ASCIS 2024

Marwadi University
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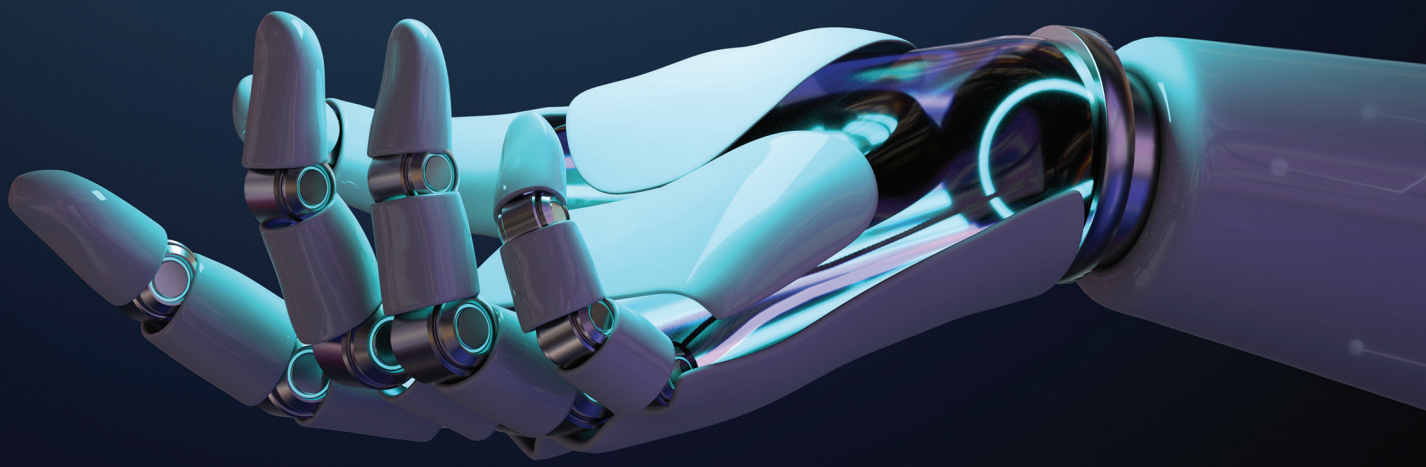
3RD INTERNATIONAL CONFERENCE ON

Advancements in Smart Computing & Information Security

Conference Proceedings



COMPLIED BY

DR R SRIDARAN
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The 3rd International Conference on Advancements in Smart Computing & Information Security (ASCIS) is a series of conferences by FCA, Marwadi University to disseminate state-of-the-art research by bridging the gap between industry and academia. This conference will be held from October 16, 2024 to October 18, 2024; wherein the leading researchers, academicians and industrialists have been invited from across the globe. Eminent experts from Academia and Industry, including the top 2% of the global scientific researchers from the Stanford list and industry are part of our general co-chairs, program chairs, industry-academia initiative, and track chairs committee. The ASCIS - 2024 comprises experts from top-ranked Indian Institutes such as IITs, NITs and reputed foreign universities. The advisory committee, a robust program committee, and branding & outreach will ensure good research submissions and identify the best research proposals to ignite cooperation between academia and industry.The research papers are invited from the academicians, research scholars and professionals and the selected papers will be presented during the conference. Other attractions of the conference being a Ph.D Forum, wherein young researcher will be presenting their Ph.D accomplishments and Poster Presentation for the research starters. More information about the conference can be found on the official website: https://ascisconf.org

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ASCIS 2024

Marwadi University, Rajkot

3rd International Conference on

Advancements in Smart Computing & Information Security

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Title	Proceedings of 3rd International Conference on Advancements in Smart Computing and Information Security
Authors' Name(s)	Dr. R. Sridaran Dr. Kalpesh Popat Dr. Divyakant Meva Dr. Sunil Bajeja Dr. Pankaj Mudholkar
Published By	Self-Published
Publisher's Name and Address	Marwadi University, Rajkot – 360003.
Printer's Details	TRANSCAN, Rajkot.
Edition Details	3rd Edition
ISBN	978-81-959510-9-3

Message from Pro Vice-Chancellor

Prof.(Dr) R.B. Jadeja
(Pro Vice-Chancellor, Marwadi University)

Dear Delegates, Speakers, and Attendees,

It is with great pleasure that I extend a warm welcome to all participants of the International Conference on Advances in Computer Science and Information Systems (ASCIS) 2024. This conference serves as a significant platform for researchers, academicians, industry professionals, and students to engage in fruitful discussions, share their insights, and promote collaboration in the ever-evolving fields of computer science and information systems.

At Marwadi University, we are deeply committed to driving innovation, encouraging academic excellence, and contributing to the global knowledge community. Conferences like ASCIS 2024 play an essential role in bringing together bright minds to explore new possibilities and address the emerging challenges of the digital world.

The proceedings of this conference reflect the dedicated efforts of all contributors, highlighting cutting-edge research and significant advancements in the field. I am confident that the discussions and papers presented here will inspire new ideas and drive forward-thinking research for the benefit of the global community.

On behalf of the entire Marwadi University community, I extend my best wishes for a productive and insightful conference, and I hope it proves to be a memorable and enriching experience for all participants.

Best regards,

Message from Pro Vice-Chancellor

Prof. (Dr) Sanjeet Singh
(Pro Vice-Chancellor, Marwadi University)

Dear Research Collaborators,

I am delighted to extend my heartfelt congratulations to the Faculty of Computer Applications for the successful organization of the 3rd International Conference on Advancements in Smart Computing and Information Security (ASCIS - 2024). It is truly commendable to see this prestigious event being held for the third consecutive year, showcasing the commitment and dedication of our faculty to advancing knowledge in this vital field. This prestigious event serves as a vital platform for researchers, academics, and industry professionals to exchange knowledge, discuss innovations, and explore emerging trends in the rapidly evolving domains of smart computing and information security.

As technology continues to advance at an unprecedented pace, the relevance of smart computing and information security has never been more critical. This conference brings together experts from across the globe to share their insights, present groundbreaking research, and foster collaborations that will shape the future of these fields. The discussions and findings from ASCIS - 2024 Marwadi University will contribute to addressing the pressing challenges posed by data protection, cybersecurity, and intelligent systems in today's interconnected world.

Marwadi University remains keenly supportive of all research activities, recognizing that conferences like ASCIS serve as essential platforms for disseminating knowledge to society. They also provide invaluable opportunities for networking and collaboration among researchers, practitioners, and industry leaders.

I am confident that the new collaborations formed during this event will pave the way for exciting research opportunities in the future. These partnerships have the potential to inspire innovative ideas and drive advancements across our fields. I look forward to witnessing the impactful contributions that will emerge from these collaborations in the years to come.

Message from Registrar

Shri Naresh Jadeja
(Registrar, Marwadi University)

In pursuit to cultivate and develop research eco-system, several initiatives have been undertaken at the University. One such endeavor has been organizing international conferences in the emerging research domains, fostering collaborations among research scholars, teachers and industry leaders. I am sure, ASCIS 2024 conference will be an exciting opportunity to engage with peers, present your work and explore new avenues for research and partnership.

I, wholeheartedly congratulate team at Faculty of Computer Applications for organizing the 3rd International Conference – ASCIS 2024 from October 16th to 18th, 2024 at Marwadi University, Rajkot.

Message from General Chair

Prof.(Dr) R. Sridaran
(Dean, Computer Applications, Marwadi University)

"Technology like art is a soaring exercise of the human imagination"
- Daniel Bell

I am extremely thankful to the academic community who have contributed quality research papers in large numbers during our 3 rd International Conference on Advancements in Smart Computing Information Security (ASCIS-2024). As every research opens a big world of opportunities for further research, I firmly believe that this compilation would benefit the academic community at large to take up their next step in their chosen domains. I am also very much thankful to Springer CCIS for their continuous support and all the sponsors, especially SERB, for their generous support. I am sure that the invited talks by eminent keynote speakers across the globe would have opened many new-age research opportunities for the next generations. Last, but not least, my sincere thanks to our university management and various committee members for their support.

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PIRNet: Two-step Deep Neural Network for Segmentation of Brain MRI with Efficient Loss Functions

Ashis Dattaa, Kunal Purkayasthaa, Palash Ghosala, Rustom Ali Ahmeda

Abstract: Aim: In medical analysis, the Segmentation of normal and crucial tissues of the brain from Magnetic Resonance Imaging (MRI) scans is the first and foremost task to start the investigation process to detect some brain-related issues that may create lots of trouble for the patient if proper and timely diagnosis is not carried out. Until a few years ago, this task was mainly managed by doctors or radiologists through a manual process, which was quite tedious and error-prone. Lately, research has focused on using various Machine Learn- ing methods, with varying levels of accuracy and complexity, to address this issue. Taking cues from the latest progress in deep stacked neural networks and residual connections used in image segmentation, we propose a comprehensive investigation of brain MRI segmentation that includes cerebrospinal fluid (CSF), gray matter (GM), white matter (WM), and background (BG) utilizing different loss functions.

Optimizing Tomato Leaf Disease Identification Using a Hybrid Spatial-Temporal Model and Attention Mechanism

Sajeev Ram Arumugam, Sheela Gowr, Anna Devi, Elavarasi.J and Sankar Ganesh Karuppasamy

Abstract: Ensuring crop health and yield requires accurately identifying diseas- es in tomato leaves. Existing deep learning models may not adequately capture the spatiotemporal patterns of disease progression, and traditional methods can be laborious and subjective. The hybrid spatial-temporal model enhanced by the attention processes used in this study presents an optimal method for diagnosing tomato leaf disease. The proposed approach uses DenseNet to extract complex spatial characteristics from high-resolution leaf images and recurrent neural networks (RNNs) to predict the temporal course of illness symptoms. The integration of temporal and spatial data provides a solid framework for classify-ing diseases. The model may also selectively focus on important areas of the images by using attention mechanisms, which improves classification accuracy. The objective is to develop a robust and efficient system for early disease detection in tomato crops. A key challenge lies in ensuring the generalizability to complex real-world scenarios with diverse disease presentations. Comprehensive evaluations of a wide range of datasets show that our hybrid model far out-performs traditional techniques in identification performance, underscoring its potential for real-world use in precision agriculture.

ABreakthrough Model for Speech Synthesis fromVideos for the Differently Abled

Sagar Yeruva, Athina Bhavana, Velaga Harshitha Sai, Gayathri Shakkari,Tatikonda Venka Manish

Abstract: Living things can get information by usinga variety of senses to perceive their environment. Humans, for instance, interpret what they perceive and utilize that knowledge to make sense of their environment and interact with one another. This madeus investigate how computers might be used to accomplish this and how it might benefit those who are unable to sense their surroundings. Therefore, our goal isto develop a system that can provide text and audio descriptions of videos for individuals with disabilities. Existing systems rely on neural networks like LSTM. Onthe other hand, LSTMs have difficulty comprehending lengthy sequences, which is necessary for creating descriptions for videos. Transformers have also gained popularity recently because of their ability to processdata in parallel; nonetheless, they have memory and temporal problems. Furthermore, existing systems do not prioritize speech from an application-orientedstandpoint, which limits the accessibility of these technologies. Therefore, we provide a system that generates textual and audio descriptions by utilizing several transformer models. Additionally, we offer a webinterface via which you may upload films and createtextual and voice descriptions for them. Taking things a step further, this work can be expanded to provide an interactive user interface that leverages the above-mentioned models to generate and read out loud descriptions of live video captured from a camera.

Commodity Identification Using Deep Learning In Smart Shoppping System

Dhevanathan P and S.Mary Saira Bhanu

Abstract: In supermarkets, product recognition for billing and stockmanagement is labor-intensive and inefficient. To address these issues, a real-time commodity identification system using computer vision and deep learning is proposed. The smart shopping system improves consumer experience with automatic cart billing, reducing checkout time and stock update alerts. Custom dataset of retail products are used for training YOLOv8, with fixed multiple cameras to capture different views to identify hidden objects and objects of different scales using instance segmentation. We achieve a maximum F1 score of 0.978 across all products with the least training time compared to other detection models.

Predictive Modeling of Genetic Diseases: A Comparison of Various Machine Learning Approaches

Rimjhim Sinha and Pradnya V. Kulkarni

Abstract: The aim of this research is to improve the prediction of genetic disorder types by employing large patient data and comparing several machine learning algorithms like XGBoost, Random Forest, AdaBoost, and k-Nearest Neighbors. The study's goal is to enhance our understanding of the underlying patterns and factors contributing to various genetic disorders by analyzing a large dataset. To improve prediction accuracy, the study uses feature selection and dimensionality reduction techniques like Recursive Feature Elimination, Pearson Correlation, and Kendall feature selection. Principal Component Analysis (PCA) and t-distributed Stochastic Neighbor Embedding (t-SNE) simplify the data without losing vital details. The primary goal is to develop a robust and interpretable predictive model for genetic disorders. When the XGBoost Classifier was used with Recursive Feature Elimination, the highest accuracy of 82% was achieved. This research aims to determine the best methods for early detection and personalized treatment planning in clinical settings by thoroughly analyzing several machine learning approaches. Enhancing our capacity to anticipate genetic condition types provides healthcare professionals with useful insights, potentially leading to more tailored and successful treatment options for patients. This approach combines modern machine learning techniques with domain-specific expertise to address the complex issue of predicting the type of genetic disorders.

Extracting the Pneumonia Signature: A Deep Learning Framework for Definitive Diagnosis

Malay Vyas and Apurva A. Mehta

Abstract: Pneumonia is a significant worldwide health and wellness concern that creates considerable health issues plus fatality, highlighting the importance of promptly and accurately detecting and treating it. Despite the improvements in imaging innovation, the hand-operated evaluation of chest radiographs by radiologists remains the fundamental technique for spotting pneumonia, bringing about hold-ups in medical diagnosis together with therapy. This research suggests a pneumonia discovery technique that utilizes deep learning strategies to automate the procedure. By harnessing an extensive data source of classified chest radiographs the recommended design intends to precisely determine locationsinfluenced by pneumonia, making it possible for better and more efficient medical diagnosis and therapy. The design uses a custom convolutional neural network (CNN) that undergoes training on various pneumonia positive and pneumonia-negative instances from multiple healthcare or- ganizations. Before educating the design, various pre-processing actions were taken for the chest radiographs to boost integrity and efficiency.This research study adds to the growth of an automated, coupled with a trusted, pneumonia discovery system, which has the potential to enhance individual results and boost healthcare effectiveness.

Advanced Lung Image Enhancement Using Dynamic Dual-Histogram Gamma Correction

A. Agnes Pearly and Dr. B. Karthik

Abstract: Enhancing lung images is essential for accurate medical diagnosis and treatment planning. Traditional image enhancement techniques often struggle to balance contrast improvement and noise suppression. In this paper, a novel method named Dynamic Dual-Histogram Gamma Correction (DDHGC), is presented that combines the ideas of Dualistic Sub-Image Histogram Equalization (DSIHE) and Dynamic Gamma Correction with Weighting Distribution. Furthermore, an Enhanced Selective Median Filter is adopted for noise suppression purpose before executing DDHGC. It offers excellent noise suppression and optimal contrast enhancement capabilities which makes it well suited for medical imaging applications. The aim of this study is to investigate the utility of DDHGC for improving contrast in two different types of medical imaging data - chest X-ray images and lung CT images from publicly available datasets. The results show that the proposed DDHGC method consistently perform better than four common methods (CLAHE, Gamma Correction, AGCWD and DSIHE). It provides the best results for PSNR, SSIM, Entropy and CII outperforming in terms of image quality, structure preservation andenhanced details indicating improved contrast.

Elite Opposition Learning based Transfer Residual Neural Network (EOL-TRNN) Classifier for Lung Diseases from Chest X-Ray (CXR)

Balaji A and Brintha Rajakumari S

Abstract: Globally lung illness is widespread due to changes in the environment, weather, daily life, and other factors. Thus the impact of this disease on physical condition is increasing quickly. It aims to the development of Machine Learning (ML) and Deep Learning (DL). It can give medical professionals and other researchers guidance on how to use DL to detect lung disease. In this paper, a novel Elite Opposition Learning Based Transfer Residual Neural Network (EOL-TRNN) is introduced for the identification of pneumonia from a Chest X-Ray (CXR). First off, it's expected that ResNet-34 is used for feature extraction layer in lung disorders. Subsequently, the dataset is trained and tested using deeper network layers and improved feature extraction layers. ResNet-34 performs well in image classification, ImageNet features have been extracted from images. TRNN weights can be iteratively changed in accordance with training CXR images with a lower bias rate. EOL is a one-step optimization ap- proach. National Institutes of Health (NIH) CXR dataset is collected from Kaggle and subjected to the EOL-TRNN model. With CXR images, the EOLTRNN classifier may predict lung disease with a higher degree of accuracy than current techniques. Measures like precision, recall, Fβ -score, and accuracy are used to evaluate the performance of the approaches. Proposed classifier has highest results of 75.62%, 78.83%, 77.19%, and 82.11% for precision, recall, Fβ-score, and accuracy.

Enhancing Railway Network Efficiency with Deep Learning-Based Traffic Prediction Models

C. Radhika and Dr. D. Kerana Hanirex

Abstract: Several elements influence how we manage the railway network, the most important of which are operational excellence and passenger satisfaction. Because traditional systems are unable to deal with the complexity and non-linearity of railway traffic data, most frequently use algorithmic approaches and simplistic statistical models. It cannot be used for better resource allocation; there will always be congestion and delays. To accomplish that, the paper proposes a novel approach that makes use of deep learning-based traffic prediction models such as Convolutional Neural Networks (CNN) and Long Short-Term Memory (LSTM). The proposed method uses both realtime and historical traffic data, which improves prediction accuracy and operating efficiency. The model builds on existing methods by using CNNs to learn spatial patterns and LSTMs to understand time-series relationships. Other results demonstrate a significant improvement over bigger mistakes in existing systems (MAE = 0.75 and RMSE = 1.20). Operational indicators also reveal advantages, with 15% lower costs and optimal resource utilization. The CNN-LSTM model resulted in significant performance advantages, including a 25% reduction in fuel consumption and more than 30% reduction in maintenance expenses. The results show that bottleneck detection has the potential to improve precision and productivity over previous techniques, which could revolutionize railway traffic regulation.

A Review on Machine Learning Algorithms for Real-Time Traffic Management

BHAVESH JAYANTILAL CHOLERA, SUNIL LALCHAND BAJEJA

Abstract: The use of machine learning algorithms in traffic control has garnered a lot of interest recently. In order to better understand the design and development of prediction algorithms for machine learning-based real-time traffic management, In this paper, we summarize the deep learning and machine learning methods for data processing, like image processing, SVM, KNN, CNN, HOG, big data, ANN, regression, Yolov3 algorithms, LSTM, GRU, etc. We are attempting to identify these methods' limitations and potential future applications. This study helps to choose the best prediction algorithms. Here, we tried to use congestion theory in a real-time traffic application.

Evaluating the Effectiveness of Machine Learning Algorithms in Predicting Plant Diseases: A Comparative Analysis

Patil Ashish K. and Dr. Deepak Kumar Yadav

Abstract: — In the recent years there have loss in the production of the agricultural yields due to the disease of the plants. Latest emerging technologies like machine learning, deep learning and Internet of things address the early prediction of these plant disease and minimize the crop loss. Deep learning technology extract the complex features from the image dataset of the plants and train the model. In this paper we perform the analysis of the literature review for the plant disease. Convolutional Neural Network (CNN), Support vector machine (SVM) and various deep learning models were used for the classification of the healthy and diseased plant images. Latest deep learning algorithm like YOLO (You Only Look Once) will be used for the object detection and imprve the accuracy of the model.

Prediction of Retinal Diseases using Image Processing Techniques and Convolutional Neural Networks

A. Ibrahim Kaleel1 and S.Brintha Rajakumari

Abstract: Numerous eye disorders have demonstrated encouraging improvements with the development of image processing techniques and deep learning(DL) approaches. However, many of these studies target on a single disease. Consequently, it is effective to concentrate on multi-disease classification utilizing retinal fundus images. This study is to examine the role of image processing techniques in the classifications of retinal diseases using CNN models like VGG19, ResNet50 and SqueezNet.. The performance indicators, including accuracy, F1 score, recall, and precision, are used to evaluate the model's performance with and without image processing techniques for retinal diseases classification. The results shows that the model's efficiency is improved by employing appropriate image processing techniques before fed into the classifier. The outcome of this study is the development of a reliable and efficient diagnostic system for identifying and treating of several eye diseases using color retinal image analysis.

Hybrid Ensemble Gradient Boosting Algorithm to Predict Diabetes Health Care Analytics

Deepa. S , Dr. B. Booba

Abstract: Diabetes is a chronic illness characterized by high blood sugar that can cause major damage to the kidney, heart, eyes, brain system, and kidneys, among other organs. Healthcare analytics improves patient care by utilizing a variety of data analysis techniques. A machine learning model was built utilizing several machine learning approaches to predict the sickness as soon as feasible in order to prevent it. The Andaman and Nicobar Islands' 770 diabetic individuals are the subject of the research project. In this research, the collected dataset have been splits into training and testing sets using exploratory data analysis techniques for data pre-processing. Subsequently, the study employed feature engineering methodologies to ascertain the significance of every attribute and make an accurate prediction of diabetes mellitus based on the risk factor identified by the Indian Diabetes Risk Score (IDRS). The current research work's model employs nine machine learning algorithms, including the Gaussian Naïve Bayes algorithms, Ada Boosting classifier, XG Boosting classifier, Random Forest classifier, Bagging classifier, Logistic Regression, Linear SVC Algorithm, KNN classifier, and decision trees algorithm and produces accuracy, precision, recall, and f1 score. Depend upon the findings, it was concluded that the Bagging classifier, Ada Boosting, XG Boosting, KNN, and Random Forest classifiers provided the highest accuracy of 88%, followed by the Gaussian Naïve Bayes method, Decision Trees, and Logistic Regression. Subsequently, the research effort created a hybrid ensemble gradient boosting method and applied it to the proposed system, yielding the greatest results in terms of accuracy (99%), precision (79%), recall (84%), AUC (87%), and ROC curve (87%).

Advancement and Applications in Biometric Techniques: A Comprehensive Study

A.Kalamani and Dr.M.Suganya

Abstract: In a society where theft is prevalent, ensuring security at every level is crucial. Biometrics is the automated process of identifying individuals based on their unique biological or behavioural characteristics, such as fingerprints, keystrokes, facial features, voices, iris patterns, and gait. Various biometrics methods are used to identify the individuals. Keystroke and Voice biometrics is a technology that uses individuals' characteristics to identify and authenticate them. Keystroke Dynamics utilizes unique typing rhythm of an individual. Voice Biometrics utilizes unique features of a person’s voice, such as pitch, tone, modulation, and pronunciation, to create a voiceprint similar to a fingerprint. Voice biometrics involves the use of various soft computing techniques to analyze and authenticate voice characteristics. We analyze the importance of accurate speech recognition in voice biometric systems and explore the potential of automated speech conversion. This paper provides a summary of the essential concepts like Ant colony Optimization, PSO in keystroke dynamics and Spoofnet, modeling techniques involved in voice biometrics. Various DNN techniques and obtained results are discussed in this study.

Exploring Advanced Ensemble Learning Strategies in Machine Learning and Data Mining for Predictive Modeling of Marathon Running Time

Dr. Brijal Panwala and Dr. Sanjay Buch

Abstract: This study explores state-of-the-art advanced ensemble learning methodologies for predictive modeling in marathon running times. The research emphases on enhancing the precision and reliability of marathon time predictions by utilizing a varied array of machine learning methods, given the multifaceted nature of influencing factors, including historical performance data. The process initiates with the deployment of individual machine learning models, followed by the application of normalization techniques to standardize the dataset, ensuring uniform feature scaling. To further refine model performance, ensemble methods such as bagging, boosting, and stacking are employed, leveraging the collective advantages of multiple models to generate more robust predictions. Comprehensive experimental analysis and comparisons reveal that ensemble learning significantly improves predictive accuracy and uncovers the intricate relationships between variables influencing marathon outcomes. This research contributes meaningfully to the evolving domain of sports analytics, providing valuable insights and tools for athletes, coaches, and sports scientists aiming to optimize training regimens and race strategies.

Human Pose Estimation using Machine Learning

Mrinmayee Deshpande, Dipali Gangarde, Nishchay Bhardwaj, Ashish Kuma Yadav, Nilesh P. Sable, Anuradha Yenkikar

Abstract: The human pose estimation proves useful for various tasks such as healthcare, sports analysis and human computer interaction. The yoga practitioners have gained wide momentum in today's era due to increasing health awareness. With the rising popularity of yoga and the increasing demand for technology-assisted learning platforms, there is an increasing need for accurate and effective methods for recognizing yoga poses. Yoga pose estimation and classification plays a crucial role in automated yoga training systems, enhancing the accessibility and effectiveness of yoga practice. Accurate recognition of yoga poses is essential for safe and effective yoga practice. Incorrect posture can result in serious injury to the body, emphasizing the critical need for precise pose detection and classification. This concern motivated our research to explore automated systems for yoga pose recognition. The paper aims to facilitate accurate identification of yoga poses, thereby enhancing accessibility to yoga instruction and minimizing the risk of injury associated with improper form. This research paper focuses on the comparison of two models namely, Ultralytics and MoveNet for detecting the keypoints in yoga poses. The keypoints are subsequently utilized for classification into five different yoga poses: downdog, goddess, plank, tree, and warrior2. Evaluation shows MoveNet achieving a superior accuracy of 93% compared to Ultralytics 88%. Precision, recall, and F1 scores are analyzed through confusion matrices for a performance analysis. This study advances automated yoga pose recognition, providing insights into the capabilities and limitations of current deep learning approaches.

