal documents, offering a robust solution to the persistent challenges of document tampering, fraud, and unauthorized access. By utilizing blockchain technology, which provide decentralized, transparent, this Evault ensures integrity or authenticity of legal documents.

Keywords: Blockchain Technology, Digital Vault for Legal Documents, multitude of stakeholders.

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RANSOMWARE ATTACK DETECTION UTILISING PROCESSOR AND DISK USAGE METRICS

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ABSTRACT

Ransomware often evades antivirus tools, encrypts files, and renders the target computer and its data unusable. The current approaches to detect such ransomware include monitoring processes, system calls, and file activities on the target system and analysing the data collected. Monitoring multiple processes has a very high overhead; newer ransomware may interfere with the monitoring and corrupt the collected data. This paper presents a robust and practical approach to detecting ransomware in execution on a virtual machine (VM). We collect data for selected processor and disk I/O events for the entire VM from the host machine and use a machine learning (ML) classifier to develop a detection model. This approach avoids the overhead of continuously monitoring every process on the target machine and prevents the risk of data contamination by ransomware. Furthermore, it is resilient to variations in user workloads. It provides fast detection with a high probability for known (used for training the ML model) and unknown (not used for training) ransomware. The random forest (RF) classifier performed the best of the seven ML classifiers we tested. Over six different user loads and 22 ransomwares, the RF model detected ransomware within 400 milliseconds with a 0.98 probability.

Keywords: Ransomware Attack Detection, Machine learning, virtual machine (VM)

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PADDY CROP DISEASE DETECTION USING MACHINE LEARNING

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ABSTRACT

Early disease detection plays a vital role in protection of paddy crops. In earlier days the detection of disease was done through seeing or by examining in a laboratory. The observation made visually needs experts and it might vary for each individual which leads to error and laboratory testing requires more time and might not be able to deliver the outcome within a time. To get the better of this issue, image processing-based Machine learning approach used to detect the diseases and classify the diseases. We mainly focused on rice (Oryza sativa) diseases. The images contain the leaves and stems which are affected by disease collected from the paddy fields. The dataset contains five different classes of diseases (1) Leaf Blast (2) Hispa (3) Brown Spot (4) Healthy leaves. The early detection of diseases will help farmers to increase their yield.

Keywords - Machine learning, Image processing, Oryza Sativa Diseases.

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SMARTER BANKING CHATFIN USING MACHINE LEARNING

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ABSTRACT

The purpose of the project is to make any domain-specific website, in our case banking, more usable by integrating a chatbot that serves as an interface for customer inquiries about services. This reduces customer interaction time with websites, thereby valuing their time and improving their overall experience. As part of this project, we explored and attempted to create an intelligent chatbot that could extract relevant information, recognize various intents and execute the pre-mapped actions. To create a contextual assistant for the above purpose, we used the RASA framework. To train the model, we constructed a custom dataset that includes multiple intents and entities. Additionally, we provide some python scripts (RASA actions) that will be executed when some intents are detected. Our solution consisted of creating a pipeline having a chatbot and several actions triggered by the chatbot. These actions will connect with the database and then provide the required data or make changes according to the user's query and display the feedback back to the user via the chat widget.

Keywords - Machine learning, Django Framework, Chatbot.

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DARKNET TRAFFIC ANALYSIS : INVESTIGATING THE IMPACT OF MODIFIED TOR TRAFFIC ON ONION SERVICE TRAFFIC CLASSIFICATION

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ABSTRACT

Classifying network traffic is important for traffic shaping and monitoring. In the last two decades, with the emergence of privacy concerns, the importance of privacy-preserving technologies has risen. The Tor network, which provides anonymity to its users and supports anonymous services known as Onion Services, is a popular way to achieve online anonymity. However, this anonymity is frequently misused, encouraging governments and law enforcement agencies to de-anonymise them. Therefore, in this paper, we try to identify the classifiability of Onion Service traffic, focusing on three main contributions. First, we try to identify Onion Service traffic from other Tor traffic. The techniques we have used can identify Onion Service traffic with >99% accuracy. In our second contribution, we evaluate how our techniques perform when such modifications have been done to the Tor traffic. Our experimental results show that these conditions make the Onion Service traffic less distinguishable. In our final contribution, we identify the most influential feature combinations for our classification problem and evaluate their impact.

Keywords – TOR Services, Onion Services, De-Anonymise

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THYROID DISEASE CLASSIFICATION USING MACHINE LEARNING

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ABSTRACT

Early detection of thyroid diseases plays a vital role in improving healthcare outcomes. In earlier days, diagnosis was primarily done through manual observation by healthcare professionals or laboratory testing. Manual diagnosis requires expert knowledge, is prone to human error, and may vary between individuals, while laboratory testing is time-consuming and may not deliver timely results. To overcome these limitations, a Machine Learning (ML) approach is employed to categorize thyroid diseases. This study focused on thyroid conditions prevalent among individuals in Iraq. The dataset contains three different classes of thyroid disease: (1) Hyperthyroidism, (2) Hypothyroidism, and (3) Normal thyroid function. Various ML algorithms were utilized, including Support Vector Machines (SVM), Random Forest, Decision Tree, Naïve Bayes, Logistic Regression, k-Nearest Neighbours (k-NN), and Multilayer Perceptron (MLP). The application of ML algorithms enables accurate classification of thyroid diseases, which enhances diagnostic capabilities and facilitates personalized treatment strategies, ultimately improving patient care and health management.

Keywords - Machine learning, Thyroid diseases, Health-care, Hyperthyroidism,

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AUTOMATED EMERGING CYBER THREAT IDENTIFICATION AND PROFILING BASED ON NATURAL LANGUAGE PROCESSING

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ABSTRACT

The time window between the disclosure of a new cyber vulnerability and its use by cybercriminals has been getting smaller and smaller over time. Recent episodes, such as Log4j vulnerability, exemplifies this well. Within hours after the exploit being released, attackers started scanning the internet looking for vulnerable hosts to deploy threats like cryptocurrency miners and ransomware on vulnerable systems. Thus, it becomes imperative for the cybersecurity defense strategy to detect threats and their capabilities as early as possible to maximize the success of prevention actions. In this sense, we present a framework for automatic identification and profiling of emerging threats using Twitter messages as a source of events and MITRE ATTACK as a source of knowledge for threat characterization. The framework comprises three main parts: identification of cyber threats and their names; profiling the identified threat in terms of its intentions or goals by employing two machine learning layers to filter and classify tweets; and alarm generation based on the threat's risk. The main contribution of our work is the approach to characterize or profile the identified threats in terms of their intentions or goals, providing additional context on the threat and avenues for mitigation. In our experiments, the profiling stage reached an F1 score of 77% in correctly profiling discovered threats.

Keywords - Emerging Threats, Cybersecurity, Threat Profiling, Machine Learning

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DETECTION OF CYBER ATTACKS TRACES IN IOT DATA

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ABSTRACT

Artificial Intelligence plays a significant role in building effective cybersecurity tools. Security has a crucial role in the modern digital world and has become an essential area of research. Network Intrusion Detection Systems (NIDS) are among the first security systems that encounter network attacks and facilitate attack detection to protect a network. Contemporary machine learning approaches, like novel neural network architectures, are succeeding in network intrusion detection. The DAE is employed for dimensionality reduction and a host of ML methods, including Deep Neural Networks and Long Short-Term Memory to classify the outputs of into normal/malicious. The applied method is validated on the IoT-23 dataset.

Keywords – NIDS, Cybersecurity, Dimensionality reduction.

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AUTOMATED ROAD DAMAGE DETECTION USING UAV IMAGES AND DEEP LEARNING TECHNIQUES

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ABSTRACT

This paper introduces an innovative automated road damage detection method leveraging Unmanned Aerial Vehicle (UAV) images in conjunction with deep learning techniques. The maintenance of road infrastructure is crucial for ensuring a safe and sustainable transportation system. Traditional methods for collecting road damage data often involve labor-intensive and hazardous processes for personnel. To address these challenges, we propose the integration of UAV technology and Artificial Intelligence (AI) to significantly enhance the efficiency and accuracy of road damage detection. Our approach employs three advanced algorithms—YOLOv4, YOLOv5, and YOLOv7—for effective object detection and localization within UAV imagery. We trained and tested these algorithms on a diverse dataset, utilizing both the RDD2022 dataset from China and an additional road dataset from Spain. The experimental results indicate the effectiveness of our methodology, achieving a mean average precision (mAP@.5) of 59.9% with the YOLOv5 model, 65.7% mAP@.5 with a modified YOLOv5 model that incorporates a Transformer Prediction Head, and an impressive 73.2% mAP@.5 using the YOLOv7 model. These findings underscore the promising capabilities of UAVs coupled with deep learning techniques for automated road damage detection, paving the way for future advancements and research opportunities in this critical field.

Keywords- Deep learning, UAV Technology, Road Damage Detection.

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CLASSIFICATION OF PESTS USING COMPUTER VISION CNN ALGORITHM

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ABSTRACT

The primary strategy for mitigating lost productivity entails promptly, accurately, and efficiently detecting plant pests. Although detection by humans can be useful in detecting certain pests, it is often slower compared to automated methods, such as machine learning. Hence, this study employs a Convolutional Neural Network (CNN) model, specifically Google Net, to detect pests within mobile applications. The technique of detection involves the input of images depicting plant pests, which are subsequently subjected to further processing. This study employed many experimental methods to determine the most effective model. The model exhibiting a 93.78% accuracy stands out as the most superior model within the scope of this investigation. The implementation of an Indonesian language application is a contribution to this research. Using this local language makes it easier for Indonesian farmers to use it. The potential impact of this application on Indonesian farmers is anticipated to be significant. By enhancing pest identification capabilities, farmers may employ more suitable pest management strategies, leading to improved crop yields in the long run.

Keywords - Pest Identification, Convolutional Neural Network, Computer Vision, Image Classification.

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PAPERID: ICIRAIML-24-043

A DEEP TRANSFER LEARNING-BASED EDGE COMPUTING METHOD FOR HOME HEALTH MONITORING

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ABSTRACT

The health-care gets huge stress in a pandemic or epidemic situation. Some diseases such as COVID-19 that causes a pandemic is highly spreadable from an infected person to others. Therefore, providing health services at home for noncritical infected patients with isolation shall assist to mitigate this kind of stress. In addition, this practice is also very useful for monitoring the health-related activities of elders who live at home. The home health monitoring, a continuous monitoring of a patient or elder at home using visual sensors is one such nonintrusive sub-area of health services at home. In this article, we propose a transfer learning-based edge computing method for home health monitoring. Specifically, a pre-trained convolutional neural network-based model can leverage edge devices with a small amount of ground-labelled data and fine-tuning method to train the model. Therefore, on-site computing of visual data captured by RGB, depth, or thermal sensor could be possible in an affordable way. As a result, raw data captured by these types of sensors is not required to be sent outside from home. Therefore, privacy, security, and bandwidth scarcity shall not be issues. Moreover, real-time computing for the above-mentioned purposes shall be possible in an economical way.