Data under Siege Advanced AI Techniques to Combat Cyber Attacks in Data Infrastructure

J. Christina Deva Kirubai and Dr. S. Silvia Priscila

Abstract: Traditional cybersecurity systems that rely on static rule sets and signaturebased detection all reach the same conclusion: dealing with new and more sophisticated threats in a continuously changing cyber security environment is far from simple. It causes substantial false positive rates and detection delays. The paper presents a complex data infrastructure security method that combines artificial intelligence (AI)- based models, machine learning, and real-time anomaly detection. In that instance, the proposed solution overcomes the primary difficulties with standard systems by using algorithms for detecting anomalies (such as Isolation Forest) and predictive modelling techniques (Gradient Boosting Machines -GBM-, Neuronal Networks,). The most significant additions are the Imperial Kernel for feature extraction and the PCA to automatically include reactions. The system has a substantially greater false positive rate and poorer detection accuracies than the proposed method, yielding 95% true positives and 93% true negatives. It also routinely outperforms the present system, with an average reaction time of three seconds and confinement times of less than one minute. Such enhancements have shown how quickly and efficiently the system detects such attacks, representing a significant advancement in cybersecurity procedures.

Breast Cancer Diagnosis: A Comprehensive Evaluation of Machine Learning Techniques

Jayasudha Mudaliar, Jigna Patel and Parita Oza

Abstract: Breast cancer is one of the most common invasive diseases affecting women globally, representing a significant public health concern. It develops from aberrant cell proliferation in breast tissue and, if untreated, can spread to other parts of the body. This study focuses on the breast cancer and its diagnosis with the support of technology. Additionally, also explored availability of various breast cancer dataset to obtain useful insights, and addressed the Wisconsin Diagnostic Breast Cancer (WDBC) dataset as an appropriate one. As, the WDBC dataset comprises real world clinical data with detailed features of breast mass obtained from biopsies using digitized fine needle aspirate, which make it vital and consistent for differentiating between benign (non-cancerous) and malignant (cancerous) tumors. Moreover, to gather more information from the dataset, utilized various Machine Learning (ML) models based on their suitability for the data. Hence, the main objective of the research project is to apply a diverse range of ML classifiers to evaluate their effectiveness in distinguishing between benign and malignant tumors. This approach follows a defined workflow that includes attribute analysis, data preprocessing, model training and testing, result visualization, and performance optimization. Among the models tested, the CatBoost algorithm demonstrated the highest performance in classifying tumors as benign or malignant.

Scalable Intrusion Detection Using Recurrent Neural Networks in Distributed Data Engineering Systems

A. Jeyaram and Dr. A. Muthukumaravel

Abstract: Traditional Intrusion Detection Systems (IDS) frequently rely on anomaly and signature-based methods, which have limits in terms of accuracy, scalability, and flexibility. Anomaly-based systems generate a high number of false positives, causing operational problems, but signature-based solutions cannot protect against zero-day assaults. To overcome these problems, the proposed system improves IDS performance in dispersed data engineering contexts by utilizing Long Short-Term Memory (LSTM) networks, which are a type of Recurrent Neural Network (RNN). Furthermore, network data has temporal correlations, which the LSTM-based IDS can utilize to reduce false positives and improve detection accuracy. The methodology ensures maximum fault tolerance and resiliency while scaling to handle terabytes of real-time data by distributing the LSTM model across a cluster and cloud-based architecture. Research results reveal that the proposed approach outperforms existing IDS approaches. For instance, the KDD Cup 99 dataset, achieved 92.5% accuracy, which is higher than other top algorithms in this scenario defined as: Precision (88.4%), and recall (91.2%). F1 score: 89.7%. However, the scores acquired from the NSL-KDD dataset were 91.2% F1 score and 93.2% accuracy, which is rather low in comparison to our results but can provide us with an elementary understanding of the outliers present in both approaches.

Prediction of Anti-Cholinesterase inhibitor for Alzheimer disease using Machine Learning Techniques

Pushpa B Patil, Shweta Patil, Abubakar Mulla and Pooja Dolli

Abstract: Acetylcholinesterase enzyme, which is responsible for the breakdown of acetylcholine, is a key therapeutic target to cure the Alzheimer Disease(AD). Whenever this enzyme is blocked, there is more acetylcholine accessible in the synaptic knob for utilisation, improving cognition and memory. The objective of the current effort is to develop machine learning methods for differentiating among AChE inhibitors and non-inhibitors. Inhibiting AChE activity helps treat AD by raising acetylcholine levels, which facilitate better communication between brain cells. Dataset is collected using ChemBL database and the same contains around 5905 bioactivity molecules. The data contains 3 classes [active, inactive and intermediate] and is pre-processed for handling missing data and handling duplicate values and further used in generation of Lipinski's descriptors or rules for applying Exploratory Data Analysis(EDA) and to get target feature for model building. Models are built using Random Forest regression technique which gives 87.8% accuracy while other algorithms which are applied are SVM regression and SVM classification which have 61.4% and 74.8% accuracy as model performance. Random Forest algorithm performs best comparatively among all other implemented algorithms.

Improving Student Stress Analysis: Novel Methods for Collecting, Preprocessing, and Fusing Features

Zankhana Bhatt and Ashwin Dobariya

Abstract: Due to the adverse effects of stress on students' health and academic success, it is to create an effective method for stress detection. This study is used to predict student stress by combining biosignal data with image processing techniques. Employs various image pre processing of facial images in this research like Gaussian Blur, Median Blur, Bilateral Filters, and Canny edge detection to enhance the extraction of features. The Multi-task Cascaded Convolutional Neural Network (MTCNN) detects and aligns facia landmarks for precise data collection. Wearable device data on respiration, oxygen, temperature, and heart rate is combined with previously processed images. The robust dataset from physiological and visual characteristics may benefit future stress prediction machine learning applications. This comprehensive real-time stress detection method allows the development of customized interventions to improve student health and academic performance. The author is developing new artificial minority oversampling methods and improving machine learning models. The list includes KNN, Decision Trees, Random Forests, and XG Boost. The author has achieved accuracy rates and F1-macro score over 90% with KNN and SVM and expects even better results with other supervised machine learning algorithms.

Heart Disease Prediction using Logistic Regression with PCA MFSA Feature Extraction Technique and Multidimensional Scaling (MDS) Pre-Processing Approach

S. Silvia Priscila, Sakthivanitha.M, C.Sadhana, M.Lavanya, Poornima.V

Abstract: Heart disease prediction is critical because it has the potential to save lives, increase patient outcomes, and save the cost of healthcare. An important task in medical diagnostics is the forecasting of heart disease. In this article, we investigate the efficacy of integrating Multidimensional Scaling (MDS) preprocessing with various feature extraction methods for precise LR (Logistic Regression) heart disease prediction. The feature extraction methods under investigation include Independent Component Analysis(ICA), Principal Component Analysis(PCA) and Mean Fisher Score-based Algorithm (PCAMFSA). PCA with MFSA emerges as the most effective method, consistently producing superior outcomes in the forms of accuracy rate, precision, and recall value compared to ICA and PCA. This underscores the significance of combining PCA with the specialized feature selection process offered by PCA-MFSA to enhance the LR model's discriminatory power. Moreover, The incorporation of MDS preprocessing with PCA-MFSA results in a significant improvement in accuracy rate, precision value, and recall. From the result obtained PCA-MFSA produces accuracy of 91%, precision of 0.90 and recall of 0.86 respectively.

Geometrically Innovated Machine Learning for Optimized Prediction of Rice Blast Disease

Revathi A and Priya R

Abstract: Rice blast disease, caused by the fungus Magnaporthe oryzae, is a major threat to global rice production, leading to significant economic losses and impacting food security. Predicting outbreaks of this disease is crucial for timely intervention and management. This paper introduces a novel machine learning technique, the Geometrically Innovated Machine Learning (GIML) method, which leverages specific agronomic parameters to enhance prediction accuracy. The study focuses on optimizing the parameters Temperature, Humidity, Soil Moisture, Soil pH, Nitrogen (N), Phosphorus (P), and Potassium (K), demonstrating their critical role in disease prediction. The GIML method integrates geometric feature engineering by calculating angles and magnitudes between data vectors, capturing intricate relationships among parameters that traditional models may overlook. Comprehensive experiments comparing this technique with conventional methods show significant improvements in prediction metrics. The results suggests that GIML outperforms the conventional methods like Support Vector Machine(SVM), K-Nearest Neighbour(KNN) and Decision Trees(DT) not only enhances model performance but also provides insights into the most impact parameters, paving the way for advanced predictive analytics in agriculture. This research underscores the potential of geometric feature engineering in transforming disease prediction models and suggests avenues for future work in other agricultural contexts.

Diabetes Prediction using Convolutional Neural Networks and Long Short Term Memory Techniques

Usha Nandhini, Murali Anand

Abstract: This study uses a hybrid CNN-LSTM architecture to create a unique medical decision model for diabetes prediction. Using deep learning algorithms has several advantages, such as improved decision-making skills, flexibility, and accurate outcomes. The recommended methodology consists of three primary processes: initial processing, selection of features, and classifier. During preprocessing phase, we address common challenges in clinical data, such as missing information and inconsistencies, to ensure data quality and integrity. Secondly, wrapper-based methods are utilised to find the most pertinent characteristics from the diabetes dataset during the feature selection phase, guaranteeing that only noteworthy features are included in the final model. Finally, accurate diagnosis of diabetes is achieved in the classification step by using the combined CNN-LSTM architecture. The approach makes use of long short-term memory (LSTM) networks' capacity for temporal sequence acquisition as well as convolutional neural networks' (CNN) capacity for spatial recognition of features.

Deep fake Image Detection and classification using CNN Models

D. Rajkumar, A.S. Aneetha

Abstract: In the world of digital media, the introduction of Artificial intelligence(AI) – generated generated artificial images has created serious problems in discriminating between actual and constructed visual information. The ease with which anyone may utilize these innovations for creating propaganda might spread fear and anarchy as a result of their rapid growth. The risk to public trust associated with detecting digital face modification in images and videos has attracted a lot of attention. Because non-consensual deepfakes employ people's likenesses for offensive or harmful content, they have the potential to seriously hurt people. Therefore, in this era of social media, having a reliable mechanism to distinguish between authentic and fraudulent content is essential. These photos, which often appear identical from legitimate ones, represent a danger to the integrity of digital media, potentially leading to deception and crime. Due to this, the approaches like Deep Learning(DL) are being employed more frequently to discriminate between real and fake faces, yielding more accurate and consistent outcomes. This study investigates and examines the performance of Convoltuional neural Networks(CNN) architectures like AlexNet , VGG19, EfficientNet, ResNet50 and InceptionV3 for the classification of real and fake images. The performance is assessed using the accuracy ,precision and F1 Score using the Artifact datasets, which is available publicly. The ResNet50 outperforms the other models with the highest classification accuracy.

Optimized Deep Belief Network for Colorectal Cancer Detection Using Hybrid PIO-DE Algorithm

G. Vinudevi, Dr. S.P. Vijayaragavan and Dr. K. Sasikala

Abstract: Effective treatment for colorectal cancer relies on its early detection, which requires advanced methods to enhance its accuracy and dependability. This study presents an optimized Deep Belief Network (DBN) framework for colorectal cancer diagnosis, employing a hybrid Pigeon-Inspired Optimization (PIO) and Differential Evolution (DE) algorithm. The technique makes use of hierarchical feature extraction properties of DBNs for capturing complex patterns from medical images. Although the PIO algorithm is introduced to obtain a more accurate result following pigeon homing behavior, its ability in optimization is coupled with DE, which is renowned for its strong optimization skills, to optimize the operation of DBN. This fusion method not only enables to optimally tune the hyperparameters and weights of DBN, also ensures both an accurate exploration as well utilization of search space. The method begins by pre-processing the input medical image, and then uses the DBN feature extraction. Next, the network is optimized by the hybrid PIO-DE method, improving the classification accuracy. Finally, the images are classified into cancerous and noncancerous tissues using the optimized DBN. The proposed strategy, which makes use of the TCGA-COAD dataset, guarantees more robust reference system for training and validation in DBN to enhance detection sensitivity as well as clinical utility.

Evaluating the Evolution of India's Mutual Fund Industry: Ways to Enhance by AI

Hynul Jenofer.P and T.S.Aarathy

Abstract: One of the best investing opportunities ever developed is the mutual fund. They are incredibly inexpensive and simple to invest in the capital market. Due to their versatility, simplicity of use, and capacity to assist people in reaching their financial objectives while reducing risk through diversification, mutual funds have been increasingly popular among investors in recent years. This transition has been accelerated by the mutual fund industry's adoption of AI and data science, which has changed the availability of investment options and produced better performance results. When examining a mutual fund, perhaps the most essential consideration is its performance. AI and analytics are altering the way individuals react to mutual fund investments. This study provides insights into the evolution of India's mutual funds industry and examines the modern approaches like predictive analytics, AI for portfolio rebalancing and sentiment analysis to evaluate the various aspects of mutual fund data.

Asthma Prediction using Fuzzification and Machine Learning based Ensemble Classifier

Dr. Himanshu K Maniar, Dr. Hardik K. Molia, Dr. Kalpesh Popat

Abstract: Asthma is a chronic respiratory condition that affects millions of individuals worldwide, requiring prompt attention and accurate prediction for necessary treatments. This research integrates fuzzification and machine learning techniques to build an ensemble classifier for asthma prediction. Fuzzification handles the uncertainty and imprecision inherently present in medical data by transforming numerical attributes into fuzzy sets using appropriate membership functions. Machine learning models, including Decision Tree, Logistic Regression, and Neural Network algorithms, are utilized to build individual classifiers. To improve classification accuracy, the bagging technique is employed to combine predictions from these classifiers into an ensemble model. The implementation is carried out using Python for fuzzification and the Orange tool for machine learning. The proposed solution demonstrates the potential of combining fuzzification with machine learning techniques to predict asthma more accurately compared to conventional approaches. Tree, Naive Bayes, Logistic Regression, kNN, SVM, Neural Network and Random Forest methods are evaluated. Additionally, we used the bagging technique to build an ensemble classifier, improving accuracy by providing output based on analyzing the outputs of individual classifiers. Compared to the initial performance analysis, accuracy improved after feature selection, as it identified the most relevant features for building the model. The accuracy was further improved after fuzzification, as it handled the possibility of uncertainty by transforming numerical features into categorical ones.

Optimizing Pricing Strategies: A Comprehensive Framework Using Bayesian Inference and Game Theory.

Bibin Xavier and Ancy T Francis

Abstract: . The implementation of efficient pricing strategies is highly important for business growth in this competitive market. Today's market environments are volatile, uncertain, and ambiguous every corner. Traditional pricing models are not able to capture all these interactions. In this research, we developed a comprehensive framework integrating Bayesian into game theory settings for price prediction. In Bayesian demand models, new data are used for reevaluating old conclusions and previous predictions, while competitor game theoretic models examine the response emanating from competitive reaction based on Nash equilibrium concepts. In practice, this combined method is helpful for setting prices that balance profits and market share, adapt to real-time market conditions, and predict the competitive action. The theoretical implications of the study include pricing decision-making under uncertainty and the practical implications are realtime pricing changes in competitive landscapes. Future research can be done to validate the results empirically across a variety of industries with an aim to optimize the performance of the framework in real practice.

Lower Limb Prosthetics Activity Recognition using Optimized CNN-LSTM Model

M.Jeyasudha, S.Prakash, G.Prakash

Abstract: Lower Limb Prosthetics Activity Recognition entails identifying and categorizing human movements related to activities using the lower limbs. Still, the detection of lower limb prosthesis activity is hindered by intricate movements, inconsistent user patterns, and challenges in real-time processing. To overcome hurdles, one can use advanced sensors, personalized training, and ensemble learning approaches to improve accuracy. The present study addresses the issue by employing the Optimized CNN-LSTM model, which enhances the accuracy of activity identification in lower limb prostheses. The suggested approach comprises four main steps: pre-processing, feature extraction, feature selection, and classification. The gathered pictures undergo pre-processing using an enhanced Gaussian Bilateral Filter and Complete Ensemble Empirical Mode Decomposition (CEEMD). Features are derived from pre-processed data using a Dual-tree Complex Wavelet Transform (DTCWT). The extracted features are then transferred to the Feature categorization procedure. The classification step is performed using the Optimized CNN-LSTM technique. This model has been improved using the Adapted Bat Algorithm to enhance its performance. After the classification, the feedback level is included in the proposed approach. The suggested model is implemented using the PYTHON programming language, and its performance is assessed using metrics such as accuracy, precision, recall, F-score, specificity, sensitivity, MCC, NPV, FPR, and FNR. Suggested optimized CNN-LSTM achieves higher accuracy (99.23%) and precision (98.83%) compared to current techniques.

Hyperparameter-Tuned Intention Mining for Mental Health Diagnosis Using Logistic Regression

Varsha D. Jadhav, Dhananjay R. Dolas, Kirti Wanjale, Ratna N. Patil

Abstract: A key component of computer science technology in the current fastdigitizing age is data mining. Intention mining is one of the challenging fields in this area. It is difficult to define intentions. Previous work shows that intentions can be defined as polarity and emotions. The research work tries to define intentions in terms of mental health using text data. Text dataset related to mental health from Kaggle was considered for experimentation. Mental health intentions were defined in terms of normal, depression, anxiety, personality disorder, stress, bipolar, suicidal. Logistic regression model with hyperparameter tuning with GridSearchCV was trained to mine the mental health intentions. The results showed that accuracy of 86.6% is achieved. The model can be helpful to medical practitioners to diagnose the mental health intentions so as to proceed for correct and fast treatment of the patient.

A Hybrid Deep Learning Framework for Lung Disorder Detection using Multi-Scale Feature Extraction and Ensemble Classification

A. Agnes Pearly and Dr. B. Karthik

Abstract: Pneumonia detection from Chest X-Ray (CXR) images is critical for timely and accurate diagnosis to ensure effective treatment. But it remains as a challenging work due to the complexity of image features and variation in pneumonia presentations. This study presents a hybrid deep learning framework to effectively address these difficulties by the integration of multi-scale feature extraction, deep feature selection (DFS), and ensemble classification. A deep Convolutional Neural Network (CNN) with residual connections is used to learn the multi-scale feature presentation for various patterns associated with pneumonia and handles the challenges during training. The DFS layer selects the most relevant features and Principal Component Analysis (PCA) reduces dimensionality to improve model performance. For classification process the framework employs an ensemble approach combines the Support Vector Machine (SVM) with Radial Basis Function (RBF) kernel along with Random Forest (RF) classifiers. The ensemble voting mechanism takes advantage of the strengths of both classifiers to improve overall performance. Evaluated on the public CXR dataset the proposed framework achieved a good accuracy of 94.6%, with precision 95%, F1-score of 94.6% and recall of 94.4%. These results demonstrate a marked improvement over traditional deep learning models and standalone machine learning classifiers, highlighting the framework's effectiveness in enhancing pneumonia detection accuracy and reliability.

Leveraging Cloud Resources for Machine Learning-Based Spam Detection API

Ashish Revar, Bhavin Bhesaniya and Prof. Kalpesh Wandra

Abstract: The proliferation of spam emails continues unabated and challenges the security of digital communication systems, thus necessitating robust detection mechanisms. This paper develops an exhaustive spam detection system based on cloud computing resources as well as advanced ML models. The ability of AWS to scale up to take on a variety of data makes it perform real-time spam detection. The central contribution is a hybrid approach of ML based on logistic regression, SVM, random forests, and LSTM. This can address challenges including but not limited to scalability, adaptability to ever-evolving spam patterns, as well as real-time processing. Detailed evaluation and analysis show vast improvement in terms of detection accuracy and scalability at higher levels, which makes it a very effective solution for modern detection challenges against spam. Integration with cutting-edge security tools will help the system combat all possible threats

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Analyzing Extractive Summarization methods for Kannada using Sentence Ranking and K-Means Algorithm

Dakshayani Ijeri, Pushpa B. patil

Abstract: In the world of internet people are dependent on the data available in digital form, due to which millions of information is being generated every day over the internet. The busy schedule of day today's life had made it is a mandatory requirement to have an automation to extract the useful information from the data available over the internet in a concise timeframe. The short description of information can be generated with the help of automatic text summarization. The available systems work efficiently on English language, as India is a diverse country with many languages being spoken across the country and due to which public even use their native languages to convey the information through digital platform. Kannada is one of the prominent languages used by the southern India and 51 million population of all over the world use this language for communication, very less work has been carried out on Kannada language in the domain of Natural Language Processing. The proposed model is implemented on Kannada language for automatic text summarization using extractive method based on sentence ranking algorithm and K means clustering algorithm and got better result for sentence ranking approach with F-score of 0.68 on Rouge 1, F-score of 0.4 on Rouge 2 and F-score of 0.4 on Rouge L over 10,000 documents.

Fake News Classification using Feature based hybrid Deep Learning

S.S. Abdul Kadhar, S.Brintha Rajakumari

Abstract: In today‘s society, most of the news consumption by people is through different social media platforms, since it is the most easy and convenient way of sharing news to each other. But this becomes the risk in widespread dissemination of fake news. These fake news not just adversely affect an individual but it also affects the society as a whole. Organizations from all sectors are currently having difficulty in finding practical solutions for identifying online fake news, which is a major problem. Subsequently, the false material is frequently posted online to fool users, it is fairly challenging to identify it. Deep Learning (DL) based algorithms can identify fake news more precisely when compared to various Machine Learning (ML) techniques. The current study, the proposed novel hybrid DL model which planning incorporates various word embedding with several DL methods like Recurrent Neural Network (RNN) model such as Long Short Term Memory (LSTM) and Gated Recurrent Unit (GRU). The suggested technique gathers characteristics from several DL word embedding techniques, integrates these features, and categorizes texts according to their Natural Language Processing (NLP) as sentiment polarity.

Butterfly Optimization Algorithm (BOA) based Feature Selection and Semen Quality Predictive Model

C. Shanthini and Dr. S. Silvia Priscila

Abstract: Pneumonia detection from Chest X-Ray (CXR) images is critical for timely and accurate diagnosis to ensure effective treatment. But it remains as a challenging work due to the complexity of image features and variation in pneumonia presentations. This study presents a hybrid deep learning framework to effectively address these difficulties by the integration of multi-scale feature extraction, deep feature selection (DFS), and ensemble classification. A deep Convolutional Neural Network (CNN) with residual connections is used to learn the multi-scale feature presentation for various patterns associated with pneumonia and handles the challenges during training. The DFS layer selects the most relevant features and Principal Component Analysis (PCA) reduces dimensionality to improve model performance. For classification process the framework employs an ensemble approach combines the Support Vector Machine (SVM) with Radial Basis Function (RBF) kernel along with Random Forest (RF) classifiers. The ensemble voting mechanism takes advantage of the strengths of both classifiers to improve overall performance. Evaluated on the public CXR dataset the proposed framework achieved a good accuracy of 94.6%, with precision 95%, F1-score of 94.6% and recall of 94.4%. These results demonstrate a marked improvement over traditional deep learning models and standalone machine learning classifiers, highlighting the framework's effectiveness in enhancing pneumonia detection accuracy and reliability.

Advanced Predictive Analytics for Early Detection of Chronic Kidney Disease using ML Models

G. Divya and Dr. R. Vasuki

Abstract: Chronic kidney disease (CKD), which has a high incidence and frequently gets diagnosed late, leads to decreased treatment efficacy and rapid progression to renal failure. Traditional diagnostic methods of serum creatinine and eGFR tests are not as sensitive or fast in detecting CKD in patients who could benefit. However, by the time these abnormalities are detected by routine screening, they are typically at a later stage. The paper proposes a unique predictive analytic methodology that uses machine learning (ML) algorithms to improve the early identification of CKD. The proposed strategy uses a hybrid framework to connect the Random Forest (RF), Support Vector Machine (SVM), and Gradient Boosting algorithms (GB). The goal is to examine data on patient demographics, clinical biomarkers, and past medical records. Data collecting, pre-processing approaches, including feature selection utilizing PCA (Principal Component Analysis) and RFE (Recursive Feature Elimination), as well as model cross-validation training. Performance measurements show a significant improvement over current techniques, with accuracy of 94.5%, sensitivity of 92.3%, specificity of 95.8%, and AUC-ROC more than 70%. It represents a significant step toward improving early detection and forecast accuracy. The approach is more effective and efficient than existing ones; when integrated into a clinical decision support system, the ensemble model ensures improved patient outcomes through faster intervention and increased diagnostic accuracy.