Keywords- Edge Computing, Computer Vision, Visual Geometry Group-16 layer model

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PAPERID: ICIRAIML-24-044

AN EFFICIENT PRIVACY-ENHANCING CROSS-SILO FEDERATED LEARNING AND APPLICATIONS FOR FALSE DATA INJECTION ATTACK DETECTION IN SMART GRIDS

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ABSTRACT

Federated Learning is a prominent machine learning paradigm which helps tackle data privacy issues by allowing clients to store their raw data locally and transfer only their local model parameters to an aggregator server to collaboratively train a shared global model. However, federated learning is vulnerable to inference attacks from dishonest aggregators who can infer information about clients' training data from their model parameters. To deal with this issue, most of the proposed schemes in literature either require a non-colluded server setting, a trusted third-party to compute master secret keys or a secure multiparty computation protocol which is still inefficient over multiple iterations of computing an aggregation model. In this work, we propose an efficient cross-silo federated learning scheme with strong privacy preservation The proposed scheme is demonstrated theoretically and empirically to provide provable privacy against an honest-but-curious aggregator server and simultaneously achieve desirable model utilities. The scheme is applied to false data injection attack detection (FDIA) in smart grids. This is a more secure cross-silo FDIA federated learning resilient to the local private data inference attacks than the existing works.

Keywords - Machine learning, Federated Learning, False Data Injection Attack Detection.

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USING EXISTING CCTV NETWORK FOR CROWD MANAGEMENT, CRIME PREVENTION & WORK MONITORING USING AI & ML

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ABSTRACT

In the constantly evolving realm of urban security, the incorporation of machine learning (ML) technologies into existing Closed-Circuit Television (CCTV) networks emerges as a game-changing solution. Inspired by real- world challenges where traditional surveillance methods often falter, our project sets out to redefine urban safety through innovative technological interventions. Our approach harness the potential of ML, involving the YOLOv8 (YOU ONLY LOOK ONCE) algorithm, to conduct real-time analysis of video feeds, swiftly identifying suspicious activities, anomalies, crowd congestion, weapons, and known criminal faces. By seamlessly integrating ML- generated insights with conventional surveillance techniques, we aim to elevate the public safety, enhance law enforcement efficiency, prevent crimes, and streamline operational processes.

Keywords - Machine learning, Closed-Circuit Television (CCTV),YOLOv8,Public safety

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PAERID: ICIRAIML-24-046

DEPRESSION DETECTION USING TEXT, IMAGE & SPEECH USING DEEP LEARNING ALGORITHMS

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ABSTRACT

The paper addresses global depression, affecting over 300 million people, by leveraging machine learning and data availability. The authors propose a model using Long-Short Term Memory (LSTM)with two hidden layers and a Convolutional Neural Network (RNN) with two dense layers to predict depression from social media text. The model, trained to identify signs of depression based on semantics and written content, achieves a 99.0% accuracy, outperforming frequency-based deep learning models and reducing the false positive rate. This demonstrates the potential of CNN and Random-forest models for early depression detection, which could help prevent mental disorders and suicidal tendencies. The paper highlights the model's effectiveness by comparing its mean accuracy with other models & early recognition of depressive emotions among social media users.

Keywords - Depression, Machine Learning, LSTM, CNN, Prediction, Social Media, RNN.

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IMPLEMENTATION OF DEEP LEARNING BASED NEURAL NETWORK ALGORITHM FOR INTRACRANIAL HAEMORRHAGE DETECTION

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ABSTRACT

Haemorrhage is caused by ruptured brain arteries, pose a critical medical emergency demanding swift diagnosis. Existing methods rely heavily on expert physicians. This study proposes a deep learning approach, specifically the YOLO model, to accurately classify brain hemorrhages from head CT scan Brain images. To overcome the challenge of limited available datasets, we employ image augmentation and dataset balancing techniques. The resulting architecture, named BHCNet, is evaluated based on accuracy, precision, sensitivity, specificity, and F1-score. Comparative analysis demonstrates the superior performance of our model in accurately predicting brain haemorrhages, potentially saving lives through timely intervention.

Keywords - Brain Haemorrhage Detection,YOLO Model, BHCNet Architecture.

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AI BASED FAQ CHATBOT WITH VOICE ASSISTANCE

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ABSTRACT

This paper introduces a novel chatbot system designed to answer frequently asked questions (FAQs) typically handled by humans. Traditional FAQ systems rely on pre-programmed responses or human agents, but the proposed chatbot brings automation into the process, significantly reducing the need for constant human intervention. The chatbot is equipped with the ability to provide instant responses to common queries, improving efficiency and user experience. If a user is unsatisfied with the chatbot's response, control is seamlessly transferred to a human agent who addresses the query in real-time and updates the system database with the new information. This feedback mechanism ensures that the chatbot becomes more intelligent and adaptive over time, reducing the gap between human-assisted support and automated systems. This system is particularly useful in environments where a large number of repetitive inquiries are handled, such as customer support or information desks. The integration of real-time human intervention not only enhances user satisfaction but also ensures that the chatbot remains up-to-date with new or evolving queries. Moreover, the chatbot's ability to support both text-based and image-based queries further broadens its applicability, making it a versatile tool in various domains. With a focus on automation, real-time response improvement, and seamless human-agent collaboration, this chatbot system bridges the gap between traditional FAQ methods and modern AI-driven solution.

Keywords -Artificial intelligence, Voice to Text Generation, Chatbbots.

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EDERATED LEARNING BASED FACE AND EYE BLINK RECOGNITION

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ABSTRACT

This paper presents a blinking-based liveness detection method for human face using Federated Learning Process. Our method only needs a web camera for capturing video clips. Blinking clue is a passive action and does not need the user to any hint, such as speaking, face moving. We model blinking activity by CRFs, which accommodates long-range contextual dependencies among the observation sequence. The experimental results demonstrate that the proposed method is promising, and outperforms the Federated Learning process method.

Keywords – Federated learning, Face Recognition, Eyblink Detection

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LANGUAGE IDENTIFICATION FOR MULTILINGUAL MACHINE TRANSLATION

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ABSTRACT

Machine translation is the process of translating a text in one natural language into another natural language using computer system. Translating a document containing a single source language content is easy but when the information in the source document is given in multilingual format then there is a need to identify the languages that are involved in such multilingual document. Language identification is the task in natural language processing that automatically identifies the natural language in which the content in given document are written in. Language identification is the fundamental and crucial step in many NLP applications. In this paper, n-gram based and machine learning based language identifiers are trained and used to identify three Indian languages such as Hindi, Marathi and Sanskrit present in a document given for machine translation. It is observed that, support vector machine-based language identifier is more accurate than any other technique and it achieves 89% accuracy that is 18% more than traditional n-gram based approach. The inclusion of language identification component in machine translation improved the quality of translation

Keywords - Language Identification, Natural Language Processing, Support Vector Machine.

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AUTOMATIC GRADING OF PROGRAMMING ASSIGNMENTS : AN APPROACH BASED ON FORMAL SEMANTICS

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ABSTRACT

Programming assignment grading can be time consuming and error-prone if done manually. Existing tools generate feedback with failing test cases. However, this method is inefficient and the results are incomplete. In this project, we present AUTOGRADER, a tool that automatically determines the correctness of programming assignments and provides counterexamples given a single reference implementation of the problem. Instead of counting the passed tests, our tool searches for semantically different execution paths between a student's submission and the reference implementation. If such a difference is found, the submission is deemed incorrect; otherwise, it is judged to be a correct solution. We use weakest preconditions and symbolic execution to capture the semantics of execution paths and detect potential path differences. AUTOGRADER is the first automated grading tool that relies on program semantics and generates feedback with counterexamples based on path deviations. It also reduces human efforts in writing test cases and makes the grading more complete. We implement AUTOGRADER and test its effectiveness and performance with real-world programming problems and student submissions collected from an online programming site. Our experiment reveals that there are no false negatives using our proposed method and we detected 11 errors of online platform judges.

Keywords – Autograder, Semantics. Programming Assignments

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PAPERID: ICIRAIML-24-052

A MULTILINGUAL SPAM REVIEWS DETECTION BASED ON PRE-TRAINED WORD EMBEDDING AND WEIGHTED SWARM SUPPORT VECTOR MACHINES

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ABSTRACT

Online reviews are important information that customers seek when deciding to buy products or services. Also, organizations benefit from these reviews as essential feedback for their products or services. Such information required reliability, especially during the Covid-19 pandemic which showed a massive increase in online reviews due to quarantine and sitting at home. Not only the number of reviews was boosted but also the context and preferences during the pandemic. Therefore, spam reviewers reflect on these changes and improve their deception technique. Spam reviews usually consist of misleading, fake, or fraudulent reviews that tend to deceive customers for the purpose of making money or causing harm to other competitors. Hence, this work presents a Weighted Support Vector Machine (WSVM) and Harris Hawks Optimization (HHO) for spam review detection. The HHO works as an algorithm for optimizing hyper parameters and feature weighting. Three different language corpora have been used as datasets, namely English, Spanish, and Arabic in order to solve the multilingual problem in spam reviews. Moreover, pre-trained word embedding (BERT) has been applied alongside three-word representation methods (NGram-3, TFIDF, and One-hot encoding).

Keywords– Deception technique, Weighted Support Vector Machine, Harris Hawks Optimization

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PAPERID: ICIRAIML-24-053

CNN BASED SPEAKER RECOGNITION IN LANGUAGE AND TEXT INDEPENDENT SMALL SCALE SYSTEM

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ABSTRACT

With the widespread use of voice-controlling services and devices, the research for developing robust and fast systems for automatic speaker identification had accelerated. In this paper, we present a Convolutional Neural Network (CNN) architecture for text-independent automatic speaker identification. The primary purpose is to identify a speaker, among many others, using a short speech segment. Most of the current researches focus on deep CNNs, which were initially designed for computer vision tasks. Besides, most of the existing speaker identification methods require audio samples longer than 3 seconds in the query phase for achieving a high accuracy. We created a CNN architecture appropriate for voice and speech related classification tasks. We propose an optimum model that achieves 99.5% accuracy on Libri-Speech and 90% accuracy on VoxCeleb 1 dataset using only 1-second test utterances in our experiments.

Keywords - Machine learning, Speaker Recognition

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PAPERID: ICIRAIML-24-054

A DEEP LEARNING-BASED EXPERIMENT ON FOREST WILDFIRE DETECTION IN MACHINE VISION COURSE

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ABSTRACT

As an interdisciplinary course, Machine Vision combines AI and digital image processing methods. This paper develops a comprehensive experiment on forest wildfire detection that organically integrates digital image processing, machine learning and deep learning technologies. Although the research on wildfire detection has made great progress, many experiments are not suitable for students to operate. Also, the detection with high accuracy is still a big challenge. In this paper, we divide the task of forest wildfire detection into two modules, which are wildfire image classification and wildfire region detection. We propose a novel wildfire image classification algorithm based on Reduce-VGGnet, and a wildfire region detection algorithm based on the optimized CNN with the combination of spatial and temporal features. The experimental results show that the proposed Reduce-VGGNet model can reach 91.20% in accuracy, and the optimized CNN model with the combination of spatial and temporal features can reach 97.35% in accuracy. Our framework is a novel way to combine research and teaching. It can achieve good detection performance and can be used as a comprehensive experiment for Machine Vision course, which can provide the support for talent cultivation in machine vision area.

Keywords - Machine Vision, Wildfire Detection, Reduce-VGGNet, CNN(Convolutional Neural Network)

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BLOCKCHAIN-BASED AUTONOMOUS NOTARIZATION SYSTEM USING NATIONAL E-ID CARD

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ABSTRACT

In recent years, the spread of information and communication technology has led to the emergence of e-government, which is the electronic replacement of government services. E-government is said to be compatible with blockchain technology, which has led to various studies on the possibility. Notarization, one of the functions of the government, has particularly been examined for the potential adoption of blockchain technology. However, because the notary public must authenticate the document's contents during the notarization process, they have been difficult to replace with smart contracts. In this study, we focus only on fixed date notarizations and propose a fully automated notarization system by combining a national e-ID card with Public Key Infrastructure and smart contracts. A fixed date is a notarization that allows a notary public to guarantee that a document existed, regardless of the authenticity of the document's content. Therefore, it can be replaced by a smart contract. Specifically, our proposed system automatically authenticates the creator and the document for electronic documents signed with a national e-ID card and uses the transaction receipt generated when the information is stored on the blockchain as a certificate of notarization. Verification of the signed data is done inside the blockchain by smart contracts, which eliminates the need for a verification authority. We further demonstrate the effectiveness of the proposed method in a Japanese use case as proof of concept.

Keyword: Public key infrastructure, E-ID

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CUTTING EDGE IOT TECHNOLOGY FOR SMART INDIAN PHARMA

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ABSTRACT

Indian pharmaceutical industry has been anticipated best over the years across world. It's a larger supplier of medical facilities to entire world and a leading nation in pharma manufacturing. Internet of things provides the pharma industry with a selection of new personalized market opportunities, better controlled environment of pharma manufacturing, prevent maintenance of equipment and improve diversified supply chain management system. Owing to the deficiencies in transparency, the pharmaceutical manufacturing may be unable to warrant innocuous and safe medicinal production and circulation. Adoption of internet of things could represent a new competitive advantage for pharma companies exhibiting pharma IoT. This is a conceptual explorative research demonstrates future of Indian pharma, which is in a verge to become self-reliant nation. The use of internet of things, artificial intelligence, big data analytics and tracking of customers carrying internet connected digital devices (TCCICDD) and sensors implanted in wearables would help to locate the customer medical history with health monitoring. This would also alert both the clinical manufacturers and users resulting in designing personalized based better future of Indian pharma industry. Future Pharma would see the business link paraphernalia across development and dispersal by using better, more reliable larger volumes of data to revolutionize manufacturing.

Keywords - Pharmaceutical Industry, Internet of Things, Big Data Analytics, Personalized Medicine.

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A RECURRENT CNN FOR AUTOMATIC DETECTION AND CLASSIFICATION OF CORONARY ARTERY PLAQUE AND STENOSIS IN CORONARY CT ANGIOGRAPHY

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ABSTRACT

The Various types of atherosclerotic plaque and varying grades of stenosis could lead to different management of patients with coronary artery disease. Therefore, it is crucial to detect and classify the type of coronary artery plaque, as well as to detect and determine the degree of coronary artery stenosis. This study includes retrospectively collected clinically obtained coronary CT angiography (CCTA) scans of 163 patients. In these, the centerlines of the coronary arteries were extracted and used to reconstruct multi-planar reformatted (MPR) images for the coronary arteriesTo perform automatic analysis, a multi-task recurrent convolutional neural network is applied on coronary artery MPR images. First, a 3D convolutional neural network is utilized to extract features along the coronary artery. Subsequently, the extracted features are aggregated by a recurrent neural network that performs two simultaneous multiclass classification tasks. In the first task, the network detects and characterizes the type of the coronary artery plaque. In the second task, the network detects and determines the anatomical significance of the coronary artery stenosis. This may enable automated triage of patients to those without coronary plaque and those with coronary plaque and stenosis in need for further cardiovascular worku.

Keywords - Machine learning, Image processing, coronary artery plaque

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BIRTH RATE ANALYSIS USING DATA SCIENCE

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ABSTRACT

The mode of delivery is a crucial determinant for ensuring the safety of both mother and child. The current practice for predicting the mode of delivery is generally the opinion of the physician in charge, but choosing the wrong method of delivery can cause different short-term and long-term health issues for both mother and baby. The purpose of this study was twofold: first, to reveal the possible features for determining the mode of childbirth, and second, to explore machine learning algorithms by considering the best possible features for predicting the mode of childbirth (vaginal birth, cesarean birth, emergency cesarean, vacuum extraction, or forceps delivery). An empirical study was conducted, which included a literature review, interviews, and a structured survey to explore the relevant features for predicting the mode of childbirth, while five different machine learning algorithms were explored to identify the most significant algorithm for prediction based on 6157 birth records and a minimum set of features. that were suitable for predicting modes of childbirth and categorized the features into different groups based on their importance. Various models were developed, with random forest (RF) ,followed by k-nearest neighbors (KNN), decision tree (DT), and support vector machine (SVM) technique.

Keywords: Childbirth prediction, S k-nearest neighbors (KNN), Prediction algorithms, Support vector machine (SVM), Structured survey, Decision tree (DT), Random forest (RF)

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PAPERID: ICIRAIML-24-059

ONLINE CRIME REPORTING MANAGEMENT SYSTEM USING WEB BASED APPLICATION

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ABSTRACT

The Online Crime Reporting System is an application that covers complete case management system and this project will help in managing all activities of the police station. It can used to report crimes and manage all the activities in a police station using computers by tracking all the details of complaints. Currently, most tasks are done manually, but by computerizing all the activities inside a police station the working systems can be managed easily and effectively. The modules involved in this project are: Login for user and admin, complaint registration, view complaint status, latest news regarding crime in the city, Safety tips for individuals, especially for women and also for vendors. This project is helpful in the Automation of police station records, including complaints, criminal records, Admin, User and Police Station Management System, etc. In addition to improving efficiency, the system enhances transparency and communication between public and the police. By moving everything online, it cuts down on paperwork, reduces mistakes, and helps resolve cases faster. The user-friendly interface makes it easy for anyone to report incidents, encouraging more citizens to come forward. In the end, the goal is to create a safer community by connecting people and law enforcement in a more effective way.

Keywords: Crime Reporting, Automation, Computerizing, Admin, User

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PAPERID: ICIRAIML-24-060

AUTONOMOUS VEHICLE MONITORING SYSTEM USING COMPUTER VISION PYTHON

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ABSTRACT

Real-time vehicle detection plays a crucial role in various applications such as traffic monitoring, surveillance, and autonomous driving. This paper proposes a novel approach that combines the strengths of You Only Look Once (YOLO) and Region-based Convolutional Neural Networks (R-CNN) for efficient and accurate vehicle detection in real-time scenarios.The YOLO algorithm is known for its speed and ability to detect objects in a single pass through the neural network. However, it may suffer from lower accuracy, especially for smaller objects like vehicles in distant scenes or with occlusions. On the other hand, R-CNN methods provide superior accuracy by proposing regions of interest and applying deep learning models to these regions. However, they are computationally expensive and not suitable for real-time applications.

Keywords: Region-based Convolutional Neural Networks, YOLO algorithm, Real-time vehicle, Computer Vision Techniques.

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PAPERID: ICIRAIML-24-061

DISEASE PREDICTION BASED ON SYMPTOMS USING MACHINE LEARNING

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ABSTRACT

The ability to predict diseases based on symptoms plays a crucial role in early diagnosis and timely intervention, thereby improving patient outcomes and reducing healthcare costs. Machine learning (ML) techniques have emerged as powerful tools in this domain, leveraging large datasets to identify complex patterns that might not be apparent through traditional diagnostic methods alone. This paper explores the application of ML algorithms for disease prediction using symptom data, highlighting the challenges, methodologies, and potential benefits of integrating these technologies into clinical practice. Disease prediction based on symptoms using machine learning (ML) is an innovative approach that leverages advanced algorithms to enhance the accuracy and efficiency of medical diagnostics. By analyzing patient-reported symptoms, demographic data, and historical health records, ML models can identify patterns and correlations that may not be immediately apparent to healthcare professionals. This method involves training models on extensive datasets to predict the likelihood of various diseases based on symptom combinations. The integration of ML in disease prediction aims to support early detection, personalized treatment plans, and improved patient outcomes. Additionally, it reduces the burden on healthcare systems by streamlining diagnostic processes and enabling more precise and timely interventions. As the healthcare industry continues to embrace digital transformation.

Keywords: Demographic data, Personalized Treatment Plans, Precise Interventions, Patient-reported Symptoms

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PAPERID: ICIRAIML-24-062

CLOUD BASED IMPROVED FILE HANDLING AND DEDUPLICATION

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ABSTRACT

Recent years have witnessed the trend of leveraging cloud-based services for large scale content storage, processing, and distribution. Security and privacy are among top concerns for the public cloud environments. Towards these security challenges, we propose and implement, on Open Stack Swift, a new client-side deduplication scheme for securely storing and sharing outsourced data via the public cloud. That is, every client computers a per data key to encrypt the data that he intends to store in the cloud. As such, the data access is managed by the data owner. Second, by integrating access rights in metadata file, an authorized user can decipher an encrypted file only with his private key.

Keywords: Open Stack Swift, deduplication, Cloud-Based**,** crypto-systems, Deep Learning, Computer Vision, convolutional neural networks.

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ADVANCED CREDIT CARD FRAUD DETECTION USING MACHINE LEARNING

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ABSTRACT

In our project, mainly focused on credit card fraud detection for in real world. Initially I will collect the credit card datasets for trained dataset. Then will provide the user credit card queries for testing data set. After classification process of random forest algorithm using to the already analysing data set and user provide current dataset. Finally optimizing the accuracy of the result data. Then will apply the processing of some of the attributes provided can find affected fraud detection in viewing the graphical model visualization. The performance of the techniques is evaluated based on accuracy, sensitivity, and specificity, precision. The results indicate about the optimal accuracy for Decision tree are 98.6% respectively. Credit card fraud detection is presently the most frequently occurring problem in the present world. This is due to the rise in both online transactions and e-commerce platforms. Credit card fraud generally happens when the card was stolen for any of the unauthorized purposes or even when the fraudster uses the credit card information for his use. In the present world, we are facing a lot of credit card problems. To detect the fraudulent activities, the credit card fraud detection system was introduced. This project aims to focus mainly on machine learning algorithms. The algorithms used are random forest algorithm and the Adaboost algorithm. The results of the two algorithms are based on accuracy, precision, recall, and F1-score. The ROC curve is plotted based on the confusion matrix. The Random Forest and the Adaboost algorithms are compared and the algorithm that has the greatest accuracy, precision, recall, and F1-score is considered as the best algorithm that is used to detect the fraud.

Keywords: Decision tree, Graphical model visualization.

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PAPERID: ICIRAIML-24-064

COMPUTE THE CUSTOMER BEHAVIORAL SEGMENTATION ON SHOPPING MALL DATA USING ML

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ABSTRACT

The use of machine learning can be seen almost everywhere around us, be it Facebook recognizing you or your friends, or YouTube recommending you a video or two based on your history — Machine Learning is everywhere! However, the 'magic' of machine learning is not just limited to only these areas. Machine Learning is broadly categorized as Supervised and Unsupervised Learning. Supervised Learning is one in which we teach the machine by providing both independent and dependent variables, for example, Classifying or predicting values. Unsupervised Learning mainly deals with identifying the structure or pattern of the data. In this type of algorithms, we do not have labeled data(or the dependent variable is absent), for example, clustering data, recommendation systems, etc. Unsupervised Learning provides amazing results as one can deduce many hidden relations between different attributes or features.In this article, I will be discussing a specific problem based on clustering techniques(Unsupervised Learning). However, my main aim in this article is to discuss the opulent use of machine learning in business and profit enhancement.