An Optimized Hybrid Deep Learning Framework for Intrusion Detection System Integration

R. Saranya and Dr. S. Silvia Priscila

Abstract: The digital age has made cybersecurity even more important, necessitating the use of innovative Intrusion Detection Systems (IDS) to strengthen network defenses. This work introduces a novel deep learning-based Integrated IDS that uses long Short-Term Memory (LSTM) and CNN (Convolutional neural network). Suggested framework consists of three important phases: Pre-process, feature abstraction and selection, classification. During the pre-processing stage, various techniques such as label encoding, data normalization class imbalance are applied to standardise input data. The proposed two-tier method, features ranked by PCA and IG for retrieval is characterized by a high generalization capability across numerous datasets with different sizes during both feature and sample reordering. The designed IDS we have is only focused on classification, for which an efficient CNN-BiLSTM network based classifier has been introduced. This integration reduces architectural complexity to its minimum level, yet allows the model to express the temporal and spatial patterns within large-scale network data. To make the algorithm more efficient we use Improved Monarchy Butterfly Optimization. It leads to faster training rates which are meant for network datasets at a much larger scale than before.

Artificial Intelligence-Driven Insights into the Indian Mutual Fund Industry: A Pre and Post-COVID Comparative Study

Hynul Jenofer.P and T.S.Aarathy

Abstract: An investment organization that pools the capital of its unit holders and distributes it among several investment alternatives, such as stocks, debt, and money market investments, is known as a mutual fund. In mutual fund industry, Artificial Intelligence (AI) may provide individualized insights to investors, assisting them in managing risk, optimizing their investing plan, and much more. The Reserve Bank of India and the Indian government took the initiative to launch the mutual fund business in 1963, coinciding with the establishment of UTI in India. A regular man has many investing alternatives because to the Indian mutual fund industry's large range of plans. The main objective of this study is to evaluate the mutual fund business in India both before and after the COVID-19 pandemic using AI Data Analytics.

Understanding Unnatural Mortality: A Comprehensive Analysis of Machine Learning Approach for Classification of Causes

Dr. Kalyani Waghmare, Dr. Sheetal Sonawane and Shamali Gunje

Abstract: Death is a tragedy regardless of its form, time, or manner in which it occurs. Death can be natural, unnatural through deliberate action of other, selfinflicted, or it can be due to the environmental factors. The primary aim of this paper lies in the comprehensive analysis and synthesis of existing literature concerning unnatural mortality. The literature is surveyed from various digital repositories for analyzing the trends and patterns of unnatural deaths. The study of literature identified the common causes of deaths. This paper offers a comprehension of the existing literature by combining and summarizing the patterns, trends, and contributing elements of unnatural fatalities. Additionally, a machine learning classification model is built to categorize news articles from the dataset into five different categories based on death causes.

Transformative Influence: AI's Application in Improving Risk Prevention and Management in Banking Institutions

Tarun Kashni, Anurag Shukla, Neeraj Dadwal, Manish Dadhich

Abstract: Male fertility is significantly influenced by the quality of the semen. It has gradually declined in the past few years, and changes in lifestyle. Numerous studies have shown that poor lifestyle choices are a major contributing factor to male reproductive diseases and low-quality semen. Machine Learning (ML) is well-suited to handle the dynamic interactions that exist between predictor traits and outcomes across large datasets. However, selecting the most important features from huge datasets becomes a very difficult task. In this paper, Butterfly Optimization Algorithm (BOA) is introduced to find the environmental factors and lifestyle choices that impact seminal quality. The collective behaviours of foraging and mate-finding in butterflies served as the model for BOA. The BOA, which computed the average training loss reduction due to feature utilisation for each dataset, was used to determine the feature significance. BOA is utilised to find more pertinent features has the impact on the seminal quality. Input features were considered categorical features, and the output features were considered dichotomous features according to the Feed-Forward Neural Network (FFNN) classifier. Dataset is collected from University of California Irvine (UCI). The assessment measures include precision, sensitivity/recall; specificity, f-measure, and accuracy have guided the experimentation analysis. FFNN is compared to other methods like Clustering Based Decision Forest (CBDF), K-Nearest Neighbors (KNN), and Multi-Layer Perceptron (MLP).

Performance Evaluation of Deep Learning Models for the Classification of Lung Diseases in X-Ray Images

Balaji and S. Brintha Rajakumari

Abstract: The lungs are the main organ of the respiratory system, which also consists of the nostrils, the mouth, the throat, the larynx bronchial tubes and pulmonary arteries. The major causes of death are due to the respiratory diseases, which include ailments including pneumonia, asthma, and chronic bronchitis. The chest x-rays(CXR) to estimate dynamic parameters like pulmonary function is common, affordable, and fundamental screening technique utilized for static examinations of organic disorders and physical anomalies. This study is to assess the performance of the Deep Learning (DL).architectures like CovCXR-Net,Deep CCXR, CNN-O-ELMNet for classifying and predicting lung diseases from X-rays. The methods are implemented in python and evaluated with CXR dataset, a publically available dataset.The result findings show that the CNN-O-ELMNet outperforms with the accuracy of 97.8%. This assessment study will be very helpful for clinicians, enhancing the diagnosis and treatment of lung disorders from X-rays.

Deep Learning Approaches for Diabetic Retinopathy A Study

N. Durga, Dr. D. KeranaHanirex, Dr.A.Muthukumaravel

Abstract: Diabetic Retinopathy (DR) is an eye disease mainly generated due to diabetes. It affects vision and causes blindness problems because it weakens the blood vessels in retina. The statistical evidence indicates that the persons who are all having diabetics for more than 15 years also have DR. It now presents a major hazard to people's lives and 2 health as a result. While physical disease identification can be used to combat DR, it is both intimidating and laborious, thus a new method must be developed. Therefore, initial detection and diagnosis are crucial for DR to prevent blindness and stop the condition from emerging into more severe stages. Many researchers generated countless Machine Learning (ML) methods for the extraction of DR features for initial findings. The typical machine learning models unfortunately exposed small generalization in feature abstraction and classification when applied to smaller datasets, or they have obligatory training time, which results in poor prediction when applied to higher datasets. Thus, deep learning (DL), the newest field in machine learning, is utilized to treat lower dataset based on competent data processing techniques. The deep architectures employ larger datasets in order to boost performance in feature extraction and image arrangement process. This paper presents a comprehensive examination of DR, causes of DR, its traits, ML and DL models, challenges, similarities, and possible research directions for DR early detection.

Detection of Optical problem in retinal Fundus images using AI Based deep learning method

N. Durga, Dr. D. KeranaHanirex, Dr. A. Muthukumaravel

Abstract: The ophthalmologist's main tool for evaluating and diagnosing retina problems in humans is color fundus photography. Uneven and uneven illumination causes deterioration in the quality of color fundus images. Therefore, an end-to-end fundus image analysis system needs to be developed. With the advent of deep learning, interest in identifying retinal diseases is increasing. Artificial intelligence (AI)-based diagnosis is increasingly accepted in ophthalmology. Using retinal images, such as fundus images, is a good strategy to create AIassisted diagnosis. Many eye diseases such as retinitis pigmentosa, macular holes, retinal vascular occlusions, rhegmatogenous retinal detachment, neovascular or dry age-related macular degeneration, epiretinal membranes, and diabetic retinopathy are often associated with retinal diseases. Here, we provide an AI model for the differential diagnosis of retinal diseases based on fundus images. By adding a thick layer of 128 nodes, Inception ResNetv2 achieves 98.8% prediction accuracy in diagnosing more than 400 diseases in 4 groups and normal controls. Additionally, most of the work is done with pre-processed high-quality fundus images. The results obtained are compared with the learning variables, and an average accuracy of 98.2% is achieved. As the number of visually impaired people increases, research on the cognitive function of the brain can accelerate the blood sugar testing process.

Integrating AI and Blockchain for Enhanced Food Traceability and Safety in Restaurants: A Transformative Approach

Sachin Yele, Ratnesh Litoriya

Abstract: In an effort to improve restaurant food safety and traceability, this research aims to investigate the revolutionary possibilities of integrating blockchain technology with Artificial Intelligence (AI). Innovative approaches to food security are urgently needed as the Fourth Industrial Revolution moves forward, bringing together physical and digital technology. One promising approach is precision agriculture, which combines traditional knowledge with modern technological advancements. Improving food traceability, increasing transparency across the supply chain, and protecting consumers are all goals of the proposed effort, which uses AI and blockchain to evaluate these potential benefits. The suggested system aims to cut down on cases of food poisoning and improve customer safety by using data collected in real time from the food supply chain. Research shows that the restaurant business may greatly benefit from AI-driven insights and blockchain's strong record-keeping capabilities when it comes to food traceability and safety.

Generative AI tool in learning an Introductory Programming: A Research Perspective

Sivasakthi M, Meenakshi A

Abstract: Since generative artificial intelligence applications have become more diverse, there has been a sharp rise in interest in their application across all societal segments and fields in recent years. Program learning processes are one of these domains. ChatGPT is one of the generative Artificial Intelligence instruments utilized for this. While ChatGPT has some prospective in the process of programming, its application in the process of building programs has grown significantly. The impact of teaching programming to students through ChatGPT on their computational thinking abilities was examined in this research. A study of 160 undergraduate students who took an introductory programming course called "Problem Solving using Python" was carried out. Pretest-posttest control group participation was maintained throughout the study in accordance with the experimental design. The students were divided into experiment and control groups at random. The exploratory gathering understudies gained benefits from ChatGPT during their week after week programming rehearses, while the benchmark group didn't use it. The computational thinking scale was employed to collect research data for the "Problem Solving using Python" course. Results indicated that students in the experimental group exhibited significantly higher levels of computational thinking skills compared to their peers in the control group. Because of this, it is possible to conclude that ChatGPT, a generative AI tool, is beneficial to students and helps them learn and write programming. AI assistance can be most useful while learning and writing code, according to study findings. For academics and educators in this regard, many recommendations were given.

Parkinson's disease Detection Using Advanced Wave Signal Processing on Spiral Drawing Tests

Sasi Rekha

Abstract: The main motor skills are impacted by Parkinson's disease (PD), a neurodegenerative ailment that is both chronic and progressive. The signs of this condition include tremors, stiffness, bradykinesia (slow movement), and postural instability. The degeneration of brain cells that produce dopamine is the root cause of these symptoms.This study introduces an innovative algorithmic framework for predicting Parkinson's disease (PD) using spiral drawing tests analysed through advanced wave signal processing techniques. By collecting spiral drawings from patients via a digital tablet and converting these into wave signals, the framework employs three key algorithms: Wavelet Transform-Based Feature Extraction (WTFE), which decomposes signals into frequency bands to extract subtle features indicative of PD; a Gated Recurrent Unit with Long Short-Term Memory (GRU-LSTM) hybrid neural network that captures both short-term and longterm dependencies in the signal data to detect tremor patterns; and Hybrid Ensemble Classification (HEC), which integrates multiple classifiers—Support Vector Machines, Random Forests, and Gradient Boosting Machines—aggregated through a weighted voting scheme. Evaluated on a dataset of drawings from PD patients and healthy controls, the framework demonstrated high accuracy in distinguishing PD, suggesting it as a promising tool for early and objective diagnosis, thereby facilitating timely and effective intervention.

Feature Extraction and Machine Learning Based Predictive Models for Heart Diseases Prediction: Analyzing the Effectiveness of Multiple Models

Poluru Sabitha, Uttam Kumar Giri, Nidhi Goel, Subhanshu Goyal,
Alok Kumar Agarwal, Ashok Kumar Sahoo, Pradeepta Kumar Sarangi

Abstract: Heart illness, also designated as cardiovascular illness, wraps up several disorders that influence the cardiovascular system and is the leading foundation of mortality globally throughout the duration of the previous few decades. Patients with heart diseases are increasing quickly as a result of poor consumption habits and a lack of health knowledge. Heart disease affects and kills approximately one out of every four people. In healthcare, especially in the discipline of cardiology, early and effective detection of cardiac disease is crucial. Giving patients the right therapy depends on reliable and exact identification of cardiac problems. Because Machine Learning (ML) systems can find patterns in data, their usage in the healthcare sector has increased dramatically. Patients andcompared to their peers in the control group. Because of this, it is possible to conclude that ChatGPT, a generative AI tool, is beneficial to students and helps them learn and write programming. AI assistance can be most useful while learning and writing code, according to study findings. For academics and educators in this regard, many recommendations were given.

From Pen to Pixel: Understanding Learning Shifts with Student Insights in E-Education

Kavita Jhanwar and Dr. Priti Sadaria

Abstract: The fast development of information technology has greatly altered many parts of our lives, especially in the areas of employment, social relationships, and schooling. By bringing students into the classroom and encouraging active participation from them, online education is changing the way people learn and is a key driver of the current digital revolution. Examining how asynchronous and synchronous learning platforms might enhance efficiency in comparison to traditional methods, this study delves into the dynamic landscape of e-education. Online chats, video conferencing, and other types of online connection are all a part of these platforms. Education has become more accessible and flexible due to the expansion of online and blended learning. This trend was made possible by the widespread use of the Internet in the 1990s. Benefits of online education, such as reduced reliance on physical infrastructure and cost reductions, are being bolstered by the ever-increasing sophistication of information technology. This study delves into the impact of online education on promoting continuous learning and career advancement during the COVID-19 pandemic. It zeroes focused on the possibilities of digital platforms for lifelong learning, reskilling, and skill acquisition. The growing area of digital learning benefits from the study's insightful and well-reasoned opinions.

Change detection using Machine Learning Algorithms in Google Earth Engine Environment Bharatpur District of the Rajasthan State

Gaurav Sharma and Manoj Kumar Sharma

Abstract: This article summarizes the findings of a study that was conducted on change discovery using machine literacy algorithms within the environment of Google Earth Engine(GEE). The study concentrated on the Bharatpur District, which is located in the state of Rajasthan in India. The exploration makes use of data collected through remote seeing and ways grounded on machine literacy to identify land cover changes over timea particular period of time. Using the broad capabilities of GEE, a detailed study is carried out in order to identify and classify important changes in the geography. These changes include civic expansion, agrarian shifts, and the deterioration of natural territories. The study maps and quantifies changes in land cover through the operation of machine literacy algorithms. This will give significant perceptivity on the dynamics of land use within the region. The findings add to a more in- depth understanding of environmental transitions and enable informed sustainable land operation decisionsand development plans in the Bharatpur District and other places that are similar.

From Threads to Algorithms: AI Innovations in Textile Production

Dr. Purvi Prajapati, Dr. Nirav Bhatt, Dr. Nikita Bhatt, Malav Champaneria, Dhyani Panchal

Abstract: AI technology is a cutting-edge field that creates human-like cognitive processes and intelligent behavior patterns using computers as the medium. Robots, natural language processing, picture recognition, and language recognition are all included. Its research interests extend beyond computer science to encompass social science and natural science. It has swiftly advanced and been implemented in a variety of disciplines recently, which has encouraged several industries to continue industrial reform and upgrading. To enhance production efficiency, industries are adopting information systems, supply chain management, and AI strategies, which improve attractiveness and profitability. With numerous applications and cross-integration, AI technology represents a new age in science and technology. This paper seeks to understand how the use of these new approaches in the workplace has impacted and benefited the textile and clothing industries of today. In this research, a number of approaches were briefly explored, including computer-aided design, augmented reality/virtual reality, the Internet of Things, demand forecasting, computer vision, big data, and many more. Analyzed the fundamental workflow of the textile industries, including how items are manufactured and delivered to markets, and how new technology aids in doing so. The application of AI in this process of industrial development received increasing attention. As an outcome of this study, AI and the internet craze are presenting opportunities and difficulties for the clothes textile business, allowing companies to manufacture products quickly and intelligently, track production in real time, customize products on demand, and save costs

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Harassment Detection in Online Discourse Using Modified Metaheuristic Natural LanguageProcessing

Stanislava Kozakijevic, Luka Jovanovic, Jasmina Perisic, NebojsaBacanin, Milos Mravik, MiodragZivkovic, and Milos Antonijevic

Abstract: The internet provides an outstanding platform for individuals to easily communicate, share interests, and connect on a global scale. This connectivity fosters rich interactions and the exchange of ideas across borders. However, the same factors that enable such positive engagement also facilitate the occurrence of harassment, especially given the anonymity that the internet offers. The negative impacts of online harassment can be profound, often mirroring the harmful effects seen in in-person bullying and mobbing, leading to significant declines in mental health. To combat this issue, artificial intelligence (AI) offers a promising solution due to its capacity to quickly process and analyze extensive datasets. While AI is commonly employed with numerical data, natural language processing (NLP) techniques are specifically designed to handle textual data, making them ideal for detecting harassment in online communications.

Predictive Modeling of Chronic Kidney Disease with Ensemble Algorithms

Kishor Mane, Mahesh Hasabe

Abstract: Chronic Kidney Disease i.e. CKD, is one of the biggest issues in health worldwide. It occurs due to a gradual decline in renal functions accompanied by a high level of morbidity and mortality. This paper discusses the multifaceted nature of the etiology, the clinical manifestations, and the diagnostic approaches related to CKD, while highlighting the emerging role of ML in improving disease prediction and management. It proposes an ensemble learning approach as an aggregate of several ML algorithms to enhance accuracy and reliability of CKD prediction. In the proposed ensemble approach SVM, logistic regression, random forest and decision tree algorithms with voting-based learning have been used. This model has been tested using ten-fold cross validation technique on the input dataset. Experimental results indicate that the accuracy of the prediction of CKD with proposed ensemble method is 90.35% against individual algorithms. This method, therefore, has great scope for early detection, risk stratification, and personalized treatment planning in the management of CKD.

Machine Learning For Accessible And Precise Assessment In Smart Monitoring Systems

Mr. Jay Dave, Dr. Amit Suthar, Dr. Hitesh Raval

Abstract: In this study, the machine learning strategies for improving accessibility and precision in smart monitoring systems are presented. This section is all about assessing the real world performance variations of the three most effective models, i.e., Naive Bayes (NB), Artificial Neural Network (ANN) and Support Vector Machine (SVM). The accuracy of the models is measured by their scores, and they are critical to identify reliable options for smart monitoring. The Naive Bayes model, on the other hand has 63.89% accuracy that could have helped to draw accurate insights into smart monitoring framework in contrast, the Artificial Neural Network (ANN) model performs well with an excellent accuracy score of 69.24%, also showings its robustness for accurate results in various monitoring setups to excel on a large scale. The Support Vector Machine (SVM) model not only performs well at 67.31% but also in understanding the real-world variations, hence contributing to the overall robustness of our monitoring system. Results of this study highlight the importance of utilizing machine learning algorithms in smart monitoring systems to improve accuracy and accessibility. Methodical study on NB, ANN and SVM models offers a valuable comparison to identify the best model for different monitoring application requirements that eventually will help researchers as well as practitioners of these domains. In the end these advanced machine learning approaches assist in building smarter monitoring systems which are efficient and accurate.

Racism detecting in Twitter comments using metaheuristic optimized text mining and classification

Dobrivoje Dubljanin, Luka Jovanovic, Nebojsa Bacanin, Petar Spalevic, Branislav Radomirovic, Miodrag Zivkovic, and Angelina Njegus

Abstract: The rise of social media platforms has fundamentally transformed how individuals interact and communicate, but as it facilitated relations between various internet users, it also precipitated an alarming increase in the spreading of racist remarks and hate-fuelled incidents. Key factors contributing to the proliferation of this harmful behavior include, among many others, the anonymity of users, digital disinhibition, and the very nature of social media with its lack of laws and restrictions, through the historical patterns of discriminatory language use, linguistic cues, and contextual analysis. This research introduces a comprehensive framework that integrates artificial intelligence, advanced natural language processing tools, and machine learning classifiers to identify racist content. Leveraging these methodologies and incorporating preprocessing techniques to reduce noise and biases present in social media data leads to more accurate identification of racially objectionable content. The demonstrative outcomes show the efficacy of this approach in identifying and classifying racist remarks on Twitter, supporting automatic content moderation, and encouraging a more welcoming online community. An additional contribution of this work is the introduction of a modified metaheuristics optimization method that is applied to classifier optimization to ensure favorable outcomes. A comparative analysis is conducted on real-world data and the best-performing optimized classifiers demonstrate an accuracy of 0.923058.

A Hybrid Approach to Cardiovascular Disease Detection: The Synergy of YOLOv9, CapsNet, and XGBoost

Gorapalli Srinivasa Rao, G Muneeswari

Abstract: Cardiovascular Stroke is a potentially fatal condition that requires careful attention to achieve the best results. Early detection and intervention are crucial to reduce mortality and long-term damage associated with stroke. This study provides new solutions to these urgent needs by offering instant stroke detection based on deep learning and machine learning to increase performance. The most important goal of this research is to create a reliable and accurate system that can instantly distinguish strokes, allowing doctors to make informed decisions. Traditional stroke diagnosis technology relies on the interpretation of medical images, which is laborious and prone to human error. Although ML and DL approaches have demonstrated potential for automating this procedure, difficulties still exist since large and varied datasets are required. In order to overcome these obstacles, we suggest YOLOv9+Capsnet in conjunction with XG-BOOST algorithms on largescale datasets that include stroke and non-stroke cases according to the cardiovascular disease of the subjects seen in the pictures.

ORB-SIFT Hybrid Feature Extraction: A Unified Feature Extraction Approach

Divya Kumawat, Dr. Deepak Abhayankar and Dr. Sanjay Tanwani

Abstract: Feature extraction is a crucial part of computer vision, which provides visual understanding and analysis of the image. These feature extraction algorithms can be classified on the basis of the type of features extracted or on the basis of the complexity of the algorithm. Scale-Invariant Feature Transform (SIFT) and Oriented Fast and Rotated Brief (ORB) are the most widely used machine learning-based algorithms. SIFT provides scale and rotation-invariant features, while ORB provides efficient real-time computing. This paper presents a unified feature extraction algorithm by combining SIFT and ORB. It uses ORB for efficient key point detection and SIFT for obtaining descriptor computations. Average distance between features and feature extraction time are the performance measures used in our paper. The experimental results show that the combined approach has a satisfactory trade-off in terms of accuracy and computational economy, especially in the case of an oriented image with an average Euclidean distance of 623.95.

Efficient Palm Print Identification Using Various Machine Learning Approaches

J. Sheela Mercy and Dr. S. Silvia Priscila

Abstract: Numerous biometric traits, including voice, handwriting, gait, iris, face, fingerprint, and palmprint have been proposed in recent years. A biometric authentication method that has gained popularity recently is palm print recognition. In the area of biometric identification, especially palm print identification, the methods of ML (Machine Learning) showed considerable potential. SVM (Support Vector Machine) become a widely used method in many applications such as palm print detection, with the emergence of machine learning techniques. This study suggests a Machine Learning based system for recognizing palm prints that include certain phases such as initial preprocessing, then feature extraction, and finally classification. This study offers a foundation for creating palm print identification systems that are both more precise and successful and it shows how well SVM works for palm print recognition. From the results obtained the proposed SVM gives accuracy of 91.60%, sensitivity of 0.92 and specificity 0.89 which is high compared to KNN accuracy of 88.92%, sensitivity of 0.89 and specificity 0.86 and RF accuracy of 89.90%, sensitivity of 0.91 and specificity 0.88.

Thorough analysis of principal challenges in opinion mining and sentiment analysis, unraveling prevailing trends and techniques through a systematic review

Shah Mansi A. and Gulati Ravi M.

Abstract: The pervasive influence of the Internet and the Web has fostered a culture of unabashed expression, where individuals freely share their thoughts on purchased products, viewed movies, or current events. Opinions now play a pivotal role in shaping people's perspectives. This surge in digital discourse has given rise to the widespread use of social networking platforms, blogs, microblogs, online marketplaces, and more. People actively engage in expressing their opinions and seek responses in this interconnected landscape. Consequently, there is an overwhelming abundance of diverse opinions and corresponding responses, making the task of mining this extensive array of data a vital undertaking. This paper presents an in-depth exploration of opinion mining and sentiment analysis, presenting a thorough overview. The analysis delves deep into the principal challenges inherent in these fields, providing insightful examples that underscore the complexity of these issues. Furthermore, the paper explores a myriad of approaches and techniques aimed at addressing each challenge, accompanied by criteria for evaluating their performance.

A Study On Machine Learning Algorithms: Forecasting Crop Prices

Dr. Jignesh Hirpara, Mr. Milan Doshi, Dr. Amit Patel, Koushik Choudhury

Abstract: In this era, with the technology used in every field, the agriculture market also generates a huge amount of revenue every day. Computer technology plays a vital role in managing and finding meaningful information about it. To manage large datasets, a field that integrates data mining, machine learning, mathematics, computer applications, and artificial intelligence is used. Crop price forecasting is a demanding and interesting method for the agricultural sector because it is dependent on future crop production worldwide. The maximum crop price for the current session or the next year is something that the entire agriculture community is interested in knowing. Currently, crop price analysis dominates the study instead of agriculture crop amount forecast. In comparison to other nations, crop yield in India is quite uneven when measured by the agriculture fraternity. It is insufficient as a base rate for any chosen crop price if an appropriate MSP is not provided. There may be a decrease in Indian poverty when these farmers receive or determine fair crop prices. A vast amount of commodity data is produced in agriculture today. A significant amount of commodity data is produced by the agriculture sector, but sadly, most of this data is not utilized to uncover hidden information. Machine learning algorithms are used to make a machine think like a human, comprehend the data sets that are currently available, and compare them to similar events that have happened in the past.