Keywords: Features, Clustering, Supervised, Unsupervised algorithm, relations.

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PAPERID: ICIRAIML-24-065

STATISTICAL ANALYSIS ON STOCK MARKET TREND BASED ON CLUSTERING USING MACHINE LEARNING

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ABSTRACT

The stock market is inherently volatile and influenced by numerous factors, making trend prediction a challenging task. This study presents a statistical analysis of stock market trends through the application of machine learning (ML) techniques, specifically focusing on clustering algorithms. Clustering, an unsupervised learning approach, is used to group stocks with similar performance patterns, allowing investors and analysts to detect hidden trends and market behaviors. The analysis explores popular clustering algorithms such as K-means, Hierarchical Clustering, and DBSCAN to segment stocks based on historical price data, trading volume, and other financial indicators. The clusters are evaluated using metrics like silhouette scores and withincluster sum of squares (WCSS) to ensure robust groupings. Additionally, dimensionality reduction techniques, such as Principal Component Analysis (PCA), are employed to enhance visualization and minimize noise in the data. The results reveal that clustering can uncover latent structures in market trends, identify sectoral patterns, and highlight anomalous stock behaviors. The findings demonstrate how clustering complements other ML-based predictive models, providing valuable insights for portfolio diversification and risk management. This research underscores the potential of ML techniques in enhancing financial decision-making by offering data-driven insights into stock market trends.

Keywords: Financial, Economic, Statistical, Graphs, Networks, Predictions

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PAPERID: ICIRAIML-24-066

FOREST FIRE PREDICTION USING MACHINE LEARNING

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ABSTRACT

Fire is a natural disaster that can be caused by many different reasons. Recently, more environmentally friendly and innovative extinguishing methods have started to be tested, some of which are also used. For this purpose, a sound wave fire-extinguishing system was created and firefighting tests were performed. With the data obtained, as a result of 17,442 tests, a data set was created. In this study, five different machine learning methods were used by using the data set created. These are artificial neural network, k-nearest neighbour, random forest, stacking and deep neural network methods. Stacking method is an ensemble method created by using artificial neural network, k-nearest neighbour, random forest models together. Classification of extinction and non-extinction states of the flame was made with the models created with these methods. The accuracy of models in classification should be analysed in detail in order to be used as a decision support system in the sound wave fire-extinguishing system. Hence, the classification processes were carried out through the 10-fold cross-validation method. As a result of these tests, the performance analysis of the models was carried out, and the results showed that the highest classification accuracy was determined 96.58% in SVC. The performance of the methods was compared by analysing the performance metrics of machine learning methods. Prediction of forest fire id expected to reduce the impact of forest fire in the future. Many fire detection algorithms are available with different approach towards the detection of fire.

Keywords: SVC, Stacking, Artificial neural network, random forest

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A PRIVACY PRESERVING AND GROUP DATA SHARING IN CLOUD COMPUTING

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ABSTRACT

In this paper, we propose a novel privacy-preserving mechanism designed to support public auditing on shared data stored in cloud environments. Our approach employs ring signatures to compute verification metadata, enabling public auditors to verify the integrity of shared data without revealing the identity of the signer on each data block. This maintains the privacy of the data's authors while ensuring that public verifiers can efficiently audit the data without the need to retrieve the entire file. Additionally, the proposed mechanism introduces the ability to perform multiple auditing tasks simultaneously, further improving the efficiency of the auditing process compared to traditional methods. Our privacy-preserving public auditing mechanism is built upon the foundation of homomorphic authenticators, leveraging ring signatures to ensure both data privacy and integrity in a shared cloud environment. Public verifiers can perform audits without gaining access to the entire data set and are unable to determine the signer of specific data blocks. To enhance efficiency, our system supports batch auditing, allowing multiple tasks to be verified in a single audit process. Future work will focus on solving traceability problems, such as enabling a group manager to reveal a signer's identity in special cases based on verification metadata. This advancement promises to address major privacy and performance concerns in cloud-based auditing systems.

Keywords: Ring Signatures, Metadata, homomorphic authenticators, Privacy, Signer, Integrity, Auditing.

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PAPERID: ICIRAIML-24-068

LOAN APPROVAL PREDICTION USING MACHINE LEARNING

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ABSTRACT

In the era of digital finance, the need for efficient loan approval processes has prompted the application of machine learning techniques. This study focuses on developing a predictive model for loan approval using a dataset that encompasses various borrower attributes, including credit score, income, employment history, and loan amount. We explore several machine learning algorithms, such as logistic regression, decision trees, and random forests, to assess their effectiveness in predicting loan approval outcomes. The data underwent rigorous preprocessing and feature selection to enhance model performance. Evaluation metrics, including accuracy, precision, and recall, were employed to identify the most effective model. Results demonstrate that machine learning can significantly streamline loan approval decisions, offering faster processing times and improved risk assessment compared to traditional methods. By integrating predictive analytics into the loan approval workflow, financial institutions can not only enhance operational efficiency but also improve customer satisfaction. This research highlights the transformative potential of machine learning in finance and lays the groundwork for future advancements, including the incorporation of real-time data and more complex modeling techniques to refine prediction accuracy further.

Keywords: Decision trees , Random forests , Data preprocessing , Feature selection, Model evaluation, Accuracy, Precision

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PAPERID: ICIRAIML-24-069

ADVANCE SYSTEM TO DETECT HELMET AND NO HELMET MEANS DETECT NUMBER PLATE USING DEEP LEARNING

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ABSTRACT

In the rapidly evolving domain of intelligent transportation systems, ensuring road safety through the enforcement of helmet usage has become paramount. This paper presents an advanced system designed to detect helmet compliance among motorcyclists and subsequently identify those without helmets by capturing and recognizing their vehicle number plates. The proposed system integrates two powerful object detection techniques, YOLO (You Only Look Once) and RCNN (Region-based Convolutional Neural Networks), to achieve high accuracy and efficiency.The system operates in two primary phases. In the first phase, YOLO is employed for real-time helmet detection. Upon detecting a non-helmet wearer, the system triggers the second phase, where RCNN is utilized for number plate detection and recognition. RCNN's robust region proposal and feature extraction methods enhance the precision of number plate identification, even in challenging conditions such as varying lighting and angles.The integration of YOLO and RCNN leverages the strengths of both algorithms, creating a synergistic effect that enhances the overall system performance. The system's efficacy is validated through extensive experimentation, demonstrating its potential to significantly contribute to traffic law enforcement and road safety measures. The findings highlight the system's ability to operate in real-time scenarios, providing law enforcement agencies with a powerful tool to detect helmet violations and identify offenders efficiently.

Keywords: Convolutional Neural Networks, Automated detection, real-time processin, Optical Character Recognition.

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PAPERID: ICIRAIML-24-070

SOCIAL MEDIA SENTIMENT ANALYSIS FOR TWITTER

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ABSTRACT

In this paper, we argue for a focus on the latter problem for practical reasons. We show that it is a much more challenging task, as our analysis of the language in the typical datasets shows that hate speech lacks unique, discriminative features and therefore is found in the 'long tail' in a dataset that is difficult to discover. We then propose Deep Neural Network structures serving as feature extractors that are particularly effective for capturing the semantics of hate speech. We have assessed our methods on the most extensive compilation of Twitter-based hate speech datasets, demonstrating that they surpass current leading approaches by up to 6 percentage points in macro-average F1 scores. In the more demanding task of pinpointing hateful content, our methods achieve an improvement of up to 9 percentage points. We delve deeper into the implications of our findings, considering how the intricacies of hate speech detection can inform and improve automated moderation systems. Our study emphasizes the importance of leveraging advanced neural network architectures not only to enhance accuracy but also to address the nuance and context-dependent nature of hate speech. By fine-tuning models with a focus on semantic understanding, we demonstrate that our approach can more effectively differentiate between benign and malicious content. Our results are benchmarked against existing methodologies, showcasing the robustness of our techniques in varied real-world scenarios. This paper contributes to the ongoing discourse on improving the detection and mitigation of hate speech, highlighting the critical role of advanced machine learning models in fostering safer online environments.

Keywords: Datasets, Pinpointing, Speech, Models, Twitter based, Semantics, Neural, Approaches, Discriminative.

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PAPERID: ICIRAIML-24-071

CHAT BOT USING NATURAL LANGUAGE PROCESSING AND FLASK

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ABSTRACT

The integration of Artificial Intelligence (AI) into healthcare has the potential to revolutionize patient care, diagnosis, and treatment. This paper presents a comprehensive overview of AI assistance for healthcare, focusing on the convergence of Natural Language Processing (NLP), Machine Learning, and Data Science. By harnessing the power of these cutting-edge technologies, AI can offer intelligent, data-driven solutions to improve healthcare delivery. Natural Language Processing (NLP) is employed to extract valuable insights from medical texts, clinical notes, and patient records. This enables healthcare providers to better understand patient histories and make informed decisions. Machine Learning techniques are leveraged to predict disease outcomes, identify anomalies, and personalize treatment plans. Additionally, data science plays a pivotal role in aggregating and analyzing large healthcare datasets, ensuring data security, and maintaining compliance with regulatory standards. The paper explores various AI applications in healthcare, such as automated diagnosis and triage, medical image analysis, drug discovery, and patient monitoring. These applications have the potential to enhance clinical decision-making, reduce medical errors, and improve patient outcomes.AI assistance in healthcare is not without its challenges, including data privacy concerns, the need for robust model interpretability, and ethical considerations. The paper discusses these issues and presents strategies to address them. In conclusion, the integration of AI, NLP, Machine Learning, and Data Science in healthcare has the potential to usher in a new era of precision medicine and patient-centered care.

Keywords: Chat bot, Natural Language Processing , convolutional neural network, interpretability,

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AI ASSISTANCE FOR HEALTHCARE USING NLP, MACHINE LEARNING AND DATA SCIENCE

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ABSTRACT

The integration of Artificial Intelligence (AI) into healthcare has the potential to revolutionize patient care, diagnosis, and treatment. This paper presents a comprehensive overview of AI assistance for healthcare, focusing on the convergence of Natural Language Processing (NLP), Machine Learning, and Data Science. By harnessing the power of these cutting-edge technologies, AI can offer intelligent, data-driven solutions to improve healthcare delivery. Natural Language Processing (NLP) is employed to extract valuable insights from medical texts, clinical notes, and patient records. This enables healthcare providers to better understand patient histories and make informed decisions. Machine Learning techniques are leveraged to predict disease outcomes, identify anomalies, and personalize treatment plans. Additionally, data science plays a pivotal role in aggregating and analysing large healthcare datasets, ensuring data security, and maintaining compliance with regulatory standards. The paper explores various AI applications in healthcare, such as automated diagnosis and triage, medical image analysis, drug discovery, and patient monitoring. The paper discusses these issues and presents strategies to address them. In conclusion, the integration of AI, NLP, Machine Learning, and Data Science in healthcare has the potential to usher in a new era of precision medicine and patient-centered care. This technology convergence is poised to revolutionize healthcare by improving diagnosis accuracy, treatment efficacy, and patient outcomes while ensuring data security and ethical use.