A Survey on Artificial Intelligence Models for Endometrial Tumor Detection, Classification and Diagnosis

Karthick N and Dr Nithya P

Abstract: An Endometrial Tumor (ET) is a common uterine disease that continues to play a significant role in the mortality linked to a tumor. Advanced ET diagnosis exhibits worse diagnostic accuracy. The medically used ET screening methods require a significant amount of time and money, and not all patients can easily access them. So, oncologists have focused huge attention on molecular modeling as it has grown quickly, which has sped up the invention of computer-aided tumor detection systems. Artificial Intelligence (AI) models offer possibilities for molecular diagnostics, early tumor classification, efficient diagnosis, and diagnosis modality selection. It may be especially pertinent to use AI models in ET detection, classification, and diagnosis. From this perspective, researchers have been actively developing and implementing AI models to create effective ET diagnostic systems. This article studies the background of ET characteristics and earlier diagnosis techniques to stimulate further research in this field. The review is planned to investigate AI models, such as Machine Learning (ML) and Deep Learning (DL) algorithms, for ET detection, classification, and diagnosis. After that, the positives and negatives of each classification model, such as Logistic Regression (LR), Support Vector Machine (SVM), Deep Neural Network (DNN), Convolutional Neural Network (CNN), and Long Short-Term Memory (LSTM) networks, are compared.

Machine Learning Approches For The Prediction Of Diabetes

Venkata Bhujangarao Madamanchi, A. Nagamuruganandam, C. P. Chandran and S. Rajathi

Abstract: Diabetes is one of the chronic diseases that is required to be diagnosed and treated immediately because of its health hazards. The enhancement of the need for accurate and efficient prediction models has however been occasioned by increasing incidences of diabetes in the global market. In this research, patterns of different machine learning techniques as applied in predicting the likelihood of a person being a diabetic are determined. We utilized a data set that is taken from the patient's electronic health records; age, blood pressure, glucose level, BMI were the predictors. When the data was being pre-processed, features had been selected, features normalized while missing values were also dealt with. Thus, in the context of performance comparison of different ML, we trained together with the contrast of prognosis models of Diabetes as Decision Trees, RandomForest, SVM, NeuralNet, and LogReg. The analytical models were developed using cross validation technique and hyper parameters were tuned for best results of all the models. The models were assessed based on metrics such as accuracy, precision, recall, F1-measure, and AUC-ROC. The results found out that with an ensemble of learning models like the Random Forest and boosting techniques, the method predicted higher accuracy than the classical approaches. Consequently, it was also revealed that such factors as BMI and glucose protected the model from being over predicted. As stated earlier this analysis also considered other factors which may have an implication in the occurrence of diabetes.

Deepfake Detection using ResNet50: Performance Analysis on Celeb-DF Dataset

Yashoda Alpesh Chouhan, Chetankumar Chudasama, and Deepak Kumar Verma

Abstract: As digital forgery blurs the line between truth and illusion, deep-fake technology presents unique problems for the integrity and reliability of online media. The use of fakes that can mimic real videos has sparked concerns about how they can be abused to spread false information and erode public confidence in real ones. As a result, it is important to ensure the authenticity of digital content by effectively detecting manipulated videos. In this study, we performed several experiments on ResNet50 trained using the Celeb-DF dataset using different hyperparameters and fine tuning methods to analyze them on the basis of metrics and evaluate its performance. Of the 12 various experiments performed, the model performed exceptionally well in some hyperparameters, achieving an AUC score of 98.11%. The findings of this article attempt to help build confidence in society in light of the growing threat posed by deepfakes.

Prediction of Stock Price and Detection of Stock Market Trends using Adaptive Learning Techniques

Rituparn Panda, Subham Panda, Priyabrata Behera, Ziaul Hoda, Sashi Ranjan, Aleena Swetapadma

Abstract: Stock market analysis and prediction is one of the most difficult tasks due to the high complexity and unpredictable nature of the stock market. The stock market operates within a broader ecosystem of interconnected markets, including commodities, currencies, and bonds, further amplifying its complexity. These magnify the challenge of predicting market movements accurately. Due to their capacity to process and analyze huge chunks of data inrealtime, algorithms based on machine learning have become an effective tool for predicting future stock values. In this work, a method has been suggested topredict stock price and it is predicted whether to buy or sell a particular stock byconsidering the current stock market trend. A bunch of historical stock market data like open price, close price, high price and low price has been used as input to analyze and predict future closing prices. Long short-term memory (LSTM) network such as depth gated LSTM and peephole LSTMhas been explored for predicting the stock price. Also, decision tree (DT) and and k-nearest neighbors (KNN) for detecting the stock market trends has been explored. The lowest mean absolute error (MAE) is found to be 0.017 with peephole LSTM methodfor stock price prediction. The result produced by each algorithm has beencompared with other existing methods. On the basis of the accuracy, effectiveness and closeness of the prediction, the best possible method for the stock prediction has been decided. The goal of the work is to help investors andfinancial experts make smarter and effective decisions by giving them insights about what might happen in the future.

Machine Learning Approaches For Lung Cancer Prediction

A. Nagamuruganandam, V. Agilandeswari, C. P. Chandran and S. Rajathi

Abstract: Cancer of the lung is still a major killer in this century, primarily because the disease is often diagnosed at an advanced stage, and it is very aggressive. Lung cancer is one of the most fatal types of cancer, therefore, the early and accurate diagnosis can greatly improve the patients' quality of life, as well as the survival rate; the recent development in the ML approaches this problem. In this research, the progress and the use of different forms of ML, sophistications such as deep learning and ensemble methods, and Support Vector Maachines (SVM): A Method for early detection of Lung Cancer using Integrated Medical Imaging Data collected from CT and x-ray, Clinical Data, and Demographics. These models' performances have therefore been evaluated by considering factors like accuracy, precision, recall, and even the AUC-ROC with regard to the ability of set apart between the malignant and the benign. The results presented in this work prove the significance of rich annotations and feature selection as an essential step in the improvement of model's interpretability and accuracy. We also discuss difficulty of translating models to other populations.

Machine Learning Strategies for Proactive Malware Detection

Hardik Mahendrabhai Patel and Shyam Kalariya

Abstract: As the nature of the threats in network security is highly dynamic in its progression, the degree of detection and analysis of malware goes pertinent to an extent. In this regard, one of the pioneering objectives of this research is the development of innovative methods of malware detection and analysis derived from more advanced machine learning algorithmsthat could be integrated with audited and unaudited programs with the aim of making the detection process more accurate and quicker. Our approach is based on the extraction and utilization of multiple techniques from various malware samples in which the model learns complex patterns and behaviors associated with malware. We ask questions about learning models for malware detection and distribution as well as deep architectures, clustering, and anomaly detection. Finally, we investigate its performance against evasion techniques used by sophisticated malware. Importantly, this study fills a significant gap in the existing literature by offering a comprehensive review of which kind of data is associated with each analysis and detection approach. A considerable amount of reasoning depends on the community of research asit will identify adequate mitigation strategies. We also go beyond general categories of taxonomies in the detection approach and present an in-depth review of the feature extraction methods with static, dynamic, and hybrid feature extraction methods with feature representation methods, which are important in formulating robust malware detection models.

Neural Networks Approach for Liver Cancer Classification

Vijaya Lakshmi Adluri, Mohan Aditya Dondapati, Maadesh Darisi, John Paul Devapooja, Kaushik Chintalapati

Abstract: Due to its high death rate, liver cancer continues to pose a serious threat to world health. Tumors growing on the liver can cause liver cancer. This liver malignancy has several different forms. Cancer of the liver is frequent yet severe. The most common cause of this liver cancer is chronic liver disease, such as cirrhosis from hepatitis B or hepatitis C. Long-term liver problems are associated with an increased risk of liver cancer, the most frequent type of liver cancer. Medications may include chemotherapy, hardening or heating the cancer cells, transplantation, and surgery.In this work, we employ neural networks to analyze data and identify important characteristics for the identification of liver cancer.

Smart Road Sensing: A Machine Learning Approach for Pothole Detection and Classification

Neel H. Dholakia, Vipul Ladva, Madhu Shukla, Nishant Kothari, Uvesh Sipai, Aksha Ranpariya and Simrin Syed

Abstract: The study introduces a machine learning methodology that uses deep learning algorithms to identify and categorise potholes. The primary objective is to create an automated system that can precisely detect potholes in real-time or for data gathering without an internet connection, assisting in vehicle management and road upkeep. The suggested method utilises Convolutional Neural Networks (CNN) and image processing techniques us- ing OpenCV to achieve a high level of reliability and accuracy in detecting potholes. This method tackles a notable problem in transportation networks by improving vehicle safety and decreasing repair expenses.

Machine Learning Models and FOREX Analysis: A Comparison with Hybrid Models to Predict the Next Day Exchange Rate

Naaz Gorowara, Misha Mittal, Nidhi Goel, Pradeepta Kumar Sarangi, Ashok Kumar Sahoo, Alok Kumar Agarwal, Subhanshu Goyal

Abstract: The marketplace where currencies from every corner of the world undergo trading is known as the foreign exchange market. It enables traders to purchase or sell any money. Foreign currency, or forex, is a unique sector of finance where speculators can expect to make large profits but also face significant hazards. It's also a rather straightforward market since dealers may make money simply by foreseeing the path of the two-currency rate of exchange. The foreign currency in the marketplace presents difficulties for period projections due to its fluctuating, highly unpredictable, irregular, and chaotic nature. It is challenging to build a reliable model that can both capture existing trends and adapt to new ones as market conditions change continually. In recent times, scholars worldwide have been closely examining the foreign exchange or FOREX market. Owing to its delicate nature, several studies have been carried out in an attempt to precisely forecast future FOREX currency prices. This work analyzes the effectiveness of machine learning models to predict the next day currency exchange rate (USD to INR). In this context, this work implements a RNN model, and a hybrid LSTM model. The accuracy thus calculated is 99.70% by RNN model and 9979% by LSTM models respectively.

Real-Time Facial Emotion Recognition Through Neural Networks

Dhairya. A. Bhatt, Harshil Rajpara, Dr. Anjali Diwan and Rajesh Mahadeva

Abstract: Facial emotion recognition is a crucial component of humancomputer interaction, creating impact on various industries including healthcare, education, and entertainment. The project goal is to develop a robust facial emotion identification system by training a convolutional neural network (CNN) on a dataset of 19,502 images. The integration of PyTorch and TensorFlow helped rapid model development, while the Adam optimizer ensured optimal convergence during training. The capabilities of the system were enhanced by implementing the Haar-cascade algorithm, resulting in a 30% reduction in processing time compared to previous methods. After 100 epochs, each with 98 samples, the proposed methodology achieved an accuracy of 84%, demonstrating a 15% improvement over baseline models. However, the system showed limitations in low-light conditions and with partially occluded faces, where accuracy dropped. Additionally, the model's performance varied across different emotions, with happiness and surprise being recognized with over 90% accuracy, while more subtle emotions like contempt were sadness with only 75% accuracy. Future work will focus on addressing these limitations through data augmentation and the incorporation of attention mechanisms to improve performance in challenging scenarios.

An IoT and Data Mining-Based Tool for Early Identification of Speech Disorders in Children Using Advanced Algorithms

Usha M

Abstract: Early detection of speech disorders in children is critical for effective intervention and treatment. This paper presents an innovative tool leveraging the Internet of Things (IoT) and advanced data mining techniques to identify speech disorders in children at an early stage. This paper explores the integration of IoT and data mining technologies for the early detection of speech disorders in children by applying advanced algorithms. The aim is to develop an efficient tool for early diagnosis and intervention, enhancing speech therapy outcomes through real-time monitoring and analysis. The system integrates IoT-enabled devices for real-time data collection, capturing various speech parameters such as pitch, tone, and articulation. These data are processed using advanced algorithms, including machine learning and deep learning techniques, to analyze patterns and anomalies indicative of speech disorders. The proposed paper offers a user-friendly interface for parents, educators, and healthcare professionals, providing insights into a child's speech development and highlighting potential areas of concern. The system's effectiveness is evaluated through extensive testing with a diverse dataset, demonstrating its accuracy and reliability in identifying various speech disorders, such as stuttering, dysarthria, and apraxia. By facilitating early diagnosis, this tool aims to improve the quality of life for children with speech disorders through timely and targeted interventions.

An Efficient Model for Academic Performance Prediction of the University Students

Nisha and Sanjay Kumar Sharma

Abstract: The provision of essential resources and a fruitful existence depend on educational standards. Colleges and universities are integrating technology into their conventional teaching techniques in response to developing technologies such as artificial intelligence. Discovering hidden relationships in informative data and forecasting scholars' academic achievement is now possible using Machine Learning (ML). The massive amount of student data is beyond the capacity of statistical methods and database management systems to process. Keeping this in mind, we examined the students' dataset to see how different features affect student outcomes. The larger Kalboard 360 dataset includes academic and demographic features collected and used for the study. Data visualization analysis shows that students who belong to urban areas got high grades compared to rural areas and the female students' performance is better than male students. In this study, we designed the models using Random Forest (RF), Support Vector Machines (SVM), Decision Trees (DT), K-Nearest Neighbor (KNN), and Logistic Regression (LR) to predict students' academic achievement. For better performance, we applied a cross-validation technique to the ML models. The result indicates that the Decision tree-based model accuracy is 99% which is better than the other models. Finally, using the ML model in education could help spot learning gaps in students' studies and identify underachievers early on. This will enable teachers to make well-informed decisions to improve students' academic achievement.

Comprehensive Comparative Study on Data Mining and Machine Learning Approaches for fraud Detection in Financial Services

Dipak Thanki and Jaypalsinh A. Gohil

Abstract: It has been the case recently that there has been an escalation in the proposition of untrue activities within different monetary sectors most especially in banks. Consequently, it becomes prudent to adopt strong and resilient strategies intended to minimize loss of finances as well as promote people's trust. Thus, preventive measures against fraud in the banking sector can be enhanced by utilizing data mining and machine learning techniques which are responsive instruments employed for such purposes. This paper looks at several data mining approaches meant for detecting banking frauds through certain algorithms, case studies and practices. To begin with, this article talks about various data mining techniques whose relevance to fraud detection is very essential. They include classification, anomaly detection, clustering and association rule mining methods. Additionally, it outlines how certainalgorithms like logistic regression & decision trees together with k-means clustering & isolation forests help to recognize cheating behaviors in supervised machine learning model. The current information regarding data mining's application for reducing bank fraud using ML techniques has been compiled in this assessment. It emphasizes how relevant it is for finance professionals to team up with data scientists in order to curb fraud development, identifies important areas that require further research, and proposes ways forward towards improved fraud detection systems.

Enhancing Music Recommendation Systems: A Hybrid CNN-LSTM Approach for Personalized and Precise Recommendations

Mohammed Sani Mohammed, Shilpa Singhal, Ravikumar R N, Dhara Joshi, Kishan Makadiya, Santushti Betgeri

Abstract: This research paper presents a new approach in which personalized music recommendations are made by combining Convolutional Neural Networks (CNNs) and Long Short-Term Memory (LSTM) networks to form a hybrid model. The study is intended to prove that the model can give accurate song suggestions according to the user's needs, with data sourced from Spotify through Kaggle platform. Our hybrid CNN-LSTM model has an accuracy of 98.7% which beat traditional recommendation algorithms like CNN, LSTM, Multilayer Perceptron (MLP), Radial Basis Functional Network (RBFN) and Generative Adversarial Network (GAN). It basically shows how an advanced recommendation system can be introduced into a simple application developed using the Streamlit Python framework. Users interact with this application by giving it certain queries to which they will receive personal music proposals. It not only confirms that the hybrid way is effective for improving user engagement and satisfaction on digital music platforms but also signifies an important step towards music recommender systems as it was previously known.on. This will enable teachers to make well-informed decisions to improve students' academic achievement.

Detecting Emotions of MEMEs Using a Hybrid approach of Deep Learning

Ms. Monali Patel and Dr. Hiteshi Diwanji

Abstract: Memes have evolved into a powerful tool for social interaction onplatforms like Twitter, Instagram, Facebook, Pinterest, where they communicate complex emotions through a blend of images, text, and emojis. In this research, we propose a hybrid deep learning model that not only processes the textual components but also integrates the expressive use of emojis to better capture the nuanced emotions embedded in memes. While traditional sentiment analysis approaches often fall short in understanding these intricate emotional cues, our deep learning approach aims to overcome these challenges. By leveraging multimodal features—the textual content alongside visual cues like emojis. We provide a more holistic method for detecting and classifying emotions in memes, enhancing the accuracy of sentiment detection. Our research also distinguishes itself by focusing specifically on harmful, offensive, and trolling content, using hybrid deep learning models that integrate both Natural Language Processing (NLP) techniques and image recognition. This approach not only enables the system to detect sentiment but also classifies different types of toxic behavior (like trolling) that are prevalent in meme culture. The dataset used for experimentation contains a range of memes annotated with these emotional and behavioral labels. In sum, this study contributes to the existing literature by presenting an advanced, context-aware method for meme classification, emphasizing the importance of both text and visual elements.

Multi-dimensional Spatiotemporal Sparse-representation Convolutional Long Short-Term Memory for Prediction of Autism Spectrum Disorder

Ms. Deepa V, Dr Maheswari D

Abstract: ASD is a Neuro development disorder. Lack of communication, anxiety over social interaction, feeble and confused behaviors are some of the outward impacts and intense impressions found in an autistic patient. Early detection and diagnosis of autism can feasibly eliminate the progression of the disease. In this paper, the detection of autism is elevated by incorporating facial expression analysis along with Machine learning techniques. The goal of the system is to evaluate the facial expressions of the patient by interpreting images or videos which aids to figure out the potential indicators of ASD. Data collection embroiled with diverse dataset that encompasses facial expression of the neurotypical individuals. In order to enhance the data quality few valid preprocessing techniques are incorporated a prompt facial expressions, facial features and expression patterns are implied as feature extraction methods. Multi-dimensional spatial-temporal sparse based convolutional long short-term memory is engaged to incriminate the neuro typical behavior of individuals and to analyze their facial expressions. The proposed model gets trained by the preprocessed dataset. The dataset is inculpated by proper validation and testing which leads to examine its real-world performance.

A Hybrid Deep Learning Framework for Uncertain Supply Chains: An Optimization Approach

Vipul Ladva, Madhu Shukla and Chetansinh Vaghela

Abstract: This research endeavors to address the challenges posed by uncertainty in inventory management within modern supply chains. The goal is to create a hybrid optimization framework that combines the simplicity of linear programming with the robustness of stochastic modeling. Therefore, this research wants to give decision-makers an adaptable instrument for optimizing inventory policies under inherent uncertainties of dynamic supply chain systems. The indicators for minimizing expected total cost in this suggested hybrid model are Order Quantities and the binary scenario. This also means stock levels must never go down below zero and few restriction or constraints must be checked and ensured for maximum quantity limitation, so that the idea of demand is always precise and correct. This also includes binary variables related to certain situation for various items and operating conditions. The scenario that includes managing complex inventories we should consider using deterministicity theory amalgamation of deterministic part with stochastic components. The large number of equations and inequalities used in representing this model go on to prove its applicability across many industries. The hybrid approach is one that optimizes stock decisions at the least aggregate cost expected considering uncertainties such as demand variability, lead
time variation among other key points. Results shown here therefore matches robust inventory management strategies created through these types of models

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FLEATM: Fuzzy Logic-Based Energy-Aware Trust Based Routing In MANETS

R. Sivaranjani, Dr. R. Shankar, Dr. S. Duraisamy

Abstract: The primary goal of Mobile Ad Hoc Networks (MANETs) is to improve energy efficiency while maintaining secure and reliable communication. The authors of this paper introduce FLEATM, an ingenious trust-based routing system that integrates energy awareness and fuzzy logic to tackle this issue. FLEATM utilizes fuzzy logic to evaluate the dependability of nodes by taking into account past interactions and present energy levels. When it comes to complex and ever-changing network environments, trust and energy measures can be quite unreliable and confusing. FLEATM employs the clever use of fuzzy logic to tackle this particular issue. The proposed approach cleverly takes into account both node energy efficiency and trustworthiness when selecting routes by integrating trust management into the routing protocol. Thanks to the nodes with high energy levels, the network life is extended as they are not affected by this twofold factor. The FLEATM trust assessment approach is really impressive since it combines suggestions from neighboring nodes with direct observations to intelligently provide comprehensive trust ratings. Simulations show proof of that FLEATM outperforms trust-based and energy-aware routing systems in conditions of packet delivery ratio, network longevity, and overall statement reliability. FLEATM's clever flexibility allows it to quickly adjust to any changes in network conditions, making it an extraordinary choice for safe and well-organized routing in MANETs.

Vehicle Density Estimation Using Improved Yolov8 Object Detection Model With Kernel Density Estimation

Mrs. K. Mohanapriya, R. Shankar, S. Duraisamy,

Abstract: Accurate vehicle density estimation is crucial for effective traffic management and urban planning. This paper introduces a novel adaptive vehicle density estimation framework that integrates an improved YOLOv8 object detection model with Kernel Density Estimation (KDE). The proposed system aims to provide high-precision, real-time vehicle density analysis to enhance intelligent transportation systems. The core of our approach is the improved YOLOv8 model, specifically optimized for vehicle detection. Enhancements include the incorporation of spatial attention mechanisms and fine-tuning on extensive vehicle datasets, leading to superior detection accuracy and reduced false positives. This robust detection capability is critical for accurately identifying and localizing vehicles in diverse traffic conditions. Once vehicles are detected, their positions are mapped onto a grid covering the region of interest. KDE is then applied to these positions to generate a smooth and continuous vehicle density map. This statistical method effectively captures the spatial distribution of vehicles, offering a more precise density estimation compared to traditional grid-based methods. The resulting density map is crucial for understanding traffic flow and congestion patterns. The system is designed to be adaptive, continuously learning from new data to refine its parameters and improve estimation accuracy. By deploying the algorithm on edge computing devices, the system achieves real-time processing capabilities, enabling immediate responses to changing traffic conditions.

Enhancing Medicinal Plant Identification with Deep Learning: A Data-Centric Approach

Lakshmi Padmaja Dhyaram, Akash Reddy Busa, Manideep Anchuri and Mahati Gorthi

Abstract: India boasts a rich biodiversity of plants, and for decades, it has utilized medicinal plants in Ayurveda. However, due to a lack of species knowledge, misidentification stemming from morphological similarities, high demand driven by endangered species, and other factors, medicinal plants are susceptible to adulteration and substitution. This paper aims to address the challenges of limited species knowledge and misidentification of medicinal plants by employing state-of-art computer vision techniques, specifically deep learning through Convolutional Neural Networks (CNNs), with a data-centric approach. Despite the existence of numerous computer vision applications proposed for medicinal plant identification, they often lack accurate tailoring for specific plants and struggle to precisely generalize across plants with diverse morphological features. Our study proposes an accurate computer vision application which utilizes different deep learning CNN architectures such as MobileNet, ExceptionNet, and InceptionNet for the precise identification of 10 medicinal plants with data encompassing various morphological features.

An Empirical Assessment of Credit Risk of Indian Companies using Machine Learning Algorithms

Sujatha R, Kavitha D, Uma Maheswari B, Paritschath, Karthikeyan. L.M

Abstract: The study aims to assess the predictive capabilities of six machine learning models such as logistic regression, decision tree, support vector machine, artificial neural networks, random forest, and Adaboost to categorize the significant variables
influencing the companies' likelihood to default. The analysis utilized a dataset from the Prowess database, containing information on companies rated by the ACUITE and BRICKWORK credit rating agencies. The dataset comprised 198 highsecurity-rated companies and 176 default-rated companies from 2016 to 2023. The study incorporates 27 explanatory variables. The analysis revealed that ensemble models, particularly the Adaboost classifier and random forest classifier, exhibit superior predictive performance compared to traditional models. The random forest classifier showed 97% precision, 97% recall, 97% F1 score, 99% area under the curve, and 98% Gini coefficient, and the AdaBoost algorithm showed 99% precision, 99% recall, 99% F1 score, 100% area under the curve and 99% Gini coefficient. The findings suggested that banks and other non-banking financial institutions can apply these models to refine their lending strategies based on the borrower firms' credit quality. Moreover, this study extends beyond traditional financial metrics by identifying key default drivers, providing insights beyond conventional financial statement analysis.

Time Series-Based Analysis of Energy Consumption: Forecasting and Anomaly Detection using LSTM and Iso-lation Fores

Rajeev Ranjan, Madhu Shree M and Dechamma M P

Abstract: The household power consumption forecasting and anomaly detection model presented in this work focused mostly on advanced machine learning tech-niques, such as Long Short-Term Memory (LSTM) for forecasting and Isolation Forest for anomaly identification. The primary goal is to optimize energy man-agement by providing accurate insights into power consumption and proactively identifying irregularities in power consumption patterns. This work unfolds in several key phases, encompassing preprocessing, data exploration, model construction, testing, and analysis. In the initial phase, the dataset is thoroughly ex-amined, revealing time-stamped power consumption data that serves as the basis for subsequent time series analysis. The existing landscape is identified as lack-ing robust forecasting and anomaly detection systems, prompting the adoption of advanced techniques to overcome conventional limitations. The proposed system introduces the LSTM model and the isolation forest to enhance forecasting accu-racy and anomaly detection, respectively. This choice is driven by LSTM’s abil-ity to capture temporal dependencies with an RMSE value of 0.0799, making it well-suited for analyzing power consumption patterns.

Enhanced Feature Selection for Chronic Kidney Disease Detection: A Hybrid Integration of Simulated Annealing and Recursive Feature Elimination

G. Jeyalakshmi, Dr. F. Vincy Lloyd, Dr. M. Jasmin and Dr. T. Jaya

Abstract: Feature selection is the first and most essential process for developing predictive models using complex medical datasets such as that of Chronic Kidney Disease (CKD). This paper proposes a new hybrid feature selection model, which integrates Simulated Annealing (SA) and Recursive Feature Elimination (RFE), for improving CKD diagnosis by Feedforward Neural Networks (FNN). The SA algorithm provides a global search mechanism, which is used to get potential feature subsets. RFE then iteratively improves these subsets by eliminating the least significant features on basis of model performance. Hybrid methodology provides an accurate and effective feature selection procedure by combining the benefits of both. The approach is validated using the CKD dataset provided by the UCI Repository. Evaluation criteria portraysthat the proposed strategy achieves 94% accuracy, 0.93 precision, 0.91 recall, and an F1-score of 0.94which is much better than other hybrid feature selection techniques. The results obviously indicate that the SA-RFE hybrid approach significantly enhance the detection performance for CKD using FNN, which could be a potential assistant tool in diagnosis with improved accuracy.

Mutual Information-Driven Ant Lion Optimizer for Enhanced Feature Selection in Colorectal Cancer Detection

G. Vinudevi, Dr. S.P. Vijayaragavan and Dr. K. Sujatha

Abstract: In order to enhance the diagnostic accuracy, feature selection for colorectal cancer identification attempts to extract the most insightful features from medical images. This study presents a new method for detecting colorectal cancer using hybrid method that combines Ant Lion Optimizer (ALO) with mutual information for feature selection and classification based on neural networks. To standardize and improve the dataset, the process starts with preprocessing medical images, which includes resizing, normalization, and data augmentation. Local Binary Patterns (LBP) are used for textural feature extraction as it can enclose significant amount of textural information pertinent to cancerous tissues. The ALO, enhanced with mutual information, is used to choose the most informative features through assessing their relevance to cancer classification. The optimized feature set is then utilized by a neural network to perform the classification. The integrated approach capitalizes on the advantages of metaheuristic optimization and modern machine learning technologies that collectively lead to an improved efficacy compared with existing methods for colorectal cancer detection. Experimental results with respect to significant features and classification performance validate the effectiveness of our approach, suggesting its potential in improving diagnostic accuracy using medical imaging.

Dynamic Crop Recommendation Systems Using Reinforcement Learning and Real-Time Sensor Data

C. Bala Kamatchi and Dr.A.Muthukumaravel

Abstract: This research is a dynamic crop recommendation system based on sensor technology and reinforcement real-time data learning boost. It comes in precision agriculture and needed to come up with solutions that answer the questions of sustainability, yield-boosting policies and resources efficiently. If sustainable development is to happen then in this method a new concept of reinforcement learning based on the Agricultural Research Institute's large-sized dataset, as well as sensors for soil moisture, temperature and acidity levels, is applied. The system uses real-time data to iteratively optimize its recommendations, to make the best crop selections as well as field management techniques. Results reveal the fruitful yield under a variety of field conditions for crop recommendations had an accuracy rate of 90%. Quite large increases in yield were also achieved, for some species yielding 30% more than when using conventional methods. Moreover, the suggested approach realized a 23% yield gain over the former year's practices. These results show actual environmental improvement along with an increase in agricultural productivity.

Hybrid Deep Learning Models for Real-Time Melanoma Classification Using Mobile Imaging

M. Packiamary and Dr. A. Muthukumarave

Abstract: Timely identification of melanoma is vital for enhancing patient prognosis, nevertheless, it continues to be a formidable undertaking. This study presents a hybrid DL model that combines attention mechanisms, LSTM networks, and CNNs to increase the precision and effectiveness of melanoma classification. To facilitate instantaneous photo collecting and analysis, the model is integrated into a smartphone application. For training and testing, the ISIC Archive dataset—which contains over 25,000 dermoscopic images—was used. With an accuracy rate of 95.2%, precision rate of 94.8%, recall rate of 95.5%, and F1-score, the model showed notable gains in performance metrics of 95.1%. These findings exhibit a significant improvement compared to the current cutting-edge techniques, which showed poorer performance metrics in all areas. The significant increase in precision and other crucial measurements underscores the efficacy of the hybrid model and its prospective use in clinical environments for the early diagnosis of melanoma. Subsequent efforts will concentrate on including a wider range of datasets and enhancing the model's efficiency for instantaneous processing on mobile devices.

GeoVigilance Labs: An AI-Enabled System for Automated Land Use Monitoring

Harsh K. Dave, Bravim K. Purohit, Akshit A. Joshi, Devkumar R. Joshi, Swayam R. Pandya, Hetashriben D. Kansariwala, Dr. Kamal Sutaria

Abstract: GeoVigilance Labs is an innovative AI-driven system designedto combat unauthorized land use changes. Leveraging cuttingedge technology, this system enables streamlined datacollection, real-time monitoring, and immediate notificationsto relevant authorities. The research delineates the system'smethodology, emphasizing its potential to significantly enhance regulatory enforcement, preserve environmental integrity, and foster improved land management practices. By empowering local authorities and integrating state-of the-art technology, GeoVigilance Labs stands as a transformative solution for addressing unauthorized land use, offering a sustainable approach for governance and environmental sustainability.

Detection and Analysis of Features of Optic Nerve Head using Retinal Fundus Images of an Eye for A priori Prediction of Glaucoma

Kartik Thakkar and Dr. Ravi Gulati

Abstract: . Glaucoma is a progressive optic neuropathy which is a leading cause of irreversible blindness [1]. Glaucoma is described by Visual Field (VF) loss and optic nerve damage, associated with raised Intraocular Pressure (IOP) except normal-tension variant. Glaucoma can be diagnosed using different Computer Vision (CV) techniques by separating features of Retinal Fundus Images like Retinal Nerve Fibre Layer (RNFL) texture, Optic Disc (OD), Optic Cup (OC), Neuro Retinal Rim (NRR), colour intensity of OC and notch in Blood Vessels (BV) [2]. Size of OC and OD is important feature in finding of glaucoma known as "Cup to Disc Ratio (CDR)". Here in this paper, we are using a novel approach to detect OC and OD to calculate CDR and colour intensity of cup from the images of patients from their progressive Retinal Fundus Images. We use Sequential Fundus Images for Glaucoma Forecast (SIGF) public dataset having progressive images of 300 patients.

Ethics of AI in the Educational Sector - Navigating the Moral Landscape

Geetha Manoharan, Sunitha Purushottam Ashtikar, and Chetan R. Dudhagara

Abstract: This chapter investigates the ethical considerations surrounding the rapidly expanding digital area of artificial intelligence (AI) and the challenges of applying it to the education sector. Initially, the influence of AI on modern edu-cation is examined, along with its possible benefits (such as customized instruct-tion and reduced administrative tasks) and drawbacks (like worries about data privacy, inclusiveness, and accessibility). We look at significant ethical concerns while delving into this fascinating area, such as how AI may affectstudent pri-vacy, the potential for algorithmic bias, and the requirement that AI systems be honest. We investigate the potential downsides of predictive analytics and data-driven education, carefully examining the trade-off between personalization and privacy. We also discuss the problem of algorithmic fairness and how machine learning algorithms might reinforce existing inequalities. As 2023 draws near, one of the most significant technical trends in higher education is artificial intel-ligence (AI). By offering customised instruction based on each student's needs and facilitating creative approaches to accessibility, artificial intelligence (AI) can improve the educational experience. AI has the potential to improve student interaction with course materials, which will lead to positive results. However, it is critical to recognise the potential ethical issues that need to be addressed, such as maintaining equity, reducing prejudice, and addressing the possibility that AI could eventually replace human instructors in the classroom. The need of ac-countability and transparency in artificial intelligence-based teaching technolo-gies is emphasised in this chapter.

Underwater Image Classification with Sloth-Enhanced Contrast Limited Adaptive Histogram Equalization (S-CLAHE) and Deep Learning Algorithms

Saravanan P And Vadivazhagan

Abstract: This work evaluates Sloth-Enhanced Contrast Limited Adaptive His-togram Equalization (S-CLAHE) effectiveness in enhancing underwater image classification performance. S-CLAHE aims to enhance the contrast and quality of underwater images by integrating the exploration strategy inspired by sloths into the traditional CLAHE algorithm. S-CLAHE is compared with DeepSeaNet and MCANet, the existing deep learning algorithms, in a number of ways, such as True Positive Rate, True Negative Rate, Precision, Matthews Correlation Co-efficient, Classification Accuracy, and F-Measure. With better classification ac-curacy and dependability, the findings reveal that S-CLAHE routinely beats the other methods. These results show the possibilities of S-CLAHE as a useful tool for improving underwater picture classification tasks, so applicable in marine bi-ology, archaeology, and exploration.

Integrating Multimodal Data with Mathematical Models for Effective Fake News Classification

Sudha Patel and Shivangi Surati

Abstract: In order to improve the identification of fake news, we propose a new model based on fusion techniques: Multimodal Deep Fusion Network (MDFN) which combines both textual and visual information. MDFN adopts a two-stage fusion strategy which combines the virtues of early and late fusion together with cross-modality attention. Under this architecture, the model compared with a few baseline methods significantly outperforms all of them 0.92 in accuracy. Comprehensive evaluation, including the ablation study, shows that each part of MDFN is crucial to its overall performance. We show experimentally that MDFN achieves strong generalization to a large number of very different news domains and can potentially detect false news effectively in diverse contexts.

Deep Learning-Based Risk Stratification for Chronic Kidney Disease Patients

G. Jeyalakshmi, Dr. F. Vincy Lloyd2, Dr. M. Jasmin and Dr. T. Jaya

Abstract: .The significant number of fatalities and ailments caused by chronic kidney disease (CKD) renders it a significant global health concern. The prompt management and treatment of CKD are contingent upon the accurate assessment of risk. In this study, deep learning-based approach to risk stratification of CKD patients is introduced. To predict the risk of CKD based on a large dataset including demographics, clinical and laboratory data with machine learning approach (Deep Neural Networks) Then, it was trained and tested following conventional machine learning procedures and performance metrics improved with respect to past methodologies. Results The results were remarkable; with a recall of 90.8%, AUC 0.96, precision rate:91.3% & overall accuracy %age :92.5%. All of which demonstrates the model's ability to improve patient care and clinical decisions. This DL approach may improve the use of healthcare resources and patient outcomes in this setting.

A Comprehensive Review of Machine Learning techniques in Recommender System for E-Commerce Platform

Divyarajsinh N. Parmar, Dr. Krunal N. Vaghela, and Dr. Madhu S. Shukla

Abstract: In today's competitive e-commerce platforms, recommender systems are essential components that increase sales and client engagement. This study present types of recommender systems used in e-commerce platforms which include content-based, collaborative and hybrid as well as some machine learning techniques can also use in recommender system. We also provide proposed methodology that can be used to represent flow of recommender system. And also, we address the benefits and challenges that machine learning based ecommerce recommender systems have.

Bibliometric Analysis of Educational Data Mining

Dr. Disha Shah and Dr. Ankita Kanojiya

Abstract: . A bibliometric analysis of educational data mining (EDM) explores the academic landscape of this interdisciplinary field, which applies data mining techniques to educational research. The study aims to systematically examine the field of Educational Data Minig (EDM) to identify the research output over a defined period, focusing on trends, types of publications, and key research topics within EDM. By gathering and analyzing publication data from databases like Scopus, Sematic Scholar, Google Scholar and CrossRef, the analysis uncovers publication and citation patterns, and the research categorial distribution of contributions. This approach provides a comprehensive review of how domain of EDM has evolved. Ultimately, the study aims to inform researchers, educators, and policymakers about current trends, emerging research areas, and the impact of EDM on educational practice and theory. This research is crucial for guiding future research directions and enhancing the application of data-driven approaches in contexts of EDM.

Event detection and analysis from social media data using N-gram and Distil-BERT model

Dharmendra Mangal, Dr. Hemant Makwana

Abstract: Now-days social media became popular source of communication. An event is an incident occurred in real-world. The Social media may be used to sense around the real world events as most of them are communicated on this platform. The sensed data are further used to detect significant events. This detected information will help the people and organization to act accordingly. Some events like natural disasters, accidents etc. require detection in real time as well as prompt action. In this work, we applied Distill-BERT model for event detection. Distill-BERT model is 60% faster and 40% smaller in size as compared to BERT-base model. This makes the event detection faster which is desired in real time processing. Also accuracy is not compromised as compared to base model (only ~3% compromised).This compromised is covered by applying N-gram model that improvise the system performance .The experimental results shows that F1-measure for BERT-base ,Distill-BERT are 0.75 and 0.72 respectively. The proposed method improves the F1-measure to the value 0.76. Hence proposed approach work better for event detection especially in real time scenario.

Enhanced Prediction of Chronic Kidney Disease Using KNearest Neighbors with Various Pre-processing Techniques

G. Divya and Dr. R. Vasuki

Abstract: . One of the primary public wellness concerns is Chronic Kidney Disease (CKD) that needs very early detection, administration for efficient get rid of. This paper aims to analyze the performance of K-Nearest Neighbours (KNN) algorithm for diagnosing Chronic Kidney Disease (CKD) and investigates a series of preprocessing methods that may have an impact on model prediction scores. The dataset consists of 400 samples with 25 features in CKD dataset which is a compilation of clinical and laboratory data. The use of three preprocessing techniques: Min-Max scaling, boxplot analysis to detect and remove outliers using Z-score normalization. The performance or the outcome of model is done using three measures i.e., Log Loss (LL), Balanced Accuracy (BA) and Matthews Correlation Coefficient (MCC). The results also indicate that KNN with the boxplot preprocessing provide significant better performance compared to other alternative preprocessors. Smoothing over the outliers and scaling properly results in improved MCC, Log Loss reduction, and balanced accuracy. As well as showcasing KNN accompanied by a boxplot analysis to be an effective tool in accurate diagnosis (and perhaps for aiding medical professionals with early recognition and intervention), this study highlights the importance of preprocessing tailored towards CKD risk prediction.

Extraction of normal and abnormal region in Colposcopy image to support cervical cancer clinical decision

Parimala Tamang, Annet Thatal, and Mousumi Gupta

Abstract: Colposcope is a device which generates a colposcopic images of the cervix which is vital for detecting cervical neoplasia. Thus, analysis of these images plays a significant role in identifying and diagnosing cervical abnormalities. In this paper, we present a UNET model for automatic segmentation of normal and abnormal regions from colposcopic images. This will be beneficial for swift analysis and minimizes the subjective biases between clinicians. The segmentation works by pre-processing the images, training the UNET model on the set of annotated dataset and finally applying the trained model to predict the normal and abnormal regions. The whole algorithm is tested on Kaggle and ICAR dataset.

Steganography in the Digital Age: An In-Depth Review of Techniques

Koushik Choudhury, Milan Doshi, Dr. Dimple Thakar, Dr. Jignesh Hirapara

Abstract: . Sending information to the proper destination in a hidden way to the receiver is called "steganography.” This is a way or practice of securing information from the outside world. By doing so, we can hide information within a video file, or it can be an image or a text file. Three well-known steganographic methods are examined in-depth in this review paper: Edge-Based Encoding (EBE), Pixel Value Differencing (PVD), and Least Significant Bit (LSB) embedding. In terms of data embedding capacity, imperceptibility, and robustness, this article compares and contrasts the performance of LSB, PVD, and EBE, highlighting the advantages and disadvantages of each technique.

Performance Comparative Analysis of Recurrent Neural Networ for Osteoporosis Disease Prediction

P Lavanya and G Yashodha

Abstract: . Low bone mineral density (BMD), the hallmark of osteoporosis, is a growing public health concern. To date, several conventional machine learning (ML) algorithms have been put out to estimate the risk of osteoporosis. When used in clinical settings, these models have, however, demonstrated comparatively low accuracy. A fresh chance to enhance prediction performance has been presented by newly proposed deep learning (DL) techniques, such as recurrent neural networks (RNN), which can extract knowledge from intricate hidden interactions. Hence, the present research work conducted the comparison analysis of different RNN approaches such as simple RNN, long short-term memory (LSTM), and gated recurrent unit (GRU) for osteoporosis detection. The results show that low computation times can be achieved using SRNNs and good accuracy can be predicted for osteoporosis using LSTM approaches.

Securing E-Commerce: A Comprehensive Analysis of Fraud Detection Methods

Rushi Parikh, Krupa Bhavsar, Uttam Chauhan

Abstract: Fraudsters are attracted to the e-commerce sector because of the increasing transaction amounts, underscoring the crucial importance of efficient fraud prevention and detection mechanisms. This paper delves into e-commerce fraud detection through a systematic literature review, exploring the evolving landscape of advanced technologies, particularly machine learning automation. This technology enhances the detection capabilities for fraudulent activities by efficiently processing large volumes of e-commerce transaction data. As fraudulent transactions become more complex, there is a need for efficient ways to counteract these risks. To combat fraudulent transactions, there's a growing need for effective methods. Our primary objective is to comprehensively study various algorithms employed in e-commerce for fraud prevention. The survey focuses on comparing and assessing the effectiveness of this algorithm. The aim is to provide insight into the effectiveness of the proposed techniques in comparison to existing techniques. The findings contribute to a deeper understanding of the current state of e-commerce fraud detection, offering valuable insights for researchers, practitioners, and stakeholders in the ongoing battle against online fraud.

Performance Evaluation of Machine Learning Algorithms for DDoS Attack Detection: A Comparative Study

Satyam Agrawal, Anup Ingle, Sagar Sudhakar Vanarase, Srinivas Chippalkatti,
Nikhil Mohan Shinde, Dr. Arati V. Deshpande

Abstract: The proliferation of Distributed Denial of Service (DDoS) attacks poses a significant threat to internet users and organizations. This paper presents a comprehensive evaluation of four machine learning algorithms, Catboost, Logistic Regression, Gradient Boost, and Naïve Bayes aimed at effectively detecting and classifying benign and attack transactions. Utilizing four open-source datasets, including CICDDOS19 (Portmapper attack dataset), DDOS Backscatter TCP dataset, DDOS Backscatter ICMP attack dataset, and the SDN dataset sourced from publicly available repositories, meticulous preprocessing techniques were employed to clean and scale the datasets before training the machine learning models. The performance evaluation of the algorithms was conducted based on key metrics such as Accuracy, F1 score, Precision, and Recall. The comparative analysis presented in this paper facilitates the determination of the best-performing algorithm for DDoS attack detection across diverse datasets, thereby offering valuable insights for enhancing cybersecurity measures.

Anthology Of ML Based Data Science Applications

Kinjal D Raval, Sridaran Rajagopal and Meghna Bhatt

Abstract: Machine Learning (ML) plays a crucial role in Data Science applications majorly in areas like finding unseen patterns, deriving information, making decisions and much more. Despite many surveys revolving around ML applications exist, their applicability in Data Science domain has not been much explored so far. Understanding this gap, an attempt has been made in this paper to provide an exhaustive survey on literature involving both ML and Data Science. The survey has been classified into various traditional sub-domains like cyber fraud, healthcare etc., and new-age ones like virtual try-ons and behaviorism. It is believed that this survey would help the Data Science Application Designers to apply ML so as to gain maximum benefits in terms of applicability knowledge, advantages as well as their limitations.

Navigating the Path: Exploring Career Choice Dynamics Among Secondary and Higher Secondary School Students

Falguni Mukeshbhai Barad and Dr. Amit Patel

Abstract: With an emphasis on individual jobs and the limitations that limit their choices, this research study aims to investigate the factors that influence career training choices made by students in secondary and higher secondary schools. Students' ability to make good job decisions depends on their career decision self-efficacy, which is impacted by the success they've had in exploring other career paths and the presence of supporting surroundings. Using a sequential research approach, the study looked at how factors like gender inequality, educational chances, social pressure, parental pressure, and personal interest influenced each other. Successful career development programs and related educational endeavors can be informed by the findings. The findings also back strong arguments about how school, peer pressure, and parental obligations affect children's career choices. Student anxiety about choosing poor career choices stems from five main places: a lack of self-awareness, inadequate investigative abilities, cultural and familial value adherence, emotional difficulties, and the fear of failure.

Performance of Linear and Polynomial Kernels of SVM towards Kidney Cyst Detection

Rahul Nimbai, Mayur Patil, Veereshkumar Rathod, Santosh Pattar, and
Prema T. Akkasaligar

Abstract: This research looks into the application of Support Vector Machines (SVMs) for image classification within the medical field, focusing on kidney cyst detection in CT-scanned images. It investigates the effectiveness of SVMs with different kernels in distinguishing between images containing cysts and those depicting normal kidneys. This research seeks to develop and evaluate the performance of SVM models using linear and polynomial kernels to classify kidney cysts in CT scan images. However, the presence of non-linear patterns in the data can pose challenges for traditional machine learning algorithms. The models carried out are trained on a dataset of CT-scanned images labeled as cysts or normal. A comparison using performance metrics, including accuracy, precision, recall, and F1 score is done to determine the most effective model for cyst classification. The linear kernel SVM achieved an accuracy of 86.90%, demonstrating good performance in classifying both cyst and normal images, whereas the polynomial kernel SVM outperformed the linear model, achieving a higher accuracy of 89.74%. Our findings suggest that the polynomial kernel SVM outperforms the linear kernel SVM for classifying kidney cysts in CT-scanned images. The polynomial kernel effectively captures non-linear patterns, leading to improved accuracy and maintaining efficiency. The model can help a professional in the diagnosis of an individual by keeping its own classification in front.

Deep Learning Methodologies for Segmentation and Classification of Cutaneous Malignancies Utilizing Capsule Networks

Punam R. Patil and Dr. Ritu Tondon

Abstract: Today, the predominant issue in global health pertains to skin cancer, being the most prevalent type of cancer, encompassing variations like melanoma and basal cell carcinoma. Early detection is critical for effective treatment, yet traditional diagnostic methods often fail due to limitations in image quality and the complexity of visual differentiation. In this paper we examines novel methodologies elucidated with the objective of improving the dependability and accuracy of skin cancer detection using sophisticated computational techniques. The proposed approach employs sophisticated image pre-processing techniques to remove noise while preserving essential features. For this study we proposes an efficient deep learning approaches for optimal segmentation and classification of skin cancer with a focus on severity analysis will be implemented in python. Furthermore, the study includes a comprehensive analysis of the severity of the identified cancers to furnish a comprehensive comprehension of the advancement of the cancer and potential impact on the individual. Overall, the capacity of sophisticated deep learning methodologies to revolutionize the field of skin cancer diagnosis is noteworthy, providing a sturdy resolution that elevates the prompt identification, precise categorization, and assessment of severity, consequently enhancing the quality of patient care and results.

Scrutinize Search Engine Optimization strategies with Artificial Intelligence to Rank a website

Dr Amit K. Patel, Mr. Milan V. Doshi, Dr. Jignesh D Hirapara, Dr. Haresh D Khachariya

Abstract: Since many years website ranking using SEO is critical concepts. In this paper we are going to cover factors regarding search engine optimization and artificial intelligence to rank websites. Here authors try to implement of various model to compare SEO result effect without AI and with AI. Based on various literature reviews and various prototype that are used to classify results. Here, author has considered various google updates happened in last decade. Based on the literature review of past years results are shown over here. The purpose of this paper is to have a road map of Using AI and SEO along with various techniques to rank a website. Various tools of AI such as SearchDex, Fuzzy Interface System, SPSS and Polidoxa are used to analyses the results of it. We have used comparative analyses of two website which is more than fiveyear-old and by applying this technique we are trying to check the comparative results of normal SEO and AI SEO techniques.

Applied ML Algorithms for Happiness Index Prediction of Nations

Tarannum Bloch, Chandrapasad and Kay Thi Kyaw

Abstract: The World Happiness Report is released every year on 20th March on the occasion of World Happiness Day. The 2023 World Happiness Report has provided detailed study of happiness trends in over 150 countries. The happiness index and growth of any nation have the interplay of psychological, economic, and social factors. Understanding this correlation can provide insight into how to design effective policies to promote the economic and psychological growth of the people of the nation. This research problem focuses on providing an ML model that can predict the happiness index based on features like social hold-up, liberty to make life choices, gross domestic product GDP per person, healthy life longevity, generosity, and perceptions of exploitation. This research is useful to the government sectors to take corrective actions to increase the well-being of the people of the nations. This research is also helpful to private organizations and NGOs in deciding further actions for the development of nations. This research paper can also help individual researchers to gain insights into applied machine learning concepts to resolve real-life problems. We have applied ML algorithms to achieve the research objective of predicting the happiness index by applying Support Vector Regression, Random Forest, Decision Tree, CatBoost & Linear Regression ML algorithms. The best generated ML models after experimentations are: SVR with the highest R2value of 0.827 and the Decision tree has achieved the highest accuracy with minimum prediction errors in Mean Absolute Error of 0.364 while Mean Square Error of 0.233 and Root Mean Square value of 0.483 respectively which makes them suitable for the prediction of global Happiness index.

Image Splicing Detection: A Deep Learning based Approach

Bhavana Kaushik, Smita Jha, Vishwa Pratap, Vinay K and Vinnel Ettam

Abstract: . Image splicing refers to the process of manipulating digital images by copying, pasting, or superimposing parts of different images to create a composite image. The resulting image is intended to trick the viewer into believing it is a real photo when in fact it is a manipulated image. Image forgery is often used for malicious purposes such as: Fabricating fake news, slandering people, or manipulating evidence in court. There are several methods for detecting fakes in image splicing, including visual inspection, statistical analysis, and Deep learning-based approaches. Visual inspection involves manually examining an image to identify discrepancies in lighting, color, texture, and geometry in different parts of the image. Feature Extraction is done from the Casia dataset. The proposed method described below gives an accuracy of 96.59% with an epoch of 30.