Keywords: Artificial Intelligence (AI), Healthcare, Natural Language Processing (NLP), Machine Learning, Data Science, Diagnosis, Patient care

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PAPERID: ICIRAIML-24-073

TRAFFIC ANALYSIS PREDICTION USING MACHINE LEARNING

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ABSTRACT

There are many inventories in automobile industries to design and build safety measures for automobiles, but traffic accidents are unavoidable. There is a huge number of accidents prevailing in all urban and rural areas. Patterns involved with different circumstances can be detected by developing accurate prediction models which will be capable of automatic separation of various accidental scenarios. These clusters will be useful to prevent accidents and develop safety measures. We believe to acquire maximum possibilities of accident reduction using low budget resources by using some scientific measures.Traffic analysis prediction using machine learning is a transformative approach to understanding and forecasting traffic patterns. By leveraging historical traffic data, real-time information, and advanced machine learning algorithms, this method provides accurate predictions of future traffic conditions. The integration of various data sources, such as traffic flow, vehicle speed, weather conditions, and time of day, allows for comprehensive analysis and modeling. Machine learning techniques, including regression models, time-series analysis, and neural networks, are employed to identify patterns and relationships in the data. The resulting predictions can be used for congestion management, urban planning, emergency response, public transportation optimization, and environmental impact reduction. This approach not only enhances traffic management but also contributes to the development of smarter and more sustainable cities.

Keywords: Traffic Prediction, Machine Learning, Traffic Analysis, Predictive Analytics, Real-time Traffic Data, Traffic Flow Forecasting.

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ONLINE REAL ESTATE MANAGEMENT USING WEB APPLICATIONS

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ABSTRACT

Aim of this project is to develop a real estate web application , The real estate system give the functionality for buyers, seller allowing them to search for houses by features or address. It provides functionality for the seller, authorize them to log into the system and add new advertisements or delete existing ones. For this each user is provided a login account with login ID and password. The application provides the user to select any particular location and get information appropriately.

Keywords: Buyers, Seller, Login ID, web based, Customer Relationship Management, Cybersecurity.

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PAPERID: ICIRAIML-24-075

COUNSELLING MANAGEMENT SYSTEM

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ABSTRACT

In order to improve the services related to counselling process, many online counselling systems came into existence which supports the students in getting required help about the educational policies of universities and colleges. Counselling is the process that includes different types of activities such as guiding students towards colleges and universities, supporting them to register with their courses, providing full guidance in getting the information related to their college registration process. This online counselling system even gives great support to universities and colleges through which they can totally reduce the paper usage for counselling and guiding the students towards their university courses. Basically this software includes three different modules in which universities can manage their college records, student's records as well as counselling sections. Hence, counselling is an important aspect for the students of current technological generation as individual counsellor may remain in contact with all individual students as well as parents. Counselling is a process to have a two way communication with students and to find out their personal attributes. Here, students are allowed to speak whatever they think about their academic environment, the curriculum and their learning progress. So, collecting all necessary information of the student and making their parent's aware about their life becomes essential nowadays. It is used to smoothen the work of each counsellor who are facing problems currently, and making complete atomization of manual process to computerized system.

Keywords: Counselling, Education, Information, Environment, Computerize, Atomization, Transition, Record, Documents.

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PAPERID: ICIRAIML-24-076

REAL TIME VIDEO BASED VIOLENCE DETECTION SYSTEM IN PUBLICAREA USING DEEPLEARNING

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ABSTRACT

The increasing concerns over public safety have necessitated the development of advanced surveillance systems capable of real-time violence detection. This paper presents a real-time video-based violence detection system leveraging the capabilities of YOLO (You Only Look Once) and Convolutional Neural Networks (CNN). The system aims to enhance public security by accurately identifying violent actions in surveillance footage. YOLO, a state-of-the- art object detection framework, is utilized for its high-speed processing and efficiency in detecting objects within frames. Combined with CNNs, which excel in feature extraction and classification, the system is designed to recognize and categorize violent behaviours effectively. The system operates in real-time, processing video feeds from public area surveillance cameras to provide immediate alerts when violent activities are detected. This capability not only aids in swift response and intervention but also enhances the overall effectiveness of public safety measures. The system operates in real-time, processing video feeds from public area surveillance cameras to provide immediate alerts when violent activities aredetected. This capability not only aids in swift response and intervention but also enhances the overall effectiveness of public safety measures.

Keywords: You Only Look Once, Convolutional Neural Network, Region- based Convolutional Neural Network, Support Vector Machine.

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PAPERID: ICIRAIML-24-077

EMOJI CREATION USING HAAR CASCADE

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ABSTRACT

We propose Emojify, an approach to generating personalized emojis using Haar cascade. Our method leverages facial feature detection and machine learning algorithms to create customized emojis that capture individual characteristics. we can detect and extract distinctive traits such as eye shape, nose size, and mouth curvature. These emoji help individuals to express themselves in a genuine way possible in an social world. These features are then used to generate a unique emoji representation. Our approach enables the creation of diverse and personalized emojis, allowing users to express themselves more accurately in digital communication . We evaluate Emojify's performance on a dataset of facial images and demonstrate its effective in generating recognizable and engaging emojis . We use emoji in our daily life frequently in the form of comments. This study explores a novel approach to automated emoji creation by leveraging Haar Cascade, a machine learning-based object detection method. The proposed method achieves efficient real-time processing due to the lightweight nature of Haar Cascade, making it suitable for mobile and web applicationsThis approach highlights the potential of combining computer vision with creative technologies for dynamic and user-centric experiences.

Keywords: automated emoji, machine learning-based object, user-centric, Facemoji, generative adversarial network.

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PAPERID: ICIRAIML-24-078

MULTI - CLASS WEATHER CLASSIFICATION ON SINGLE IMAGES USING ARTIFICIAL INTELLIGENCE

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ABSTRACT

Multi-class weather classification from single images is a fundamental operation in many outdoor computer vision applications. However, it remains difficult and the limited work is carried out for addressing the difficulty. Moreover, existing method is based on the fixed scene. In this paper we present a method for any scenario multi-class weather classification based on multiple weather features and multiple kernel learning. Our approach extracts multiple weather features and takes properly processing. By combining these features into high dimensional vectors, we utilize multiple kernel learning to learn an adaptive classifier. We collect an outdoor images called MWI (Multi-class Weather Image) set. Experimental results show that the proposed method can efficiently recognize weather on MWI data-set.

Keywords: Edge detection; Weather classification; Support Vector Machine; Convolution Network Architecture; Object segmentation

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PAPERID: ICIRAIML-24-079

AUTONOMUS SYSTEM FOR FOOD VARIETY IDENTIFICATIONAND CALORIE RECOMMENDATION USING DEEP LEARNING

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ABSTRACT

The modern world healthy body depends on the number of calories consumed, hence monitoring calorie intake is necessary to maintain good health. At the point when yourBody Mass Index is somewhere in between from 25 to 29. It implies that you are conveying overabundance weight. Assumingyour BMI is more than 30, it implies you haveobesity. To get in shape or keep up the solid weight individuals needs to monitor the calorie they take. The existing system calorie estimation is to be happened manually. The proposed model is to provide unique solution for measuring calorie by using deep learning algorithm. The food calorie calculation is very important in medical field. This method is implementing to calculate the food calorie with the help of Convolutional Neural Network. The input of this calculated model is taken an image of food. The food calorie value is calculated theproposed CNN model with the help of food object detection. The primary parameter of the result is taken by volume error estimation and secondary parameter is calorie error estimation The volume error estimation is gradually reduced by 20%. That indicates the proposed CNN model is providing higher accuracylevel compare to existing model.

Keywords: CNN(convolutional nueral network), Image Classification, Data preprocessing, Feature extraction, Accuracy,Precision.

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PAPERID: ICIRAIML-24-080

NEW APPROACH FOR THIRD GENERATION OF ATM USING ARTIFICAL INTELLIGENCE

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ABSTRACT

Automated teller machines (ATMs) are well acknowledged devices stereotypically used by folks to cart out a variability of personal and business economic transactions and banking tasks. ATMs have become very popular with the general public for their availability and general user friendliness. ATMs are now originate in many positions having a systematic or high volume of consumer movement. For example, ATMs are typically found in restaurants, supermarkets, Convenience stores, malls, schools, gas stations, hotels, work locations, banking centers, airports, entertainment establishments, transportation facilities and a myriad of other locations. ATMs are typically available to consumers on a continuous basis such that consumers have the ability to carry out their ATM financial transactions and/or banking functions at any time of the day and on any day of the week. This based on the facial recognition and also the multilevel security system based to work this entire concept. Here, we have some PHP support to analyze the person authorized identification.

Keywords: Automated teller machines, stereotypically, RFID technology, AI technologies, Video stream, Pre processing, Feature extraction, Face recognition.

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PAPERID: ICIRAIML-24-081

AMAZON PRODUCT REVIEWS AND SENTIMENT ANALYSIS USING ML

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ABSTRACT

As online marketplaces have been popular during the past decades, the online sellers and merchants ask their purchasers to share their opinions about the products they have bought. As a result, millions of reviews are being generated daily which makes it difficult for a potential consumer to make a good decision on whether to buy the product. Analyzing this enormous amount of opinions is also hard and time consuming for product manufacturers. This thesis considers the problem of classifying reviews by their overall semantic (positive or negative). To conduct the study two different supervised machine learning techniques. SVM, Logistic Regression, Multinomial Naïve Bayes, Decision Tree and Ensemble Classifier, has been attempted on beauty products from Amazon. Their accuracies have then been compared. The results showed that the Random Forest approach outperforms among the state of art approaches.

Keywords: Logistic Regression, Decision Tree, ecommerce, amazon dataset, preprocessed.

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PAPERID: ICIRAIML-24-082

PHISHING URL DETECTION USING MACHINE LEARNING

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ABSTRACT

Phishing attacks pose a significant threat to cyber security by tricking users into divulging sensitive information via malicious URLs. Traditional detection methods struggle to keep pace with evolving phishing tactics. This paper explores the use of machine learning techniques to enhance phishing URL detection, analyzing various algorithms and their effectiveness. The findings demonstrate that machine learning can significantly improve the accuracy and efficiency of identifying phishing attempts, offering a robust solution to this persistent cyber threat.

Keywords: phishing, URL detection, machine learning, cybersecurity, phishing attacks, malicious URL's

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THE FUNCTIONALITY PHARMACY STORE MANNAGEMENT SYSTEM AND DELIVERY SYSTEM

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ABSTRACT

The project mainly focused on online processing into customer in that application. Initially customer register to the details, then will login to the account details in that application. The pharmacy owner symptoms details provide in that application. After the process of customer view to the prescription details then will pay the amount in online banking application. The doctor prescription also providing the customer needs symptom query of proceeds. After applying to online banking and cash on delivery process in that application. The admin process to the customer and pharmacy owner details viewed. The finally admin login to the account details in all the customer and pharmacy owner view the details. The admin processing in to checking in that application. This system is also helpful to improve the efficiency of the system by ensuring effective monitoring of services and activities. A summarized list of drugs dispensed to patient can be viewed for monitoring purposes. The pharmacy management system is built for the sake of ensuring effective and clear data saving and manipulating as well as neat work on the pharmacy medical products.

Keywords: Symptoms, Prescription, query, Online application, Drugs, Monitoring purposes, manipulation, Computer Vision, Medical products.