Implementation of Deep Learning Approaches for Defect Detection in Ceramic Tiles

Vinod Kumar Pal and Dr. Pankaj Mudholkar

Abstract: In manufacturing industry, specially (ceramic tiles industry) manpower are doing manual inspection for detecting the defects. This process is very tedious and expensive, while detecting the flaws manually; there is a risk of getting inaccuracy in this work. The number of the tiles produced in real time environment, it is impossible to detect the defects in manual mode. The Ceramic tiles industry facing a lot of challenges in defect detection due to shape of defect, location of the defect, environment conditions and lighting conditions. Deep learning is a sub set of machine learning which helps to take the decision based on the tiles. We have proposed four deep learning approaches (Pre-trained models) namely, Dense Net, Xception, Res Net50 and VGG16 in this work. In this study, all four techniques have been thoroughly explored. Consequently, all four models are capable of learning a wide range of images and identifying flaws in ceramic tiles.

A Review of Deep-Learning-Based Models for Afaan Oromo Fake News Detection and Classification on Social Media Networks

Kedir Lemma Arega, Kula Kekeba Tune

Abstract: . The fact that firms from every field are battling to find practical answers for identifying internet false news is a serious problem right now. Finding phony material on the internet can be challenging because it is frequently prepared with the intention of misleading readers. Deep learning algorithms demonstrate superior capabilities in discerning fraudulent information compared to various machine learning methodologies. Previous scholarly works primarily focused on data mining and machine learning, with minimal exploration of deep learning approaches for counterfeit news detection. This study seeks to comprehensively evaluate existing technologies for identifying false news. The initial focus lies on delineating the impacts of disinformation. Subsequently, an elaboration is provided on the dataset utilized and the deep learning methodologies applied in prior research. A meticulous examination of deep learning-based techniques has been conducted to categorize the various approaches effectively. Furthermore, an analysis of key metrics for fake news detection is presented. Recommendations are also put forth for the improvement of fake news detection techniques in prospective research endeavors.

Enhanced Locomotive Delay Prediction Using Machine Learning with Modified Z-Score and Lasso Regression

Dr. Monita Wahengbam, Dr. Tonjam Gunendra Singh, Dr. P. Abirami and
Dr. S. Nirmala Sugirtha Rajini

Abstract: Prediction of train delays is critical for better adjustment in the plan made at stations on one hand and also played a huge role in gaining customer satisfaction. In this paper, a more detailed methodology approach has been suggested for train delay prediction using SVM with MZ-Score preprocessing and LR feature selection. The MZScore is used to flag and prune outliers in the data, with LR carrying out feature selection by reducing coefficients towards zero for less relevant features. The suggested way is implemented and tested on the Train_delay_Prediction. csv dataset. This evaluation tests how much the performance of different FS methods—RFE, PCA and LR with MZ-Score preprocessing can change. The results demonstrate that better performance and balance between precision, recall can be achieved by the synergy of MZ-Score preprocessing, LR feature selection and SVM for train delay prediction. From the results obtained its proved that proposed MZ-Score+LR+SVM gave accuracy of 96.45%, precision of 0.94 and recall of 0.92 which is high compared to other existing algorithms.

AI Cloud Recommendation System

Harsh K. Dave, Kartik R. Joshi, Darshil D. Mistry, Shubham Y. Shah, Dr. Kamal Sutaria

Abstract: This AI-based approach for cloud service recommendation system will be an initiative project that will help surmount the challenges that emanate from the selection of the most appropriate Cloud Service Provider and the most appropriate architecture. In the wake of rapid proliferation, cloud computing in this digital information age presents users with a myriad of cloud service providers and architectures that come with varying featurs and advantages. This, in most of the cases, complicates the process of decision making and becomes a nightmare for the user to seek the right cloud solution that would suit his particular case. By using the very latest in Artificial Intelligence, AI Cloud Recommendation System makes a call for personalization techniques through analysis of user preferences, needs, and historical data. This will very easily help in choosing the correct cloud service provider and architecture concerning cost, security, scalability, and performance. Contrariwise, this project testifies to the practicality of artificial intelligence in solving a very complex, real-world challenge—thereby rendering the choice of cloud services much easier and user-friendly.

Diverse Pre-processing Strategies for Enhancing the Performance in the Classification of Aromatic and Medicinal Plants Using Leaf Images

Shareena E M, D. Abraham Chandy

Abstract: The work focuses on the essential aspects of pre-processing and feature extraction as a preliminary phase before implementing a deep learning classification model. Although deep learning models possess intrinsic feature learning capabilities, the preliminary extraction of essential features cannot be overlooked. This involves identifying salient characteristics, patterns, and structures within the data before feeding it into the deep learning model. By carefully preparing the data through techniques like normalization and augmentation, and by extracting key features from the dataset, the work aims to establish a solid groundwork that ensures the subsequent deep learning model can perform effectively and produce accurate results in classifying the data. The dataset comprises authentic images of plant leaves sourced from the Aromatic and Medicinal Plant Research Station, Odakkali, Kerala, and includes a diverse range of leaf images from 39 distinct aromatic and medicinal plant species. Considering the year-round availability of plant leaves, we give prominence to this essential botanical element. It acts as a cornerstone in our pursuit of attaining strong identification results that are dependable and accurate. In this study, we employ various approach that leverages shape, color, and texture features extracted from plant leaves. The work showcases the implementation of pre-processing techniques on a single sample leaf image of Ricinus Communis, the castor oil plant, sourced from the dataset.

Sentiment Analysis of You Tube Video Comments

S. Manjula, Dr. A. Jaya

Abstract: . In Today's world, YouTube is the prominent platform to share the educational resources than ever before. Students as well as professionals enhance their learning experience with their preferred way of learning which making it easier to understand and retain the concepts in an easy way. They can also revisit the lecturers at their flexible time and pace. Nowadays global experts are stepping into YouTube with extraordinary visual demonstration to give an exclusive insight with no cost to the learners. The you tubers not only rocking in the field of education but also in the various fields such as cooking, mentoring, skill development course and etc., so everyone turning to YouTube for their growth and also for the welfare of the society. Once the channel is grown, one of the biggest challenges is to identify the pros and cons of the viewers. To maintain the channel in quality way, SNA (Social Network Analysis) is coming into the picture, where we identify the emotion behind the text or comments. This research work used RStudio tool to analyse the comments or emotions provided by the viewers in YouTube. In this eight emotions (anger, fear, anticipation, trust, surprise, sadness, joy and disgust) are identified which is very helpful to understand the impact of the video and also gives the insight to the channel creator.

Robust Dataset of Digital Handwritten Devanagari Script Images and Implementing Deep Learning Handwritten Devanagari to Character Recognition

Sanjay E.Pate, Prof. Dr. Rakesh J. Ramteke

Abstract: Devanagari character datasets available on repositories are typically pre-processed scanned characters from paper. This paper introduces a novel approach to creating a digital online handwritten Devanagari dataset using an innovative online technique. The character set comprises carefully selected 44 Devanagari characters 9 character images are difficult to distinguish are ommitted from 53 Charcaters. Generated on a Python-based canvas. We instructed 100 users to draw on canvas each Devanagari character using a mouse, resulting in 44,000 digitally scribbled images, each sized at 300 x 300 pixels. Which were processed using Python for resizing and noise reduction. The final images were organized, converted to JPEG format, and compiled into a zip file and CSV. Divide the dataset 70 % for training and 30 % for testing. To properly recognize and utilize above created dataset, Our intention is to utilize a Convolutional Neural Network (CNN) within the domain of deep learning methodologies. The implementation utilized Keras' Sequential model, consisting of a convolutional layer, pooling layer, Conv2D layer with ReLU activation, flatten layer, dropout layer, and dense layer, with a total of 2,387,116 trainable parameters. Numerical identifiers from 0 to 43 were assigned to Devanagari digits and symbols, with a selection of images and class labels.

Exploring Data Analysis for online Advertisement CTR prediction using Machine Learning

Ms.Vishnuba Chavda, Dr. Savan Patel

Abstract: . Today's multi-billion-dollar online advertising industry is restlessly focused on maximizing return on investment (ROI) and good campaign strategies derive after gaining insight from user and advertisement data definitely helps to achieve good ROI. In this research we explore the usage and implementation of Exploratory Data Analysis (EDA) to gain insight for Online advertisement dataset to enhance the prediction of CTR (Click Through Rate) using machine learning (ML) techniques. Dataset collected from Mendely contains attributes regarding user demographics like Gender,Age,Income,Location with Advertisement related attributes like Type,Topic,Advertisement placement etc. With the analysis goal to uncover insights into user engagement patterns and ad performance metrics which helpful to build better strategic advertisement campaign. With the key steps, EDA start with data cleaning and pre-processing, univariate analysis, bivariate analysis, and end with multivariate analysis. Initial data cleaning includes handling missing values, detecting and addressing duplicates, identifying outliers and encoding for categorical features. Using Univariate analysis visualization techniques distribution of individual variables are examined.

Cybersecurity Threats and Trust Dynamics in Digital Payment Systems: An Analysis of Domestic Fraud and User Perspectives

Vishal Praful Ramaiya, Dr Pramod Goyal, Dr Neeraj Kumar Dubey

Abstract: The widespread adoption of electronic payment systems has introduced new cybersecurity challenges alongside its convenience. This paper examines key cybersecurity issues in digital payment platforms, particularly domestic fraud and the dynamics of user trust. The objective is to analyze how various cybersecurity threats, such as phishing, malware, and data breaches, impact the security and reliability of digital payments. The research specifically explores the influence of security breaches on user trust, while considering demographic factors such as age and education levels. In contrast to previous studies, this work provides a detailed analysis of how security breaches affect user confidence across different demographic groups. The study emphasizes the need for robust cybersecurity measures and improved security practices by financial institutions to foster trust and encourage broader adoption of digital payment systems. This research offers valuable insights into how demographic factors shape user perceptions of security, providing a foundation for more tailored cybersecurity strategies in the digital payments sector.

Enhancing Cyber Hacking Breach Classification through Integrated Preprocessing and Feature Extraction Techniques

J. Christina Deva Kirubai, Dr. S. Silvia Priscila

Abstract: The increasing risk of cyber attacks necessitates the use of advanced and effective techniques for quick detection and categorization. Through the integration of preprocessing approaches and feature extraction techniques, the present study aims to improve cyber hacker breach categorization in terms of accuracy, precision, and recall. To be more precise, Z-Score standardization is used as a stage of preprocessing to normalize the data, and robust feature extraction is achieved by Independent Component Analysis (ICA) after that. For thorough breach categorization, the retrieved characteristics are subsequently combined using Multilayer Perceptron (MLP), Decision Trees (DT), and Naive Bayes classifiers. The research task assumes that Z-Score normalization, ICA, and MLP working together will produce better outcomes than any of them working alone. Experiments conducted on a wide range of cyber-hacking situations reveal that the suggested method works well, with improved memory, accuracy, and precision. The results highlight the value of integrating both preprocessing and feature extraction methods and highlight the opportunities for real-world security-related applications enabling active breach prevention and detection. From the outcomes attained, the proposed MLP yields accuracy rate of 91.50%, Precision of 0.90, Recall of 0.89. The tool used is Jupyter Notebook and the language used is python.

Advanced Threat Intelligence Systems for Early Warning of Cyber Hacking

T. Sharath, Dr.A.Muthukumaravel

Abstract: As we continue to deploy state-of-the-art cybersecurity measures, targeted cyber-attacks have increased in scale and frequency. A Research on a New Advanced Threat Intelligence System for Early Warning in Cyber Attack based on Realtime Monitoring, Machine Learning and Big data Analytics The system combines, tidies and synthesizes data across disparate sources. It uses supervised and unsupervised machine learning models to assess the risks in that case. ATIS have introduced big data tools to conduct fast large-scale data analysis to predict threats online and activate alerts; In a controlled evaluation of ATIS, there was seen to be an improvement in the accuracy and reduction in false positives associated with threat detection. This new method gives an end-to-end cybersecurity solution for proactive security services, which allows organizations to gather such required data on a timely basis and respond when the attack takes place. The main objective of this research is to predict the cyber attack in the field of data engineering. Here the proposed algorithm Random Forest (RF) gave best accuracy of 95.154%, precision of 92%, recall of 94%, f1 score of 93% and AUC-ROC of 0.97 which is high compared to other existing algorithms.

Reconciliation - Backdoor Access finding strategies with Legacy Applications

Bhushan B Chavan, Harsh Soni,
Lakhichand Khushal Patil, Kalpesh A. Popat

Abstract: In the intricate realm of Identity and Access Management (IAM), practitioners frequently grapple with a host of prevalent challenges that impede the process of access reconciliation. A prime hurdle is the intricate task of pinpointing inconsistencies and discrepancies within user access rights spread across a plethora of systems and applications. The inherently complex and ever-evolving nature of modern IT landscapes, where access levels are meticulously assigned based on varied roles and responsibilities, exacerbates this challenge. Compounding this issue is the lack of a centralized overview of user access rights, which obstructs the timely detection and resolution of conflicts, such as unwarranted or excessive access privileges. These conflicts not only heighten security risks but also amplify the organization's vulnerability to unauthorized access. Addressing these issues necessitates the adoption of robust mechanisms aimed at identifying and rectifying access discrepancies, including regular access reviews and automated access certification processes. In this paper, We wrote access reconciliation algorithm to identify backdoor, Manual Error, Timing error exceptions. It is found that the outcomes are satisfactory compared to manual reconciliation and as a result these techniques can be integrated in designing an expert tool and helpful in Audit's, Technical hardenings.

Comparative Analysis of Vulnerability and Threats related to Blogging Platforms

Nidhi Khare, Dr. Sachin Kadam

Abstract: With the proliferation of technology and its advancements, blogs play a key role in writing content on various topics replacing the traditional ways of maintaining diaries. Blogging is becoming a passion for many people due to the services provided by free blogging platforms; bloggers are making a realm of it. Blogging platforms are widely used today by individuals, businesses, and organizations for content creation, marketing, and sharing information. However, they are also vulnerable to security threats, which can lead to data breaches, website defacements, or other cyber-attacks. In this paper, we have studied different blogging platforms like WordPress, Blogspot and Wix for analysing, the associated security concerns, and the threats and vulnerabilities these platforms face. These mentioned blogging platforms are widely used by bloggers. The popularity of these platforms is due to several unique features such as ease of its usage, flexibility, extensive feature sets. Here, security is the prime concern for bloggers as the content which are posted on these platforms are vulnerable to various threats and vulnerabilities. In this research paper, we performed the comparative analysis of vulnerability and threats related to three blogging platforms- WordPress, Blogspot and Wix by following the research methodology of experiment. The experiment was conducted using penetration testing on the above-specified blogging platforms to understand the better security features provided by them. Based on the vulnerabilities and threats identified for these platforms, it can be concluded that Blogspot platform provides better security features with less vulnerabilities and threats.

An Ensemble Method for Insider Threat Detection based On User Activities Analysis using Bi-LSTM and GA Optimization

Anju A, Adline Freeda, Krithika Venket
Babymol Kurian, Sudha D, Mercy W

Abstract: One of the main reasons why firms experience security breaches is insider threats. They are users or workers of an organization who carry out any malicious conduct with the intention of harming others. The majority of insider threat detection techniques currently in use depend on deep learning and machine learning techniques and have the following drawbacks: they need obvious feature engineering, which increases the number of false positives; they rely on established criteria or maintained patterns and fail to detect novel or unidentified threats they are highly computational and need a large amount of training data. For an improved client behavior-based insider threat identification system, this study proposes an integrated learning strategy to overcome the aforementioned limitations. An ensemble model Bidirectional longshort- term memory and uses a CNN, ANN with GA and Meta Learner also used to find the best solution for insider threat detection and optimize the hyper parameters are done using the fast global search method of the genetic algorithm.

Cybersecurity Threats to Autonomous Vehicles: A Deep Learning Approach

Sathyavathy. V

Abstract: In the upcoming years, autonomous cars are predicted to completely transform transportation by offering greater accessibility, efficiency, and safety. Autonomous vehicles are a critical component of smart mobility, which is a fundamental component of smart cities. Significant new Cybersecurity vulnerabilities are also introduced by the intricate sensor systems, onboard computers, and vehicle-to-infrastructure connectivity needed for self-driving cars. However, human safety and quality of life may be negatively impacted by vulnerabilities in Autonomous vehicles. Automotive Cybersecurity is getting a modulation point. The attacks of cyber incidents have grown drastically, threatening safety and carrying functioning important implications. It is more crucial to protect automobiles, mobility apps, and Internet of Things gadgets from the cyberattacks of self-driving cars in a proactive manner. The motivation of threat actors is changing to focus on having a significant and large-scale control on connected cars and motion assets. Deep Learning is a key element of smart cities, and it is closely coupled with autonomous attacks and defences.

Enhancing Cloud Security for Structured Data: An AESGCM Based Format-Preserving Encryption Approach

Vidhya S

Abstract: Globally, 8.1 billion people exist, and among them, 5.44 billion are active Internet users that is 67.1% of global population handling vast amounts of sensitive data. This data is often structured and requires encryption. Traditional database encryption algorithms modify the format and length of the structured data, resulting in differences in size, format, and data type between the original and encrypted fields. Such modifications are particularly problematic for indexed fields, necessitating additional handling and changes in the schema of the existing table. Format-Preserving Encryption (FPE) retains the original data type and format post-encryption. This paper proposes an AES-based FPE for structured data types on the cloud. AES-GCM (Advanced Encryption Standard - Galois/Counter Mode) is a widely-used encryption method in cloud environments, combining high security with efficiency. It offers both data confidentiality and integrity, by encrypting data while also generating an authentication tag to ensure data hasn't been altered. AES-GCM's parallelizability makes it highly performant, and its non-deterministic nature, achieved through unique initialization vectors (IVs), ensures strong protection against replay attacks. It's particularly favored in cloud storage and communications for its balance of security and speed.

A Lossless Image, Video and Audio Encryption Method based Hybrid Chaotic Map and DNA Encryption

Vrushali Khaladkar, Manish Kumar

Abstract: The suggested lightweight video encryption strategy offers a promising method for safeguarding multimedia data in cyberspace. The proposed strategy is based on a hybrid chaotic ma and DNA encryption. Due to the fewer dimensions of the chaotic map, it can be adapted to secure real-time data generated using closed-circuit television and other Wireless sensors network tools. The strategy provides a strong level of security and resistance against different attacks by utilizing advanced cryptographic techniques including hybrid chaotic systems and DNA encryption. The proposed work is decently compared with other contemporary competing encryption schemes which shows that the proposed one can be adapted for the encryption of videos in lightweight applications. The thorough assessment using simulation results and statistical experiments highlights the practical applicability and efficiency of the proposed encryption technique.

Enhanced Web Browser Forensics: Innovative Methodologies for Evidence Collection and Analysis

Nishant Navinbhai Joshi, Dr. Sunil Lalchand Bajeja

Abstract: web browsers are widely used computer applications that assist user in engaging in various activites,such as browsing the internet, downloading files, interacting with social medial networks, and managing email. As web browsers store critical user data, they become essential for investigating online malicious activites.This study explores various method used to analyze web browser data in the field of digital forensics, focusing on different types of data ,including url's timestamp, browser ersions, download files and search queries. The organization of this data depends on the operating system, which requires specific methods tailored to each situation. Digital forensics, a crucial branch of forensic science, focuses on extracting and examining digital information from devices to detect criminal activities or verify device breaches. Web browser analysis plays a significant role in digital forensics, contributing to both criminal and civil cases due to the vast amount of evidence generated by online activities. This study reviews the primary techniques and methods used for web browser analysis, assessing their advantages and disadvantages. Additionally, it presents an innovative approach to evidence collection and analysis to advance forensic science. As web browsers enable tasks like internet browsing, file downloading, email access, and social media interaction, they are vital sources of evidence in digital forensic investigations, especially in cases involving cybercrime or malicious activities. This research focuses on the methods used to analyze key types of web browser data, such as URLs, timestamps, browser versions, downloaded files,access times, and search queries. Given the variation in data storage methods across different browsers and operating systems, forensic techniques must be customized for each scenario. By reviewing the current web browser analysis tools and techniques, this study highlights their advantages and limitations while introducing a novel framework for evidence collection and analysis. This framework aims to improve the accuracy and effectiveness of forensic investigations, addressing the complexities of browser data across platforms and advancing the field of forensics science in the investigation of digital crimes.

Automation of Endpoint Security using Machine Learning

Simongi Patel, Vipul Chudasama

Abstract: With the increasing usage of the internet and technology, cyber threats are also increasing which target endpoint devices. This work focuses on the importance of securing the endpoints and the highlights the role of Intrusion Detection Systems (IDS) in mitigation of cyber threats. This research work provides insight into various threats related to the Network environment and analysis of intrusions. To mitigate such threats, we propose customized IDS mechanisms for secured endpoints using different ML techniques with the NIDS dataset. The patterns of anomaly are identified which leads to proactive threat detection. By continuously updating predefined rules based on emerging threats, automated Endpoint Security mechanisms can be deployed to mitigate security threats effectively. The results suggest some models perform well to detect threats.

DDOS Attack Detection and Prevention using MIEC Method in SDN Environment

R. Karthikeyani, Dr. E. Karthikeyan

Abstract: The Software Defined Network (SDN) is one of the best commonly used network management architecture in recent years. The main aim of SDN is enabling flexibility and simplicity in network operation and management via centralized controller. This approach is allowing administration to efficiently oversee, configure, and optimize various network devices like switches, routers, and access points from a unified control point. SDN encounters numerous challenges, including latency issues, scalability, packet forwarding, security and cost. Among this security is a major concern for SDN, particularly due to the threat of Distributed Denial of Services (DDOS) attacks, which pose a significant risk to the SDN environment. Despite ongoing advancement in tools and technology, the detecting and mitigating DDOS attack within SDN remains a challenging task. As of now no fully efficient solution has been developed to effectively cope with the challenges posed by DDOS attack in SDN environment. The proposed Mutual Information Entropy Calculation method (MIEC) is a rapid and simple solution for detecting DDOS attack and improve previous entropy detection algorithm. Experimental result further shows more accurate outcomes and faster reporting in comparison to previous methodologies.

Hacktivism or Cyber Warfare? Decoding the Motivations Behind Cyber Attacks Targeting Israel

Niraj Kumar Singh, Sunil Bajeja

Abstract: The realm of cybersecurity is increasingly fraught with sophisticated threats, with cyber attacks targeting nations often shrouded in ambiguity regarding their underlying motivations. This study delves into the intricate landscape of cyber assaults directed at Israel, aiming to disentangle the complex web of motives driving such attacks. Through an extensive analysis of diverse cyber incidents and the examination of associated ideological, political, and strategic underpinnings, this research endeavors to delineate between hacktivist endeavors and manifestations of cyber warfare. By scrutinizing the historical context, tactics, and messaging deployed by threat actors, this study seeks to offer clarity on the underlying intentions behind cyber operations directed at Israel. The results of the study indicate that the conflict between Palestine and Israel has led to a cyber warfare landscape involving other nations and various hacktivists from different countries supporting both sides. Israel's cybersecurity weaknesses have al-lowed various hackers and hacktivists to exploit opportunities with motives such as political, economic, business, ideological interests, self-beliefs. In response, Israel established the National Cyber Directorate, responsible for cybersecurity policy, security, and capacity development for the government, public, and private sectors, to prevent and mitigate threats to critical infrastructure and manage cyber incidents. Additionally, Israel engages in cybersecurity cooperation with various countries to combat cyber terrorism.

Designing a Secure E-Voting System with Ganache: Challenges and Solutions

Dr. Garima Mathur, Dr. Pushpraj Singh Chauhan, Prof. Privi Dubey

Abstract: Ensuring a fair and secure voting mechanism is essential for democratic systems to function effectively. Current electronic voting systems, particularly those relying on Electronic Voting Machines (EVMs), exhibit vulnerabilities such as susceptibility to hacking, data tampering, and lack of verifiability. This paper proposes a secure electronic voting system leveraging the Ethereum blockchain and smart contracts to mitigate these challenges. Our system introduces decentralized voting processes with cryptographic mechanisms to ensure transparency, voter anonymity, and resistance to fraud. By utilizing blockchain's immutability and distributed ledger technology, we address issues like double voting and vote tampering. The proposed solution also includes mechanisms for individual verifiability, where voters can confirm the accuracy of their vote and universal verifiability for the integrity of the overall results. The system is implemented using Ganache for blockchain simulation, with smart contracts managing the election process. Transaction efficiency and network congestion are handled using optimized smart contract designs. Future work includes improving scalability and adopting advanced consensus algorithms to enhance security and transaction throughput.

Systemization of Knowledge: Privacy Preservation for Decentralized Non-Financial Applications

Purnima Ahirao, Deepti Reddy

Abstract: The digital ecosystem is used extensively by people worldwide for various services such as social media, banking, healthcare, insurance, etc. Every coin has two sides similarly digital usage also has its advantages and disadvantages from the user's perspective. One of the disadvantages is the sharing of personal and sensitive data over the digital medium without understanding the hazards. This personal identification information (PII) is used not only for providing personalized services to the users but also for profiling the users for the gain of the service providers. The importance of user rights over their data is easily neglected. Privacy Preservation plays an important role in the digital eco-system to control the security and privacy of the users PII. This includes achieving User Anonymity, Data Confidentiality and Access Control. Researchers have provided various methods and solutions to ensure privacy and security of digital data using centralized methods including cloud services. Security challenges exist in such approaches due to their centralized nature. Eventually, re-searchers are exploring the decentralized approach using blockchain technology. Blockchain technology paves the way for many applications that need a dis-tributed and trustful way of data management. This paper presents a systematic review of research work done to satisfy the privacy preservation challenges in decentralized, non-financial applications such as Healthcare, Social media, Identity management, etc., on a public blockchain i.e. Ethereum, and further identifies the gaps amongst them. The authors conclude by suggesting a combined approach to solve the existing gaps for efficient privacy protection of digital data on Dapps.

Identifying Application-Level Distributed Denial-of-Service (DDoS) Attacks with Machine Learning (ML)

Muhammad Atif Yaqub, Muzzamil Mustafa, Saad Hussain Chuhan, Basit Sattar, Muhammad Zulkifl Hasan, Muhammad Zunnurain Hussain, Hooria Umar, Zain ul Abdin, Afshan Bilal,Jibran Ali, Muhammad Saad Qaiser

Abstract: The modern digital age has seen an exponential growth in internet penetration, which in turn has increased the probability of a denial-of-service attack. When an evil user launches a Denial of Service (DoS) attack, it's with the goal of flooding computing and network resources and blocking access to them for normal users. These kind of assaults may happen at any level of the OSI model, from the application layer all the way down to the transport layer. This research focuses on application layer DoS attacks instead of transport and network DoS attacks and attempts to detect Denial of Service using Machine Learning and Neural Network approaches. An updated dataset of Denial of Service attacks divided into many subcategories was used in this experiment. According to the research, the decision tree approach performed well in terms of accuracy and splitting compared to the logistic regression approach.

Pin Shuffling Authentication Scheme for Preventing Shoulder Surfing Attack

P. Latchoumy, G. Kavitha

Abstract: In the current ATM process, a significant number of ATM frauds and thefts are occurring, particularly shoulder-surfing attacks. To prevent such attacks, the Shuffling PIN Authentication Scheme is proposed, which operates on touch display screen devices. This scheme employs the technique of displaying two keypads with different digit arrangements: one keypad is closer to the user in which the user can enter their PIN value comfortably and another keypad can be kept far away for the attacker, where an attacker observing the PIN value from a distance making it hard to predict the pressed digits. Whenever the user can enter their PIN value, the keypad is shuffled with new generated PIN. Additionally, the scheme implements a color keypad mechanism for OTP authentication, further enhancing user security. Thus, the Shuffling PIN authentication scheme and color keypad for OTP authentication are proposed to prevent shoulder-surfing attacks in ATM transactions.

Solidarity Linking Women and Technology: An Analysis

Dr. Anuradha Acharya, Kenil Thakkar

Abstract: In today's dynamic landscape, the intersection of education, technology, and women's empowerment stands as a beacon of progress and opportunity. This paper explores the transformative potential of technology in empowering women, especially in societies like India where gender norms often pose significant barriers. We aim to dissect the nuanced relationship between technology and women's empowerment, focusing on its impact on various aspects of their lives, from mind set to communication skills. Our analysis spans urban and rural settings, shedding light on both the challenges and opportunities presented by technological advancements. Through a comparative analysis, we unveil the distinctive role technology plays in reshaping women's trajectories, offering insights into how platforms like WhatsApp, Instagram, and LinkedIn serve as catalysts for social and professional growth. Earlier studies focused on how women can be uplifted through technology and what are the challenges she faces and is based on women empowerment. This paper not only tried to explore the role of technology in women's life and in women empowerment, but also tested two important hypotheses based on education and traditional barriers. The results shown that the high cost of education and traditional blocks are the hurdles in the progress of women. Ultimately, the findings underscore the indispensable role of technology in driving comprehensive progress and empowerment for women in today's world and existence of very close relationship between both.

Detection and Classification of Epileptic Seizures Using Machine Learning and Deep Learning: A Systematic Review and Challenges

Shirish Dubey, Kamlesh Gupta

Abstract: Nowadays epileptic seizure detection and classification has been an important concern as the central nervous system is affected in epilepsy due to brain disorders that cause changes in neural activity. Seizures result from unexpected brain activity, excitement, and sometimes unconsciousness. Epilepsy is a profound condition, with approximately 1% of people worldwide affected by it, and 10% reporting that they deal with this issue daily. It has the potential to im-pact life prospects significantly. The primary purpose of an EEG report is to rec-ord the electrical brain activity generated within the brain. Using EEG, doctors and scientists can analyze brain activity and identify abnormalities. Several re-search studies using machine learning and deep learning techniques have been successful in recognizing EEG patterns associated with epileptic seizures. The proposed study explains and compares various existing algorithms and methods for detecting and classifying epileptic seizures based on certain parameters. The analytical results indicate that the KNN, SVM, and CNN classifiers are most preferred, and the Bonn dataset and CHB-MIT datasets are the most used choices.

Comparative Analysis of Improved K-Means Clustering for Human Freedom Index

F. Mohamed Ilyas, S. Silvia Priscila, Dr. Sheela K, Dr. J. Vimala Roselin,
Sona K. V, R Prema

Abstract: The Human Freedom Index (HFI) assesses the extent of human freedom in different nations by considering both personal and economic freedoms. It incorporates measures such as the rule of law, freedom of expression, and freedom to trade, giving a holistic picture of the freedoms people have in different countries. In order to improve the HFI analysis, this re-search examines three advanced clustering strategies. The first technique optimises clustering performance and minimises iterations by combining the Hamely algorithm with Mini Batch k-means (MBK-means). The second meth-od uses chromosomes to construct cluster centroids, therefore leveraging an Improved Genetic Algorithm (GA) based K-means (IGBKM) to address concerns with initial cluster centre sensitivity and local optimisation. The third and most promising method combines Ant Colony Optimisation (ACO) and Improved K-means (ACO-IKM) to solve the shortcomings of K-means clustering by selecting cluster centroids optimally and maximising ability based on the disparity statistics. This comparative research study shows that in terms of clustering robustness and accuracy, the ACO-IKM method performs much better than the other approaches. The results of this study show that the ACO-IKM approach is a better way to analyse the HFI dataset, providing dependable and effective clustering performance using Silhouette score. This assists in identifying trends in global freedom and pinpoints areas that require improvement in order to advance human dignity and autonomy.

Survey on Security Models employed in Blockchain Based Applications

Lochana Mahajan, Sridaran Rajagopal, Rujuta Shah

Abstract: Blockchain technology has already gained significant importance in various fields involving medium to large scale applications. It has also gained research importance, in recent years, in order to make it application-friendly in terms of factors like security and decentralization. Further research is also consistently going on towards Blockchain adoption, absorption, and business values. Out of these factors, security plays a significant part, so it is essential to understand the different threats affecting the Blockchain based applications to be considered while developing them. The proposed survey discussed here is based on various security risks revolving around Blockchain-based applications with the support of current state-of-the art re-search being carried out in different fields, such as IOT, Metaverse, Cloud based applications, and other relevant fields, it is believed that the proposed survey would greatly support the Block-chain application users and developers for the proper application of the technology.

Application of Smart Computing in Steel Structural Health Monitoring: Sensor Based Damage Detection for Smart Infrastructures

Husain Rangwala, Tarak Vora

Abstract: Steel structures are robust and enduring, however susceptible to various damages including loss of the grips of bolts at connections. Such secondary damage is difficult to monitor manually. With the help of applying smart computing techniques for structural health monitoring methods, namely use of Piezoelectric sensors (PZT) sensor by the Electromechanical Impedance Technique the monitoring of a bolt's grip becomes effective and efficient. This paper represents results of experimental investigations on a bolted steel connection specimen prepared and tested for the damage detection conditions. The study focuses on identifying the response due to looseness with and without applied axial tensile load using different statistical damage indexes like Root Mean Square Deviation (RMSD) and Mean Absolute Percent Deviation (MAPD). The damage assessment is analyzed based on the signature of impedance concerning frequency, variation of torque in the bolts, and axial loading. Using the different number of repetitive experimental output data, the feasibility and effectiveness of this method are verified. The results show that both RMSD and MAPD damage indices increase with the decrease in the design torque in the bolt establishing an effective way of monitoring of the bolts' grip. The looseness indices were found to be highly sensitive to small damage which showed early warning for repair or maintenance helpful for monitoring process. The results showed good agreement on application of smart computing for structural health monitoring using sensor-based damage detection necessary for the smart infrastructures.

Analysis of Security Challenges with Countermeasures in IoT based Applications – A Survey

Sini V., Sridaran Rajagopal

Abstract: The Internet of Things (IoT) has gained significant popularity in this decade due to its capability to facilitate data exchange between devices and sys-tems via the Internet. Since data plays a crucial role in IoT Applications, it is necessary to secure them from the threats. There exist many surveys on security threats of IoT applications but most of them either fail to produce the necessary integration of technologies or lightweight solutions. In the proposed survey de-scribed in this paper, it is attempted to classify security threats with their coun-termeasures from the available literature so that future solutions can be thought of layer-wise, which will be essentially lightweight. It is believed that the pro-posed survey would certainly help IoT application designers to a greater extent.

Efficient Train Traffic Prediction Using Support Vector Machines with Advanced Preprocessing Techniques

C. Radhika, Dr. D. Kerana Hanirex

Abstract: Train delays have a big impact on customer happiness and railway management. Predicting train delays accurately may enhance both passenger satisfaction and operational effectiveness. Although many other algorithms have been used to solve this issue, Support Vector Machines (SVM) in conjunction with strong preprocessing methods may provide better results. This study investigates how several preprocessing methods, namely the Modified Z-score method (MZ-Score), Interquartile Range (IQR) method, and Z-score method, affect the effectiveness of SVM in predicting train delays. This study aims to improve train delay prediction models' recall, accuracy, and precision by using powerful preprocessing methods in conjunction with SVM. Testing the suggested system using the Train_delay_Prediction.csv dataset shows that combining SVM with the MZ-score technique yields better results in terms of accuracy, precision, and recall.

Enhancing Sleep Disorder Prediction: CNN with IQR and Lasso Preprocessing

V. Nagarajan, Dr. C. Meenakshi

Abstract: Millions of people worldwide suffer from sleep disorders, which spotlight the significance of precise diagnosis and prognosis. Sleep disorder problem is nowadays a major problem in adults which make them unsleep thus leading to many complications. The main scope of this research is to predict sleep disorder in a well efficient manner using machine learning approaches. To improve the predictive accuracy for the classification of sleep disorder, we present a unique method in this study that combines the application of Lasso feature extraction and Convolutional Neural Network (CNN) with Interquartile Range (IQR) preprocessing. The data quality was enhanced and the impact of anomalies on model performance was reduced by preprocessing the dataset first. The preprocessing procedure was done using IQR, a reliable technique for the identification and removal of anomalies. At the same time, Lasso feature extraction is implemented to choose the more related attributes, improving interpretability, and minimizing dimensionality. The CNN algorithm is well-known for its capability to spontaneously read hierarchical attributes derived from the dataset. The model is accelerated with the preprocessed attributes extracted from the Lasso and IQR combination. The incorporation permits CNN to acquire both global and local designs in the data, increasing its ability to discriminate between different types of sleep disorders. The algorithm is trained with the help of the ISRUC-Sleep dataset. The outcome of the algorithm is estimated concerning precision, accuracy, F1-score, and recall scales. The results obtained from the experiment illustrate that the suggested combination of Lasso and IQR preprocessing along with CNN performs well than any other individual algorithms based on exactness of 90.30%, precision value of 0.89, recall rate of 0.87 and F1-score of 0.90 respectively. The software tool used is Jupyter Notebook and the Python programming language is used.

Decentralized EHR Exchange in Healthcare: Enhancing Privacy and Security with Blockchain and Cryptographic Techniques

Aqeel A. Yaseen, Kalyani Patel, Abdulla J. Y. Al-darwish, Ali A. Yassin

Abstract: In today's digital landscape, robust security protocols are essential. De-spite significant advancements in information security, cyber threats continue to evolve and increase. Although advanced protection systems such as multi-factor authentication and encryption have been implemented, data remains vulnerable to breaches. In this context, blockchain technology emerges as one of the most promising technologies that can contribute to enhancing data security, thanks to its distinctive features such as decentralization and transparency.

This paper explores the integration of blockchain technology and Elliptic Curve Cryptography (ECC) to address privacy, security, and scalability chal-lenges in healthcare data exchange. By leveraging blockchain's decentralized, immutable structure along with ECC for secure key management, the proposed system offers a secure platform for storing and verifying Electronic Health Rec-ords (EHRs). Smart contracts are utilized to ensure transparent, tamper-proof au-thentication processes, which enhance user trust. This blockchain-based ap-proach, strengthened by ECC, not only fortifies security and privacy but also eliminates single points of failure and reduces reliance on third-party verification. While eliminating third-party verification enhances security and reduces costs, it raises the need for robust governance mechanisms. A decentralized governance model, potentially through the use of smart contracts or Decentralized Autono-mous Organizations (DAOs), can ensure continuous oversight and compliance with healthcare regulations. These governance structures help maintain account-ability and trust in the absence of traditional third-party intermediaries Designed for scalability and efficiency, the system facilitates secure EHR exchange across multi-cloud environments. The findings suggest that blockchain, integrated with ECC, provides a promising solution for secure, scalable EHR management in healthcare.

A Proposed Model to Transliterate Digitalized Braille Text into Gujarati: An Aid for Visually Challenged People

Dr. Nikisha Jariwala, Dr. Kalpesh Popat

Abstract: Information and Communication Technology (ICT), in the modern digital era has become so cutting-edge and touched to each and every field but there is still a disconnect between visually impaired persons and communication technologies because of ignorance and inattention. Due to the limited availability of resources and tools; people with visual impairments are unable to communicate in writing. In this paper, researcher has tried to draw the attention towards the challenges that are faced by visually impaired individuals in written communication and also discussed the benefits of having a tool that eradicate the communication gap. To overcome the challenges faced by blind people; author has proposed a model based on Natural Language Processing (NLP) and character mapping technique that act as an aid to transliterate the Braille text written by blind people to our regional language Gujarati. The technique used in the model uses standard Braille syntax. Rules are formed, lookup table is created, Braille characters are identified and they are transliterated to Gujarati language text. The model shows satisfactory result in the transliteration of Braille characters to Gujarati. It will also help visually impaired students in their education.

A Study on Augmented Reality's Impact on Online Shopping in India: Enhancing Consumer Experience and Behaviour

Vijaykumar N, Charuhasini TM, Arul Rajan

Abstract: In recent years, the implementation of augmented reality (AR) in the online shopping arena has been attracting much attention as a revolutionary development in e-commerce. This research had focus on the impact of AR on online shopping experience, with particular attention paid to shoppers' perceptions of perceived usefulness and perceived ease of use and their intention to use the features of AR. It also interrogates the link between users' intentions and their actual behaviours about the use and development of AR technologies with regard to e- commerce platforms. This study's target population included of online customers in India with prior experience using AR in their shopping activities. A total of 812 AR users in India were initially randomly approached to participate in the survey. The sample size was deemed valid and sufficient based on Cochran's formula. Four months, from March to June 2024, were dedicated to the data collection process. The researched had used SEM analysis, Average Variance Extracted, and descriptive statistics for analysing the data. Perceived ease of use proves vital in determining the intention by customers to use Augmented Reality for online shopping while perceived usefulness has no direct role towards this effect above. This finding highlights the importance of designing the AR experiences that are intuitive and user-friendly to foster user adoption within the online shopping domain. Finally, the incorporation of augmented reality into online shopping is likely to change the face of e- commerce, offering new experiences to consumers, increasing conversions, and enhancing customer satisfaction.

Advancements and Innovations in Mixed Reality: A Comprehensive Review

Jitesh Solanki, Dr. Kalpesh Popat

Abstract: This paper will cover ground-breaking developments and innovations in Mixed Reality (MR). From its evolution, to its applications, user studies, sen-sor systems and future implications — these will be the main topics analyzed in this research. First, the article kicks off with a general overview of MR, and consequently, goes on with a literature review. It presents the historical reveals, and discourses MR effects in different fields of application. Contrasting AR, VR, and MR, one can establish that they are basically different due to their dis-tinguishing characteristics. User study case views which points us usability and user experience doctrines; a deep look at sensor describes are used in MR sys-tems is another component of the knowledge structure. Based on this global overview, the post on the current MR technology advances discusses the future implications and challenges facing the field of research. It provides a compre-hensive approach including the benefits and limitations of the topic.
The review also focuses on the social and industry areas that are anticipated to be influenced by MR and appreciates its ability to bring revolutionary changes. Using problematic areas and possibilities to view, such paper becomes the source of knowledge for researchers, practitioners, and anyone looking for how to handle mixed realty in a complex way. The mixed reality development and utilization is presented in this conference from an in-depth study with this knowledge being the prerequisite for understanding where the technology is coming from and where it is headed.

Multi-Sensor Data Fusion for Accurate Prediction of Suspicious Activities in Video

R. Radhika, Dr. A. Muthukumaravel

Abstract: Video analytics for surveillance enhances safety of the public across a range of public spaces, such as shopping centers, railroad stations, and daycares. Conventional closed-circuit television systems have proven to be inefficient and prone to errors as they rely heavily on human operators. The proposed intelligent video surveillance system utilizes deep learning algorithms to promptly notify the authorities of any suspicious activity. The system has been trained to identify a wide range of human actions and po-tential hazards. It achieves this by utilizing datasets like UCF-Crime, HMDB51, and UCF101. The architecture combines LSTM (Long Short Term Memory) with CNN (Convolution Neural Network). The CNN component effectively identifies suspicious activity by extracting important features from video frames using the Inception V3 mod-el. The LSTM examines these characteristics to establish connections over time. The system demonstrated exceptional performance on UCF-Crime, with an F1 score of 99.1%, precision of 99.8%, recall of 98.5%, and an impressive accuracy of 99.6%, as observed during the evaluation across datasets. HMDB51 achieves an impressive F1 score of 99.1%, with precision at 98.7%, recall at 97.9%, and accuracy at 99.4%. On the other hand, UCF101 achieves a commendable F1 score of 98.6%, with accuracy at 99.2%, precision at 98.7%, and recall at 97.9%. The detection durations for UCF-Crime, HMDB51, and UCF101 are 0.25 seconds, 0.30 seconds, and 0.28 seconds, respectively. The proposed model streamlines the procedure of improving safety by utilizing intelli-gent video analytics.

An Efficient Intrusion Detection System using Deep Learning Techniques

Ms. P. R. Pameela Rani, Dr. S. Vidhya

Abstract: In the rapidly evolving landscape of cybersecurity, Intrusion Detection Systems (IDS) play a crucial role in identifying and mitigating malicious activities within network environments. While traditional IDS methods have proven effective, they often struggle to cope with the sophistication and volume of modern cyber threats. This survey investigates the integration of optimization algorithms and hybrid deep learning techniques to enhance the efficacy of IDS. By combining optimization with hybrid architectures such as Convolutional Neural Networks (CNN) and Long Short-Term Memory (LSTM) networks, we can leverage their strengths in managing complex data patterns and temporal dependencies. This paper reviews 25 research studies focused on intrusion detection and examines the potential of computer-assisted methods for improving detection performance. The findings suggest that integrating optimization with hybrid deep learning techniques offers a promising pathway for advancing IDS capabilities, thereby ensuring more robust network security in the face of ever-evolving cyber threats.

A Comparative Analysis of Nerve Vessels Enhancement & Segmentation Techniques Through Edge Detection on Retinal Fundus Image

N. Durga, Dr. D. Kerana Hanirex, Dr. A. Muthukumaravel

Abstract: Diagnosing wider disease in retina is more significant in Ophthalmology. Using Image processing techniques to identify the retinal diseases has proven more precise than other technology implementations, rapidly. Certain disorder identifications lowers the quality with respect to the limiting capacities and diagnosing them. Irrespective of several algorithms and researches the issue remains unsolved on the retinal disease identifications using image processing. Where huge number of observations turned negative with retinal color images, which in turn formulated an enhanced technique that is solely focuses on the green component of the retinal image. Corona virus spread during the year 2019 is predicted to have allied with the variations in the nerve vessel, that is seen into the partitioned eye fundus with the patients in the process of detecting the variations in the retinal via image processing which is also used to assess the potential correlation over medical constraints.
Initially, the retinal image of the eye is pre-processed which is further processed by identifying the presence of the pictorial particulars using contrast improvisation and histogram equalization, CLAHE. Secondly by removing the noise from the image, using WMF (www mmmm ffff). Upon comparison with filters like median, wiener etc, WMF is proved to be the best from the results obtained in this proposed research work. Finally, retinal images were segmented with the nerve cells in the retinal images of Covid-19 infected individuals using SOBCAN (SSSooobbb ccc aaa nnn) methodology. The fundus images and performance was evaluated based on parameters including MSE, PSNR and SSIM. The results were compared with other technologies like sobel, canny etc., and concludes that the proposed methods' formulated outcome outperforms the equivalent enhancement method.

Leveraging Blockchain Technology: Decentralized Finance (DeFi) in Health Insurance

Susana D, Srividya V

Abstract: Decentralized Finance (DeFi) is an emerging technology that lever-ages blockchain technology to facilitate peer-to-peer financial transactions with-out the need for intermediaries. While DeFi has primarily been applied widely in the traditional finance arena, there is growing interest in its potential application in the healthcare industry, specifically in the field of health insurance. Health insurance is a complex and highly regulated industry on the verge of disruption. DeFi has the potential to streamline the claims process, reduce costs, and increase transparency in the insurance sector. However, significant challenges must be addressed before DeFi can be widely adopted in healthcare insurance. This study aimed to explore the scope of implementation of DeFi in the health insurance field by conducting interviews among industry experts and administering surveys among traditional healthcare insurance users on their perception of acceptance of DeFi. The expert interviews highlighted transparency, accuracy, cost efficacy, accessibility, efficiency, and customization as major advantages. The drawbacks of DeFi in the health insurance sector included regulatory challenges, integration issues, data privacy and security, and technical expertise.

Financial Data-Driven Classification of Manufacturing Companies: A Case Study of the Malaysian Industry

Rathimala Kannan, Kannan Ramakrishnan

Abstract: Manufacturing sector companies are typically categorized based on size or product type to aid in policy formulation and long-term planning. The existing classification systems, however, overlook economic performance, which makes it difficult to plan policies precisely and allocate resources. This study aims to close this gap by identifying economic factors that set manufacturing companies apart using data mining and machine learning. The main objective is to uncover similarity patterns among manufacturing companies and to describe each segment's characteristics addressed in this study by utilizing historical data from the Manufacturing Economic Census Survey. The Cross-Industry Standard Process for Data Mining (CRISP-DM) framework guides the extraction of meaningful patterns from the economic census survey data. The study attempts to ef-ficiently group manufacturing organizations according to their economic perfor-mance by utilizing unsupervised learning algorithms such as fuzzy C-means clus-tering and K-means clustering. The findings deviate from the existing categoriz-ing method and yield six groups that are defined by financial metrics such as net book value, staff qualities, and spending distribution. Each segment is described in detail, including key characteristics such as business structure, primary activi-ties, workforce qualifications, and financial metrics. These insights are instru-mental in making informed decisions regarding future policy changes and finan-cial aid initiatives, ultimately fostering a more resilient and competitive manufacturing sector. This research underscores the significance of data-driven ap-proaches in elucidating industry dynamics and guiding strategic interventions to propel economic growth and enhance the well-being of Malaysians.

Application of Smart Computing Systems for Smart Cities and Urban Infrastructure: Framework, Data Management, and Smart Monitoring Attributes

Ankur Bhogayata, Amit Thoriya, Tarak Vora, Divyakant Meva

Abstract: Smart cities require the utilization of advanced computing technology to address the intricate challenges posed by the rapid expansion of metropolitan areas. This study discusses the use of intelligent computing systems in smart cit-ies, specifically emphasizing their conceptual frameworks, essential components, and actual implementations. Smart computing systems consist of several technologies, including Internet of Things (IoT) devices, artificial intelligence (AI), and big data analytics. These technologies collaborate to enhance urban infrastructure and services. The aim of this article is to provide a comprehensive understanding of how intelligent computing systems might potentially transform urban living and make substantial contributions to the progress of sustainable, efficient, and resilient smart cities. The study explores essential components, including data collection and analysis, real-time decision-making, and resource optimization through automation and predictive analytics. The article represents the frame-work of IoT, integration of various smart components, operation of devices, working with data collected, smart monitoring of urban infrastructures, application of smart computing aspects for smart homes and smart cities by discussing real time example.