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PAPERID: ICIRAIML-24-084

LOGO DETECTION USING YOLO ALGORITHM

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ABSTRACT

Logo detection is a computer vision technique that allows us to identify and locate logos within images or videos. Unlike image recognition, which assigns a label to an entire image, logo detection draws bounding boxes around each logo instance and labels them accordingly. In this project, we train a logo detection model using YOLOv7, a state-of-the-art architecture known for its speed and accuracy.

Keywords: Deep Learning, Convolutional Neural Network(CNN), Logo Detection, Image Analysis, Quality Inspection, YOLOv2, Automation, Computer Vision, YOLO (You Only Look Once)

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PAPERID: ICIRAIML-24-085

TRAFFIC PREDICTION FOR INTELLIGENT TRANSPORTATION SYSTEM USING MACHINE LEARNING

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ABSTRACT

This project describes content analysis of text with to identify suicidal tendencies and types. This article also describes how to make a sentence classifier that uses a neural network created using various libraries created for machine learning in the Python programming language. Attention is paid to the problem of teenage suicide and «groups of death» in social networks, the search for ways to stop the propaganda of suicide among minors. Analysis of existing information about so-called groups of death and its distribution on the Internet. This project explores the creation of accurate prediction models to identify patterns in traffic accidents, which continue to be a significant issue in both urban and rural areas despite extensive safety measures in the automobile industry. The project aims to develop models capable of automatically classifying various accidental scenarios by detecting patterns associated with different. circumstances. These classifications, or clusters, will provide valuable insights into the causes of accidents and help in the development of targeted safety measures. Through this study, we aim to contribute to the ongoing efforts in enhancing road safety and reducing the frequency of traffic accidents. By leveraging data analysis and machine learning techniques, the project endeavors to provide actionable insights that can inform policy-making, improve vehicle design, and foster safer driving behaviors.

Keywords: Artificial Intelligence, , Machine learning, Threads, supervised slearning and unsupervised learning.

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PAPERID: ICIRAIML-24-086

NETFLIX STOCK MARKET PRICE PREDICTION USING MACHINE LEARNING ALGORITHMS

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ABSTRACT

The prediction of share prices is the function of deciding the future price of a company stock or other commercial tool traded. Prediction of some movements allowed from some patterns can be found. People are always attracted to invest in share market and stock exchanges as they provide huge financial profits, which is also an important for finance research. This paper expects to study, develop and assess different techniques so as to foresee future stock trades. The experimental results states that different classification techniques can be successfully deploy for share price prediction

Keywords: Artificial Intelligence, , Machine learning, Threads, supervised slearning and unsupervised learning.

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PAPERID: ICIRAIML-24-087

IMPLEMENTATION OF BUSINESS INTELLIGENCE FOR SALES DATA MANAGEMNET USING POWER BI

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ABSTRACT

In the digital age, the ability to visualize financial data effectively is crucial for informed decision-making in both corporate and personal finance contexts. This paper presents a comprehensive design framework for financial knowledge dashboards utilizing Power BI, a leading business analytics service by Microsoft. The proposed design focuses on transforming complex financial datasets into interactive, user-friendly visualizations that facilitate deeper insights and strategic analysis. Our methodology integrates best practices in data visualization, user experience (UX) design, and financial analytics. We emphasize the importance of user-centric design, ensuring that the dashboard meets the needs of diverse stakeholders including executives, financial analysts, and operational managers. Key features of the dashboard include real-time data integration, customizable views, and advanced analytical tools such as predictive modeling and trend analysis. The paper concludes with a discussion on the future directions of financial dashboards, including the integration of artificial intelligence (AI) and machine learning (ML) to further augment decision-making processes. By leveraging the capabilities of Power BI, this design framework aims to empower users with actionable financial insights, driving better business outcomes and fostering a deeper understanding of financial health and performance.

Keywords: Artificial Intelligence, , Machine learning, Threads, supervised slearning and unsupervised learning.

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PAPERID: ICIRAIML-24-088

CHAT BOT USING NATURAL LANGUAGE PROCESSING AND FLASK

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ABSTRACT

The integration of Artificial Intelligence (AI) into healthcare has the potential to revolutionize patient care, diagnosis, and treatment. This paper presents a comprehensive overview of AI assistance for healthcare, focusing on the convergence of Natural Language Processing (NLP), Machine Learning, and Data Science. By harnessing the power of these cutting-edge technologies, AI can offer intelligent, data-driven solutions to improve healthcare delivery. This enables healthcare providers to better understand patient histories and make informed decisions. Machine Learning techniques are leveraged to predict disease outcomes, identify anomalies, and personalize treatment plans. Additionally, data science plays a pivotal role in aggregating and analyzing large healthcare datasets, ensuring data security, and maintaining compliance with regulatory standards. The paper explores various AI applications in healthcare, such as automated diagnosis and triage, medical image analysis, drug discovery, and patient monitoring. paper discusses these issues and presents strategies to address them. In conclusion, the integration of AI, NLP, Machine Learning, and Data Science in healthcare has the potential to usher in a new era of precision medicine and patient-centered care. This technology convergence is poised to revolutionize healthcare by improving diagnosis accuracy, treatment efficacy, and patient outcomes while ensuring data security and ethical use.

Keywords: Artificial Intelligence, , Machine learning, Threads, supervised slearning and unsupervised learning.

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PAPERID: ICIRAIML-24-089

FRAUD DETECTION TECHNIQUES FOR CREDIT CARD TRANSACTIONS USING POWER BI

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ABSTRACT

Credit card fraud poses a significant challenge to the financial industry, necessitating effective detection mechanisms. This study explores the use of Power BI, a robust business analytics tool, to enhance fraud detection in credit card transactions. By analyzing historical transaction data, we established rules and patterns associated with fraudulent behavior, such as unusual transaction amounts, atypical purchase locations, and rapid successive transactions. These rules were used to create dynamic dashboards and graphs within Power BI that highlight anomalies and generate alerts for further investigation. Key contributions include developing a comprehensive framework combining data preprocessing, rule-based anomaly detection, and visualization within Power BI. Interactive dashboards provide real-time insights through visual elements like heat maps, trend lines, and geospatial maps, enabling financial analysts to monitor transaction patterns, identify potential fraud, and make data-driven decisions promptly. Our findings demonstrate that Power BI significantly enhances fraud detection capabilities, providing real-time insights and facilitating quick responses to suspicious activities. This research underscores Power BI's potential as a versatile tool for fraud detection and presents a scalable approach adaptable to various financial institutions

Keywords: Power BI, Fraud Detection, Credit Card Transactions, Data Visualization, Anomaly Detection, Real-Time Analytics Fraud, Business Intelligence.

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PAPERID: ICIRAIML-24-090

DESIGN OF FINANCIAL KNOWLEDGE IN DASHBOARD

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ABSTRACT

In the digital age, the ability to visualize financial data effectively is crucial for informed decision-making in both corporate and personal finance contexts. This paper presents a comprehensive design framework for financial knowledge dashboards utilizing Power BI, a leading business analytics service by Microsoft. The proposed design focuses on transforming complex financial datasets into interactive, user-friendly visualizations that facilitate deeper insights and strategic analysis. Our methodology integrates best practices in data visualization, user experience (UX) design, and financial analytics. We emphasize the importance of user-centric design, ensuring that the dashboard meets the needs of diverse stakeholders including executives, financial analysts, and operational managers. Through case studies and real-world applications, we demonstrate the effectiveness of our design in improving financial reporting accuracy, enhancing strategic planning capabilities, and fostering a data-driven culture within organizations. The paper concludes with a discussion on the future directions of financial dashboards, including the integration of artificial intelligence (AI) and machine learning (ML) to further augment decision-making processes. By leveraging the capabilities of Power BI, this design framework aims to empower users with actionable financial insights, driving better business outcomes and fostering a deeper understanding of financial health and performance.

Keywords- Machine Learning , Cybersecurity , Network Traffic, Prediction Models , Deep Learning

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PAPERID: ICIRAIML-24-091

LUNG CANCER DETECTION USING CNN BY DEEP LEARNING

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ABSTRACT

Lung cancer is among the most fatal disease indeveloped countries, and early diagnosis of the disease isdifficult. Lung cancer diagnosis and Treatment has been one of the most daunting challenges humans have encountered in recentdecades.Early tumor diagnosis will continue to save a vast amount of lives around the world on a daily basis. This paper describes a method for classifying lung tumors as malignant or benign that combines a Convolutional Neural Network(CNN)with the A lexNet Network Model. A lexNet CNN is one of the transfer learning models. As compared to accuracy achieved by conventional neural network systems, the proposed CNN achieves a high degree of accuracy, which is more effective.

Keywords- Machine Learning , Cybersecurity , Network Traffic, Prediction Models , Deep Learning

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PAPERID: ICIRAIML-24-092

MACHINE LEARNING APPROACHES FOR PREDICTING CYBERSECURITY THREATS USING NETWORK TRAFFIC DATA

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ABSTRACT

This paper explores the application of machine learning techniques to predict and mitigate cybersecurity threats based on network traffic analysis. We focus on a novel feature extraction method that identifies patterns in traffic behavior, which are then used to train various machine learning models such as decision trees, support vector machines (SVM), and deep learning networks. Experiments conducted on real-time network traffic data demonstrate that our proposed method significantly outperforms traditional threat detection systems in both accuracy and speed. The results show that deep learning models, in particular, achieve up to 95% prediction accuracy. This paper concludes that machine learning can be effectively used to enhance cybersecurity measures, offering an efficient solution to current challenges in detecting complex, unknown threats. Future research could explore further improvements in data preprocessing and model optimization.

Keywords- Machine Learning , Cybersecurity , Network Traffic, Prediction Models , Deep Learning

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PAPERID: ICIRAIML-24-093

BLOCKCHAIN-BASED VOTING SYSTEM

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ABSTRACT

The traditional voting systems, whether electronic or manual, have raised concerns regarding security, transparency, and the integrity of election results. Voter fraud, manipulation, and lack of transparency are some of the major challenges in existing systems. To address these issues, a Blockchain-Based Voting System leverages the immutable, decentralized, and transparent nature of blockchain technology to create a secure and efficient voting platform.

In a Blockchain-based voting system, each vote is treated as a transaction recorded on a distributed ledger. This ensures that every vote is securely encrypted, immutable, and cannot be tampered with after it has been cast. The system utilizes cryptographic techniques to maintain voter privacy, ensuring that individual votes remain anonymous while preserving the integrity of the election process. Additionally, the voting system can be designed to handle elections on various scales, from local elections to national ones. The system could integrate smart contracts, which would allow automated verification of voter eligibility and facilitate the process of tallying votes once the election concludes. This system provides multiple benefits, including increased voter trust, reduced administrative overhead, faster result reporting, and most importantly, increased security and transparency.

Keywords: Voting System, Cryptography, Decentralized Ledger, Transparency, Security, Electronic Voting, Smart Contracts, Voter Privacy, Consensus Mechanism, Election Integrity, Immutable Records, Digital Voting.

ISBN No. 978-93-94246-83-6

PAPERID: ICIRAIML-24-094

A MACHINE LEARNING APPROACH FOR PREDICTING NETWORK TRAFFIC ANOMALIES

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ABSTRACT

The increasing reliance on networked systems in various domains has led to a surge in data traffic, making the detection of anomalies a critical task. In this research, we propose a novel machine learning-based approach for predicting and identifying network traffic anomalies. Our approach utilizes supervised learning techniques, specifically Support Vector Machines (SVM) and Random Forests (RF), to classify network traffic patterns. We employ a dataset consisting of real-time network traffic, including features such as packet size, timestamp, and source-destination pairs. The model is trained on historical traffic data and tested for its performance in predicting unusual patterns. Results show that our method achieves an accuracy of 92% and an F1-score of 0.89, outperforming traditional anomaly detection systems. The proposed approach demonstrates its potential in enhancing network security and optimizing resource management.

Keywords- Network Traffic Analysis, Machine Learning, Anomaly Detection, Support Vector Machines, Random Forest, Network Security, Supervised Learning, Predictive Modeling.

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PAPERID: ICIRAIML-24-095

ADVANCES IN ARTIFICIAL INTELLIGENCE FOR NATURAL LANGUAGE PROCESSING: CHALLENGES AND OPPORTUNITIES

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ABSTRACT

Artificial Intelligence (AI) has rapidly transformed numerous fields, with Natural Language Processing (NLP) being one of the most prominent areas of development. This paper explores the latest advancements in NLP techniques, specifically focusing on deep learning models, transformers, and reinforcement learning. We highlight the challenges faced by AI systems in understanding and generating human language, such as context comprehension, bias, and ethical concerns. Additionally, the paper reviews the application of AI-powered NLP models in industries like healthcare, finance, and customer service, discussing their potential benefits and limitations. We also present future directions in AI research, including multimodal learning, unsupervised learning techniques, and the integration of symbolic reasoning with neural networks. This review aims to provide a comprehensive overview for researchers and practitioners working in AI and NLP.

Keywords- Artificial Intelligence, Natural Language Processing, Deep Learning, Transformers, Reinforcement Learning, Context Comprehension, Bias in AI, Ethical AI, Multimodal Learning, Unsupervised Learning, Symbolic Reasoning, AI Applications.

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A DEEP LEARNING APPROACH FOR PREDICTING FUTURE TRENDS IN ARTIFICIAL INTELLIGENCE

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ABSTRACT

The field of Artificial Intelligence (AI) has experienced significant advancements in recent years, with deep learning techniques becoming central to the development of intelligent systems. This paper explores the application of deep learning models to predict future trends in AI, including the evolution of algorithmic approaches, hardware capabilities, and societal impacts. We propose a novel methodology for predicting AI advancements by analyzing historical data from multiple domains such as computer vision, natural language processing, robotics, and autonomous systems. By leveraging state-of-the-art neural networks, we identify patterns and insights that can inform the direction of future research and industry applications. Our findings suggest that AI will continue to expand its influence across various sectors, with breakthroughs expected in explainability, ethics, and generalization. This paper concludes by discussing the potential implications of AI advancements and the importance of fostering interdisciplinary collaboration to ensure a responsible AI future.

Keywords: Artificial Intelligence, Deep Learning, Predictive Modeling, Neural Networks, Algorithmic Trends, Natural Language Processing, Computer Vision, Robotics, Ethics in AI, Future AI Trends.

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PAPERID: ICIRAIML-24-097

REAL-TIME TRAFFIC MONITORING USING IOT AND MACHINE LEARNING

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ABSTRACT

Traffic monitoring and management are crucial for modern cities to ensure smooth transportation flow and reduce congestion. This project leverages Internet of Things (IoT) devices and machine learning algorithms to develop a real-time traffic monitoring system. By utilizing sensors and cameras installed at strategic locations, the system collects data on vehicle count, speed, and traffic density. Machine learning models analyze this data to predict traffic patterns and provide actionable insights for traffic management authorities. These insights can be used to optimize traffic signals, manage lane usage, and reroute traffic in real-time, thereby improving response times to traffic incidents. The integration of IoT and machine learning in this project aims to enhance traffic efficiency, reduce travel time, and improve overall urban mobility.

Keywords - IoT, machine learning, traffic monitoring, smart cities, transportation.

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PAPERID: ICIRAIML-24-098

ENHANCING CYBERSECURITY THROUGH DEEP LEARNING-BASED INTRUSION DETECTION SYSTEMS

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ABSTRACT

With the increasing number of cyber-attacks, enhancing cybersecurity measures has become a critical priority. This project proposes a deep learning-based intrusion detection system (IDS) to identify and prevent malicious activities in real-time. The system utilizes convolutional neural networks (CNN) and recurrent neural networks (RNN) to analyze network traffic data and detect anomalies indicative of cyber threats. By employing advanced feature extraction and pattern recognition techniques, the IDS can differentiate between normal and suspicious activities with high accuracy. Additionally, the system incorporates a feedback loop that allows continuous learning and adaptation to evolving threat patterns. This project aims to bolster network security, protect sensitive data from cyber threats, and minimize the risk of data breaches and unauthorized access.

Keywords - cybersecurity, deep learning, intrusion detection system, CNN, RNN, network security.

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SMART HEALTHCARE SYSTEM USING WEARABLE DEVICES AND CLOUD COMPUTING

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ABSTRACT

The advent of wearable devices and cloud computing has revolutionized healthcare by enabling continuous monitoring and remote patient care. This project develops a smart healthcare system that integrates wearable sensors with cloud-based data analytics to monitor vital signs and health parameters in real-time. The system collects data on heart rate, blood pressure, and physical activity, and transmits it to the cloud for analysis. Machine learning algorithms process the data to detect potential health issues and alert healthcare providers. Additionally, the system can provide personalized health recommendations to patients based on their monitored data, encouraging proactive health management. This innovative approach aims to improve patient outcomes, enhance disease prevention, and reduce healthcare costs by facilitating early diagnosis and timely medical intervention.

Keywords - smart healthcare, wearable devices, cloud computing, real-time monitoring, machine learning, patient care

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AUTONOMOUS DRONE NAVIGATION USING REINFORCEMENT LEARNING

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ABSTRACT

Autonomous drones have the potential to revolutionize various industries, from agriculture to logistics. This project focuses on developing an autonomous drone navigation system using reinforcement learning algorithms. The drone is equipped with sensors and cameras to perceive its environment and navigate through complex terrains. Reinforcement learning models enable the drone to learn optimal navigation strategies by interacting with the environment and receiving feedback. By training the drone to avoid obstacles and reach target destinations efficiently, this project aims to advance the capabilities of autonomous aerial vehicles and expand their applications. Moreover, the system incorporates advanced sensor fusion techniques to combine data from multiple sources, enhancing the drone's perception and decision-making abilities. This innovative approach not only aims to improve the efficiency and safety of drone operations but also paves the way for their integration into critical applications such as emergency response, precision agriculture, and package delivery.

Keywords - autonomous drones, reinforcement learning, navigation, sensors, machine learning, aerial vehicles

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PAPERID: ICIRAIML-24-101

PERSONALIZED RECOMMENDATION SYSTEM USING COLLABORATIVE FILTERING

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ABSTRACT

Personalized recommendation systems play a pivotal role in enhancing user experience by suggesting relevant products or content. This project develops a recommendation system using collaborative filtering techniques to analyze user preferences and behaviors. The system leverages historical data on user interactions to predict future preferences and recommend items tailored to individual tastes. By employing matrix factorization and neighborhood-based algorithms, the system can provide accurate and diverse recommendations. Additionally, it incorporates context-aware recommendation strategies to consider factors such as time, location, and device usage, enhancing the relevance of the suggestions. This project aims to improve user satisfaction and engagement across various applications, including e-commerce, streaming services, and social media, by delivering a more personalized and intuitive user experience.

Keywords - personalized recommendation system, collaborative filtering, user preferences, machine learning, matrix factorization, e-commerce, context-aware recommendations.

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PAPERID: ICIRAIML-24-102

EDGE COMPUTING FOR REAL-TIME DATA PROCESSING IN IOT NETWORKS

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ABSTRACT

The proliferation of Internet of Things (IoT) devices has led to an exponential increase in data generation, necessitating efficient real-time data processing solutions. This project explores the implementation of edge computing in IoT networks to process data closer to the source, thereby reducing latency and bandwidth usage. By deploying computational resources at the network edge, the system can handle tasks such as data filtering, aggregation, and preliminary analysis locally. This approach enhances the responsiveness of IoT applications, supports real-time decision-making, and mitigates the challenges associated with centralized cloud processing. Additionally, edge computing can improve data privacy and security by limiting the need to transmit sensitive information over long distances. The project aims to improve the performance and scalability of IoT systems, making them more robust and efficient. Furthermore, it seeks to enable seamless integration with various IoT devices and platforms, promoting interoperability and ease of deployment. By leveraging advanced edge computing frameworks, this project strives to create a resilient and adaptive infrastructure capable of meeting the dynamic demands of modern IoT ecosystems.

Keywords - edge computing, IoT, real-time data processing, latency reduction, bandwidth optimization, decentralized computing.

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PAPERID: ICIRAIML-24-103

QUANTUM COMPUTING FOR OPTIMIZATION PROBLEMS IN SUPPLY CHAIN MANAGEMENT

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ABSTRACT

Optimization problems in supply chain management are complex and require efficient solutions to enhance operational efficiency and reduce costs. This project investigates the application of quantum computing to solve large-scale optimization problems in supply chain networks. Quantum algorithms, such as quantum annealing and variational quantum eigensolver, are utilized to find optimal solutions for inventory management, logistics planning, and demand forecasting. By leveraging the computational power of quantum computers, this project aims to achieve significant improvements in the accuracy and speed of solving optimization problems, thereby revolutionizing supply chain management practices. In addition to traditional optimization challenges, the project explores the potential of quantum computing to address real-time decision-making scenarios and dynamic supply chain environments. The integration of quantum algorithms with classical methods seeks to create hybrid approaches that can tackle the most intricate supply chain issues. Ultimately, this project aspires to set new benchmarks for efficiency, resilience, and sustainability in supply chain operations, paving the way for more agile and adaptive logistics solutions.

Keywords - quantum computing, optimization, supply chain management, quantum algorithms, logistics, inventory management, real-time decision-making, hybrid approaches, sustainability

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PAPERID: ICIRAIML-24-104

ENHANCING HEALTHCARE DIAGNOSTICS WITH AI-DRIVEN PREDICTIVE ANALYTICS

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ABSTRACT

The integration of artificial intelligence (AI) into healthcare diagnostics has the potential to revolutionize patient outcomes by enabling accurate and timely predictions. This project explores the application of machine learning (ML) models to process medical imaging data, electronic health records, and real-time patient data for predictive diagnostics. Advanced deep learning techniques, such as convolutional neural networks (CNNs) and recurrent neural networks (RNNs), are employed to detect anomalies, forecast disease progression, and recommend personalized treatments. By leveraging large datasets and AI models, the project aims to improve the accuracy of diagnostic processes, reduce healthcare costs, and enhance patient care. Additionally, the research investigates ethical considerations and fairness in AI applications to ensure equitable healthcare access. Hybrid methodologies combining AI with traditional diagnostic approaches are proposed to optimize the precision and scalability of solutions, thereby setting a new standard in modern healthcare systems.

Keywords: artificial intelligence, machine learning, healthcare, predictive analytics, diagnostics, medical imaging, personalized treatments, ethical AI.

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PAPERID: ICIRAIML-24-105

AI-POWERED FRAUD DETECTION SYSTEMS FOR FINANCIAL SERVICES

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ABSTRACT

Fraud detection in financial transactions is a critical challenge that demands robust and scalable solutions. This project leverages AI and machine learning techniques to identify fraudulent activities in real time, minimizing financial losses and enhancing customer trust. Utilizing supervised and unsupervised learning approaches, such as anomaly detection, clustering, and deep learning, the project aims to create models capable of detecting patterns indicative of fraudulent behavior. Emphasis is placed on designing interpretable models to maintain transparency and compliance with regulatory standards. By incorporating real-time streaming analytics and hybrid AI techniques, the project addresses evolving fraud tactics and adapts to dynamic financial environments. This initiative aspires to set a benchmark for secure and resilient financial systems.

Keywords: artificial intelligence, fraud detection, financial services, machine learning, anomaly detection, real-time analytics, transparency, regulatory compliance.

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PAPERID: ICIRAIML-24-106

SMART CITIES: AI-DRIVEN URBAN TRAFFIC OPTIMIZATION

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ABSTRACT

Rapid urbanization has intensified traffic congestion, necessitating intelligent solutions to enhance mobility in cities. This project investigates the application of AI and data-driven approaches to optimize urban traffic management systems. Reinforcement learning (RL) and predictive analytics are utilized to manage traffic signals dynamically, minimize congestion, and reduce emissions. The project also incorporates real-time data from IoT sensors, GPS, and historical traffic patterns to create adaptive models. By combining machine learning with edge computing, scalable solutions are developed to address the growing demands of urban mobility. This research not only enhances transportation efficiency but also contributes to sustainable urban development and improved quality of life in cities.

Keywords: artificial intelligence, smart cities, traffic optimization, reinforcement learning, IoT, predictive analytics, sustainability, urban mobility.

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PAPERID: ICIRAIML-24-107

I IN PRECISION AGRICULTURE: ENHANCING CROP YIELD PREDICTION

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ABSTRACT

With the growing demand for sustainable food production, precision agriculture has emerged as a key area for innovation. This project employs AI and machine learning techniques to optimize crop yield predictions and resource management. Leveraging satellite imagery, weather data, and soil health metrics, deep learning models such as neural networks and decision trees are developed to predict yields with high accuracy. The research integrates AI with drone technology for real-time monitoring of crop health and early detection of diseases. Furthermore, the project explores the role of AI in optimizing irrigation and fertilization schedules to minimize waste and maximize efficiency. These advancements aim to transform agricultural practices, ensuring food security while promoting sustainability.

Keywords: artificial intelligence, precision agriculture, crop yield prediction, machine learning, sustainability, drone technology, resource optimization, food security.

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PAPERID: ICIRAIML-24-108

AI-DRIVEN CUSTOMER INSIGHTS FOR E-COMMERCE PERSONALIZATION

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ABSTRACT

Personalization in e-commerce has become essential for enhancing user experiences and driving business growth. This project delves into AI-based approaches to analyze customer behavior and preferences for tailored product recommendations. Techniques such as collaborative filtering, natural language processing (NLP), and sentiment analysis are employed to process large-scale user data from browsing patterns, purchase history, and reviews. The research focuses on creating recommendation systems that adapt in real time, ensuring relevance and enhancing customer satisfaction. Hybrid models combining AI with traditional marketing strategies are explored to maximize the impact of personalization. By enabling dynamic and data-driven decision-making, this project aspires to redefine customer engagement in e-commerce.

Keywords: artificial intelligence, e-commerce, personalization, recommendation systems, customer insights, NLP, real-time analytics, hybrid models.

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PAPERID: ICIRAIML-24-109

EBOOK STORE MANAGEMENT SYSTEM

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ABSTRACT

The shift towards online shopping has revolutionized retail, and the book industry is no exception. The "E-commerce Book Store" project aims to create a robust online platform tailored specifically for book enthusiasts. This platform will provide a seamless shopping experience, offering a wide range of books across various genres and categories. Users will be able to browse, search, and purchase books conveniently from the comfort of their homes Key features of the platform include an intuitive user interface, secure payment gateways, personalized recommendations based on user preferences, and a responsive customer support system. The backend infrastructure will be designed to handle a large inventory efficiently, ensuring timely updates on stock availability and order processing.

Keywords: E-Commerce, E-Book, Inventory Management, Backend Infrastructure.

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PAPERID: ICIRAIML-24-110

FAST AND SECURE FILE SHARING USING BLOCK CHAIN TECHNOLOGY

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ABSTRACT

As cloud services greatly facilitate file sharing online, there's been a growing awareness of the security challenges brought by outsourcing data to a third party. Traditionally, the centralized management of cloud serviceprovider brings about safety issues because the third party is only semi- trusted by clients. Besides, it causes trouble for sharing online data conveniently. In this paper, the Block chain technology is utilized for decentralized safety administration and provide more user-friendly service. Apart from that, Cipher text-Policy Attribute Based Encryption is introduced as an effective tool to realize fine-grained data access control of the stored files. Meanwhile, the security analysis proves the confidentiality and integrity of the data stored in the cloud server. Finally, we evaluate the performance of computation overhead ofour system.

Keywords: Artificial Intelligence, Precision Agriculture, Crop Yield Prediction, Machine Learning, Sustainability, Drone Technology

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PAPERID: ICIRAIML-24-111

LEVERAGING SQL FOR EFFICIENT DATA MANAGEMENT IN SUPPLY CHAIN OPTIMIZATION

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ABSTRACT

This project describes content analysis of text with to identify suicidal tendencies and types. This article also describes how to make a sentence classifier that uses a neural network created using various libraries created for machine learning in the Python programming language. Attention is paid to the problem of teenage suicide and «groups of death» in social networks, the search for ways to stop the propaganda of suicide among minors. Analysis of existing information about so-called groups of death and its distribution on the Internet. This project explores the creation of accurate prediction models to identify patterns in traffic accidents, which continue to be a significant issue in both urban and rural areas despite extensive safety measures in the automobile industry. The project aims to develop models capable of automatically classifying various accidental scenarios by detecting patterns associated with different circumstances. These classifications, or clusters, will provide valuable insights into the causes of accidents and help in the development of targeted safety measuresBy leveraging data analysis and machine learning techniques, the project endeavors to provide actionable insights that can inform policy-making, improve vehicle design, and foster safer driving behaviors.

Keywords: artificial intelligence, precision agriculture, crop yield prediction, machine learning, sustainability, drone technology

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PAPERID: ICIRAIML-24-112

ORT OF RICE AND ITS NEUTRICIAN CATEGORIES CHARACTERIZATION UTILIZING DEEP LEARNING APPROACH

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ABSTRACT

Rice is staple food crop for million of people worldwide, and the quality of the rice grains is a critical factor in determining its market value and consumer acceptance. Traditional methods of grading and classifying rice grains are time-consuming and subjective, leading to inconsistences and errors in the final product. In recent years, deep learning(DL) techniques have shown great promise in automating the process of rice quality analysis. In this study, we developed a DL-based approach for rice grain quality analysis using a large dataset of rice grain images. The DL model was trained to classify rice grains based on various quality parameters such as size, shape, color, texture, and defects. The results showed that the DL model could accurately classify rice grains with a high degree. Furthermore, the DL-based analysis provided insights into the underlying physical and chemical properties of the rice grains, which can be used to optimize production and processing methods.

Keywords: Deep Learning, Convolutional Neural Network(CNN), Fuzzy Logic, Image Analysis, Quality Inspection, Food Processing, Automation, Computer Vision, Rice Grain Classification, Nutritional Analysis.

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PAPERID: ICIRAIML-24-113

BUG TRACKING MANAGEMENT SYSTEM USING WEB DEVELOPMENT

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ABSTRACT

A bug tracking system (BTS) is a software application that is designed to help programmers to keep track of reported software bugs in their work. A major component of bug tracking system is a database that records facts and known bugs submitted by the tester. Bug Tracking System is an ideal solution to track the bugs of a product, solution or an application. Bug Tracking System allows individual developer to keep track of outstanding bugs in their product effectively.

Keywords: artificial intelligence, precision agriculture, crop yield prediction, machine learning.

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PAPERID: ICIRAIML-24-114

WEAPON DETECTION USING DEEP LEARNING

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ABSTRACT

Weapon detection is a critical component of security and public safety in our modern world. The threat of weapon and the need for rapid and accurate detection of weapons in public spaces, transportation hubs, and high-risk areas have prompted the development of advanced technology solutions. Deep learning, a subset of artificial intelligence (AI), has emerged as a powerful tool for automating the detection of weapons in images and videos. This abstract provides an overview of the key aspects involved in developing a weapon detection system using deep learning techniques. The primary objective of this research is to explore the application of deep learning models in the context of weapon detection. We address the challenges associated with identifying concealed or openly gun and refill dangerous objects. Deep learning algorithms, particularly Convolutional Neural Networks (RCNNs) and object detection models like YOLO (You Only Look Once) and Faster R-RCNN, have demonstrated remarkable potential in recognizing weapons from visual data. The increasing number of terrorist acts and lone wolf attacks on places of public gathering such as Hotels and Cinemas has solidified the need for much denser Closed-circuit Television (CCTV) systems. The increasing number of CCTV cameras has deemed it almost impossible for a human operator to inspect all the video streams and detect possible terror events. One of the common types of terror event is called "Active Shooter".

Keywords: Deep Learning, Convolutional Neural Network(CNN), Fuzzy Logic, Image Analysis, Quality Inspection, Food Processing, Automation, Computer Vision, Rice Grain Classification, Nutritional Analysis

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PAPERID: ICIRAIML-24-115

FAKE PRODUCT IDENTIFICATION USING BLOCK CHAIN

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ABSTRACT

In recent years, block chain has received increasing attention and numerous applications have emerged from this technology. Our Project uses the decentralized Block chain technology approach to ensure that consumers do not fully rely on the merchants to determine if products are genuine. We describe a decentralized Block chain system with products anti- counterfeiting, in that way manufacturers can use this system to provide genuine products without having to manage direct-operated stores, which can significantly reduce the cost of product quality assurance.

Keywords: Supply Chain Integrity, Product Authentication, QR Code Identification, Blockchain Technology, Consumer Safety.

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AI IN PRECISION AGRICULTURE: ENHANCING CROP YIELD PREDICTION

PAPERID: ICIRAIML-24-116

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With the growing demand for sustainable food production, precision agriculture has emerged as a key area for innovation. This project employs AI and machine learning techniques to optimize crop yield predictions and resource management. Leveraging satellite imagery, weather data, and soil health metrics, deep learning models such as neural networks and decision trees are developed to predict yields with high accuracy. The research integrates AI with drone technology for real-time monitoring of crop health and early detection of diseases. Furthermore, the project explores the role of AI in optimizing irrigation and fertilization schedules to minimize waste and maximize efficiency. These advancements aim to transform agricultural practices, ensuring food security while promoting sustainability.

Keywords: artificial intelligence, precision agriculture, crop yield prediction, machine learning, sustainability, drone technology, resource optimization, food security

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ABOUT CONFERENCE

International Conference on "Recent trends in AI-driven Data Analysis, Machine Learning and Computational Design" (ICRAIML-2024) will be organized by Department of AI&DS, AI&ML and CSD, St. Martin's Engineering College, Secunderabad, Telangana, India on 17th & 18th December, 2024. ICRAIML-2024 will serve as a colloquy for sharing the proficiency among academicians, researchers, scientist and industrial personnel from all over the world in the areas of engineering and technology.

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