Smart Choices: How Computer Applications Shape Consumer Decisions on Household IoT Appliances

R. Chitra, M. Sathish, Mr. Jone Stervin

Abstract: This study explores how people in India buy smart gadgets for their homes. These gadgets, part of the Internet of Things (IoT), offer benefits like convenience and safety. Understanding why people choose these products is essential for companies selling them. The research looks at factors like consumer awareness, opinions, and what influences their buying choices. We surveyed people in Coimbatore to learn about using IoT products like innovative security systems and fitness devices. Regression analysis also indicated that all the independent variables significantly correlated with the dependent variable, Consumer Behavior; IoT had the highest regression coefficient value ($\beta = 0.411$, $p < .001$). The findings of this research from the SEM analysis provide evidence of a positive association between IoT adoption, Industry 4.0 revolution (IR), Trust and Privacy Concerns (TPC), and Consumer Relationship Management (CRM) with consumer behavior

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Utilizing Digital Twins for Predictive Modelling in Manufacturing Cyber-Physical Systems

Uma Maheshwari B, Sujatha R, Deekshitha V, Viswanath Ananth

Abstract: Industry 5.0 has transformed manufacturing systems into digital ecosystems and some of the key technologies driving this transformation is digital twin and cyber physical systems. Digital twin(DT) is the development of a virtual copy otherwise referred to as the twin of any physical model whereby, both physical model and its DT would be inter-connected enabling exchange of real time data. Although the idea of a DT has been around for almost two decades, its application in the industry has gained momentum in the recent times. Cyber physical system(CPS) integrates natural and physical systems through communication and computation. The objective of both DT and CPS is to achieve flawless interconnection in between physical and digital worlds. DT may be seen as a targeted application of CPS, which offers an integrated and interoperable framework with a broad perspective. The main focus of this paper is on how CPS and DT are used in manufacturing and its architecture with a particular emphasis on its utilization for shop floor monitoring.

The Emergence of the Social Internet of Vehicles (SIoV): A Comprehensive Analysis of Architecture, Technologies, and Applications

Tarandeep Kaur, Dr. Pankaj Deep Kaur

Abstract: Social Internet of Vehicles (SIoV) marks a transformative step in the evolution of vehicular networks, blending the interactive principles of social networking interactions with the interconnected functionality of contemporary transportation systems. This paper explores the revolutionary potential of SIoV, providing a thorough analysis of its fundamental architecture and the advanced technologies driving its evolution. Improved connectivity and more intelligent interactions between vehicles are encouraged by SIoV utilizing edge computing, blockchain, Vehicle-to-Everything (V2X) communication, and 5G technology improvements. This paper proposes a novel architecture for the Social IoV named "VSN-A" i.e. Vehicular Social Networking Architecture. The proposed architecture has four layers- The vehicle communication layer, the Social Networking layer, the data processing layer, and the application and user interface layer. Through this comprehensive examination, the authors identify the existing research gaps and proposed future directions, underscoring the pivotal role of SIoV in shaping the future of intelligent transportation.

Engaging Coronary Heart Disease Prediction (Vein) through Feature U-Net Improvement with Ensemble Learning Based Hybrid Bagging and Boosting Techniques

Dr. Prakash, Dr. Sudharan , Dr. G Meenakshi, Dr. Margaret Marry

Abstract: Cardiovascular sickness, otherwise called coronary illness, has arisen as a noticeable worldwide wellbeing worry throughout the last 10 years. Guaranteeing the greatest amount of precision in anticipating cardiovascular occasions is of fundamental significance. Accurate prediction is particularly crucial due to the severe consequences of heart disease. Detecting heart complications at an early stage significantly enhances the effectiveness of treatment. In the pursuit of achieving precise early detection, various machine learning (ML) methods have been used. However, existing ML methods exhibit limitations in delivering efficient and accurate heart disease detection. These limitations result in challenges such as overcrowding in medical facilities due to unnecessary readmissions and unfortunate fatalities stemming from the discharge of patients requiring urgent medical attention. In this work, we present a method for the early diagnosis of heart disease by employing a combination of feature optimization and ensemble learning using hybrid bagging and boosting techniques. The proposed approach involves several key steps. Following data pre-processing, we harness an enhanced U-Net pre-trained architecture to extract features. This innovative approach utilizes both known and unknown features within the dataset to enhance feature extraction. To address data dimensionality challenges, we introduce a Modified Binary Search (MBS) algorithm for feature optimization. This algorithm effectively identifies the most optimal set of features to address data dimensionality issues. Furthermore, we introduce an ensemble learning-based hybrid bagging and boosting technique for heart disease detection and classification, which leverages the strengths of both approaches. To gauge the performance of our proposed method and compare it with existing techniques, we conduct experiments using the Cleveland and Framingham's heart study datasets.

A Survey on Various Sentiment Analysis Applications Employing Opinion Mining

Meghna Bhatt, Sridaran Rajagopal

Abstract: Opinion mining aka sentiment analysis refers to the use of natural language processing, text analysis and computational linguistics to identify and extract subjective information in source data. This, further helps to extract the subjective information into various categories that help in a decision-making process. In this survey, a novel attempt is made to provide an application-specific classification on opinion mining and sentiment analysis. The survey presented here widely covers the processes, levels and challenges of opinion mining that would help the application designers of opinion mining applications.

Leveraging Social Media Data to Improve Disaster Response and Recovery Efforts using Artificial Intelligence Techniques: A Comprehensive Review

Shilpa Pimpalkara, Sai Madhavi D

Abstract: The increased use of social media platforms, which provide user-gener-ated data in real-time, has significantly impacted the disaster response and recovery field. The application of artificial intelligence (AI) techniques to parse multimodal da-tasets from social media has emerged as a practical and feasible strategy to enhance disaster management efficacy in response to this paradigm shift. This research provides a thorough overview of the most recent advancements in AI-driven social media data analysis methods to aid in disaster response and recovery operations. The study ex-plains the wide range of available AI-driven solutions, covering state-of-the-art tech-niques such as computer vision, deep learning, machine learning, and natural language processing (NLP).
This study presents a review based on 46 recent papers, 33 % of which are survey papers, 63% on an implementation approach and 4% case study. Survey papers selected for the comprehensive review provide valuable insights covering 1785+ papers. The findings offer valuable input related to the dataset used in recent research, the proposed methodology, and future directions. The research makes a significant contribution to synthesizing the findings for future work in the proposed area.

Mitigating the Technological Challenges of Regenerative Farming with an integrated Framework merging IoT, Ontologies, and GIS

Tshepiso L. Mokgetse, Rajagopal Sridaran, Hlomani Hlomani

Abstract: Regenerative farming offers a sustainable approach to agriculture by promoting ecosystem restoration, soil health, and biodiversity conservation. However, the adoption of regenerative practices faces significant technological challenges, including data collection, management, interoperability, integration, mapping, and spatial analysis. These challenges hinder the scalability and effectiveness of regenerative farming, particularly in terms of monitoring, decision making, and resource optimization. This article addresses these challenges by proposing an integrated framework that combines the Internet of Things, Ontologies, and Geographic Information Systems. IoT is leveraged for real-time data collection and management, Ontologies ensure seamless data interoperability across systems, and GIS enables advanced spatial analysis and mapping. Using a meta-synthesis of existing literature, this study identifies the key technological obstacles to regenerative farming and presents a solution that integrates these emerging technologies. The proposed framework aims to enhance the effectiveness of regenerative practices, support ecosystem health, and improve the sustainability of agricultural systems. Farmers will also leverage from sharing practices across different regions. The data will allow farmers to get practical results of the effectiveness of regenerative farming.

VANET Security through Blockchain based Location Verification: Innovation and Challenges

Dr. Sandosh S, Thriam bakesvar B, Subash Saajan J, Eniyavasanthan R

Abstract: Vehicular Adhoc Networks (VANET) is an emerging and significant technology which brings in new application fields such as traffic safety and security. Besides VANETs naturally have frequent challenges, like these nodes speeds are variable in nature and the infrastructure is decentralized, which means that those networks need very strong security systems to perform well. Such research study is focused on the analysis of the routing protocols, the use of the applications, the current challenges and security requirements in VANETs, which is terminated with the proposal of innovative solutions designed to ameliorate network performance and minimize the security risks. In particular, it involves location verification which is based on blockchains and making use of geographic routing and reliability tests to assert that the transmission data is secure. Moreover, a secure protocol will be suggested in order to decrease routing overhead and guarantee confidentiality of messages among vehicles that are specified in a group. Conclusively, this study takes the lead in making advancement in the VANET security as it gives the foundation for research to be conducted in this critical area.

Real-Time Node's Power-Aware Kubernetes Scheduler in a Cloud Environment

Kiran Kumari, Dhananjay Dakhane

Abstract: Kubernetes is a popular container orchestration system for deploying containerized applications in the cloud environment due to the popularity of Container-as-a-Service (CaaS). The Kubernetes default scheduler does not consider node's power consumption for scheduling the jobs that result in cluster power consumption. To minimize the power consumption of a Kubernetes cluster, a real-time Node's Power-Aware Kubernetes Scheduler (NPAKS) is proposed. Further, NPAKS is implemented using the Kubernetes scheduling framework and deployed on a bare-metal EKS cluster. The experimental results show that NPAKS scheduler minimizes cluster power consumption with respect to the Kubernetes default scheduler. Finally, future research opportunities are discussed.

A Comprehensive Analysis of Low-Energy Adaptive Clustering in Underwater Acoustic Networks

N. Karthika, Dr. D. Kavitha

Abstract: This survey study investigates the junction of Machine Learning (ML), networking, and the Internet of Things (IoT) within the framework of Low-Latency, Low-Energy Adaptive Clustering Hierarchy (LL-LEACH) protocols for Underwater Acoustic Networks (UANs). The deployment of UANs has special difficulties because of the hostile underwater environment, limited energy resources, and need of real-time data transfer. LL-LEACH systems optimize energy economy, reduce latency, and improve network performance by means of adaptive clustering techniques enhanced by machine learning algorithms to address these challenges. Emphasizing their fundamental features, advantages, and limitations, this work explores and assesses many recently proposed LL-LEACH methods. This study addresses decreasing latency and possible computer-assisted solutions for LEACH protocols in underwater acoustic networks. It also addresses how machine learning techniques may enhance network management, data processing, and decision-making capabilities as well as how IoT devices might be added into UANs. By means of this extensive analysis, we want to provide insights on the state-of- the-art LL-LEACH systems in UANs and suggest future research routes at the intersection of machine learning, networking, and IoT for underwater communication systems.

EAPTEEN: Energy-Aware Adaptable Routing for Continuous Monitoring in Event-Driven Wireless Sensor Networks the EAPTEEN Approach

Jeya Rani D, Nagarajan Munusamy

Abstract: Due to WSN's many uses in agriculture, mechanical assembly, military surveillance, ecological checking, clinical and medical care, disaster recovery duties, and so on, advances in the WSN sphere have gained speed in recent years. To facilitate communication between themselves, the wireless sensor nodes in a WSN are structured in a completely random fashion. One of the main limitations of WSN is energy since the nodes are battery-powered. This paper proposes the EAPTEEN Method for Energy-Aware Adaptable Routing for continuous monitoring in WSN. The "Enhanced Adaptable Periodic Threshold Sensitive Energy Efficient Sensor Network Protocol (EAPTEEN) Approach" introduces a new routing protocol that maximizes energy efficiency and maintains continuous monitoring in event-driven WSNs. Current protocols, like TEEN, prioritize data transmission when thresholds are exceeded, which can result in gaps in monitoring during inactive periods and the possibility of missing important events. Additionally, EAPTEEN enhances TEEN by enabling sensor nodes to consistently send data to the base station at set intervals, regardless of any threshold conditions. The suggested method may respond to changes in the network including topological dynamic changes, node failures, and energy level variations. Focus of the discussion of experimental findings is the present method and assessment of network performance criteria including latency, energy, and throughput.

Research Perspectives on Load Balancing Strategies in Serverless Computing

Yashwanth Balan, Dr. R. Arokia Paul Rajan

Abstract: Serverless computing, a groundbreaking trend in cloud computing, has transformed how applications are deployed and managed by abstracting the infrastructure layer. serverless computing enables developers to concentrate exclusively on their code while cloud providers care for server provisioning, maintenance, and scaling. Services like AWS Lambda, Google Cloud Functions, and Azure Functions exemplify this model, offering substantial advantages in terms of reduced operational complexity and cost. However, one persistent challenge in this domain is load balancing. Effective load balancing in serverless computing ensures efficient resource utilization, optimal performance, and cost-effectiveness. Unlike traditional load balancing, which typically relies on long-lived server instances, load balancing in serverless environments must accommodate the stateless and ephemeral nature of serverless functions. Traditional techniques are not directly applicable because serverless architectures functions that are instantiated on-demand in response to incoming requests. This paper surveys various strategies and approaches developed to address the unique load balancing challenges in serverless computing, providing a comprehensive overview of the current state of research and practice. The paper extends further research on serverless computing by analyzing the survey papers. The paper highly focuses the research areas in the field of edge computing, hybrid cloud models and distributed load balancing for the future usage

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Innovative Perceptions: A Survey on Named Data Networks through an Inventive Lens

A. Shanmuga Priya, Dr. K. Vaitheki

Abstract: The Internet is used for data transfer, where the client and the server communicate through IP addresses, leading to P2P communication. The data across a network being a vital component, the focus is more on the data than the location of the data. Hence, the IP address that designates the server hosting the data is of less significance. As IP is facing challenges to capture the internet community, content-centric networking platforms such as Named Data Networking have emerged as content-based networks. NDN permits user to request data without awareness of the server and manages memory consumption, protection and flexibility issues more efficient than the current IP-based Internet. NDN is a progressive worldwide reclassifying architecture that provides the notion of information transmission over networks. This survey aims to foster the essential ideas of Named Data Networking, investigating its assorted applications, and address the difficulties and future headings in the realtime NDN. Further the correlation between IPv6 and NDN has been examined. These essentially highlight the importance of the NDN and the potential for improving administration and security of web.

Optimizing Resource Utilization and Performance in Multi-Cloud Infrastructures through Predictive AI Analytics

Arun Pandiyan Perumal

Abstract: To achieve optimal resource consumption and the cloud environment's overall performance, organizations must manage multi-cloud deployments efficiently and overcome the related challenges. Therefore, this paper aims to understand how the application of predictive AI analytics can improve the management of resources and performance in environments that include multiple clouds. It discusses Cloud Management Platforms, Service Performance Management, cost optimization tools, and AI-based predictive analysis, among others. This paper will focus on the strengths and weaknesses of multi-cloud settings with an emphasis on the manner in which predictive analytics can be helpful in overcoming some of the principal issues arising from these settings. The case study also shows that newer tools such as VMware vRealize Suite, Datadog, and the AWS cost explorer, with embedded elements of artificial intelligence and machine learning, have revolutionized the scenario of predictive Cloud analytics.

Classification and Analysis of Online Business Models: A Framework for Practical Application

Roland Schmuck

Abstract: This research investigates and categorizes online business models through the development and validation of an own online classification for online business models. Adapting Malone et al. [2006] traditional business model framework to the online economy, the study proposes a system categorizing models based on rights (ownership, usage, intermediation) and asset modification in online environments. The framework was tested against datasets comprising the most visited websites and popular mobile applications, demonstrating its robustness in categorizing online business models. The usage rate of online business models was examined in two datasets: websites and mobile applications. Findings highlight the intellectual property landlord as the most used, dominant online business model, taking over half of the business models in the analyzed two datasets. The own classification system effectively encompassed all identified models from literature review and practical use, showing its suitability for understanding and categorizing online business models.

Magnetic Resonance images detection of Alzheimer's Disease

Velumani Thiyagarajan, Mrs. T .Deepika, Dr. C. Sivaprakasam,
Dr. S. Thilagavathi, Mrs. P. Thenmozhi

Abstract: The aim of the paper is to study and design a CAD tool for Alzheimer's disease (AD) detection using linear SVM classifiers on MRI scans. Existing approaches often face challenges with high-dimensional feature spaces and limited data accessibility from repositories like ADNI. To overcome these, three SVM-based classifier proposals were explored. Results demonstrated promising accuracy, sensitivity, and specificity, particularly with cross-validation techniques. Notably, classifiers trained with image histograms showed superior performance in differentiating between AD, cognitively normal (CN), and mild cognitive impairment (MCI). Despite successes, initial approaches encountered difficulties, necessitating alternative methods. Challenges in data access and processing highlight the need for improved data management tools. Moving forward, refinements such as feature selection and testing with larger datasets could enhance classifier performance. Exploring deep neural networks as an extension may offer further insights into AD detection methodologies for early diagnosis and intervention.

Enhancement of Forest Fire Assessment by KDCPMNN Approach in Sikkim, India Using Remote Sensing Images

Kapila Sharma, Gopal Thapa

Abstract: Forest fires pose a significant threat to ecosystems, especially in regions like Sikkim, where climate conditions increase the frequency of forest fire. Accurate prediction and assess-ment of forest fires is essential to mitigate damage to forest land and wildlife. However, existing research has not adequately combined meteorological data with land imagery for forest fire pre-diction in this region. This study proposes a novel Kernelized Deep Convolutional Parametric Modswish Neural Network (KDCPMNN) model for forest fire prediction using satellite images and meteorological data. Initially, satellite images are segmented using the K-Means (KM) algo-rithm, followed by pre-processing with Ani-sotropic Exponential Diffusion Filter (AEDF) and Bayesian Contrast Limited Adaptive Histogram Equalization (B-CLAHE). The Dark Channel Prior (DCP) and Transmission Map (TM) are then used to calculate intensity values and depth information, respectively, from which features are extracted. Simultaneously, vegetation details and attributes from meteorological data are also extracted. These combined features are input into the KDCPMNN to predict the likelihood of a forest fire. In the event of a fire, the burn area is assessed using the Composite Burned Index (CBI) within a Secant Linear Membership-based Fuzzy Inference System (SLM-FIS), while the fire's potential is evaluated through a confidence score. Experimental results show that the proposed KDCPMNN model achieves 98.2% accuracy, surpassing existing methods.

A Study on the Effects of Social Media Platforms on Graduate Students' Academic Achievement

Jatinkumar B. Kotadiya, Dr. Amit K. Patel

Abstract: The increasing ubiquity of social media platforms has changed the system of post-secondary education and has profoundly affected the lives of users, with almost everyone benefiting from it. It has also innovated the way student access data and connects with each other. The rise of online communities and the essence of the online environment have given rise to worldwide social networking platforms. The event includes numerous activities, from making virtual friends to chatting with them and exchanging images and videos. This research investigates the overuse of social media platforms and specifically the impact on the academic careers of students. The primary goal of this research is to target urban and rural graduate students in the Department of Computer Science at Harivandana College to determine how social media affects their academic performance and to examine both the strengths and weaknesses of social media use to reduce its use and improve one's academic career while providing suggestions for enhancing learning. An analytical research approach was used in this study, as well as a cross-sectional survey and questionnaire to collect data. The findings show that social media significantly affects a student's academic path. There are also physical and mental effects that can result. In addition, study hours may deteriorate. On the contrary, online earning through social media can increase one's income source. Notably, Instagram, WhatsApp, and YouTube emerge as the most used platforms for educational purposes among the surveyed students. This research sheds light on the multifaceted role of social media in the lives of college students and attempts to enhance academic activities. Social media and education are becoming increasingly entwined. It has also become an addiction that creates a gap between parents and students. Students prefer to share their problems, feelings, and frustrations with their elders on social media, as they find it easier. Such research enhances education and knowledge. The findings of my study will also be useful for educational policymakers and social networking site developers.

International Law and AI Interface

Dr. Rahul J Nikam

Abstract: With the use of data-driven algorithmic tools, users may swiftly analyse vast volumes of data, identify patterns in the data that are otherwise impossible for people to see, and provide accurate forecasts. These resources have shown to be beneficial in domestic juridical practice, negotiations, and other areas of law that are intimately linked to International Law (IL). However, in their handling of international relations, countries, and their international attorneys have disregarded this new set of instruments. This article makes the case that nations need to start making the most of these resources when drafting and enforcing IL. These powers could assist governments in making decisions during treaty negotiations, international court cases, and assessments of the applicability of customary law. International attorneys representing countries need to consider the prospect that countries like China may start using big data and machine learning in ways that will increase their power, even if they are dubious about the merits of new technologies. The international legal system and relations will be significantly impacted by high-tech international legal practice. Less powerful governments will benefit greatly from easily accessible tools, but more sophisticated technology is likely to widen the already existing power disparities. Thus, the Article provides strategies for weaker states and external players to offset technology-induced changes in power that might threaten the long-term goals of IL.

Effect of Technology Acceptance among Employees in the Second Half of their Working Life

Dr. Firdaus Bashir

Abstract: Integration of technology into the workspace is a continuous process which has a major impact in the manner of functioning. It is essential to make the employees ready in accepting and integrating it in their work. The present study explores the effect of socio-demographic factors like age, job designation, educational qualification and years of experience of employees who are in their second half of working life on the acceptance of technology integrated in the organisation. Four dimensions of acceptance of technology was considered namely usefulness of technology integrated at work, user-friendliness of new technology, availability of training and organisational support. The TechnologyAcceptance Model (TAM), was applied as the grounded theory for the present study. Survey method was integrated where 250 structured questionnaires were distributed to the supervisors and clerical employees of three manufacturing organisations, out of which 230 were further processed for percentage analysis, chi-square and the correlation coefficient test. It was observed that organisations should adopt technology which is useful as well as user friendly. Besides, sufficient training and organisational support will make the acceptance effective. Management can use the insights of the study to adopt use-friendly technology, provide sufficient training programmes for employees of different age groups, educational backgrounds, years of experience and designation to ensure acceptancy.

A Study on Employee Engagement Factors of Information & Communication Technology (ICT) Workforce

Gowri R, Dr. Neeraj Kumar Dubey

Abstract: Organizations desire to achieve goals to sustain in competitive environment. Crisis like Covid-19, Economic crisis, war, etc. affect Employee Engagement due to sudden changes in organizational environment. Employees‘ attitude towards work changes and hence Strategic Human Resource Management (SHRM) measures are needed during crisis. Predicting employee engagement is ever challenging for Information & Communication Technology (ICT) employees. Assessment of ICT employees was carried out through online questionnaire survey and analysis using correlation & regression. Results and implications imperative for ICT employees have been cross validated with contextual findings and specific envisaged outcomes. Modern tools are now supported by Natural language processing and character mapping with infusion of Artificial Intelligence (AI) -& Machine Learning ML) can provide SHRM decisions. The results show that the workload, team integration and mode of work has significant relationship with employee engagement. Team integration plays vital role along with the amount of work & mode of working. Social media communications & time with family has no significant relationship. Team-relationship in-creases engagement & retention.

Impact of Social Media Marketing in the Cosmetic Industry to Cross the Chasm in India.

Narendra Rathnaraj, Rajasree C, Amrutha S, Arul Rajan

Abstract: The Indian cosmetic industry is developing at a rapid pace with improvements in digital technologies, which in turn has encouraged the growing number of smaller brands to use social media marketing activities as a significant means toward market success. This research investigates how social media marketing activities (SMMA) influences cosmetic brands in their capability of bridging the gap between early adopters and mainstream consumers, termed "crossing the chasm." Based on a sample of 385 respondents residing at Coimbatore city, the data has been analyzed regarding the influence of social media sites like Facebook, Instagram, Twitter, and YouTube on brand awareness, customer relationship, and enhancement of social image. By understanding this study, one may appreciate how social media greatly affects the creation of proper brand awareness by increasing customer loyalty and enhancing a favorable social im-age, which are both important in the transformation from niche to broader markets. Factors that are key and interconnected will also be outlined in the main body of findings to provide practical insights for cosmetic brands to extend their market influence through effective social media marketing strategies. The study employs PLS – SEM to under-stand he interconnectedness of the variables used in the study. From the analysis it is observed that SMMA has a concrete impact on the marketing of cosmetics in India.

A Simulated Manufacturing Study on Rope Size and Number of Splits on the Productivity while Applying the Simplified Drum-Buffer-Rope Methodology

Jagannathan Sekkizhar, Nagarajan Vivek

Abstract: The Theory of Constraints(TOC) body of knowledge has created solutions for many different business scenarios from manufacturing, to project management, to supply chain, to retail, to even new product design. The oldest tool was the Drum-Buffer-Rope (DBR). A simplified version of this was proposed By Eli Schragenheim which assumed the market to be the constraint and used only one buffer. This method is striking for its simplicity of application. One key point missing in the TOC literature is the size of the buffer and its impact on the throughput of the system. Also missing is the impact of the moderating impact of the splitting of the orders received on the relationship between the buffer size and the throughput. This paper proposes two hypotheses that connect buffer size and order split to the throughput.

Decentralized Payment Gateway: Bridging DeFi with Metamask

Ashish Revar, Khooshi Sonkar, Prof. Kalpesh Wandra

Abstract: When online transactions are involved, the act of transferring money most of the time necessitates the sharing of personal details such as names, bank accounts, and credit card numbers. The main mode of the transactions is through centralized systems, and they require a long period to settle. Emerging technologies innovate the market which necessitates a fast and secure payment system. The DeFi model relies on blockchain focusing on the distributive approach as its main tool. Blockchain is a digital application of allocation transactions by a decentralized system that is used for its security and transparency. DeFi employs the technology of blockchain and smart contracts to have financial services dispersed in a decentralized manner. This paper accepts a decentralized payment system utilizing Distributed Finance (DeFi) and blockchain. The system is composed of a frontend website and backend smart contracts, which perform the functions of user interface payment processing, and ledger updates. It integrates MetaMask, which is a cryptocurrency wallet, that stores user accounts and cryptographic keys, and also interacts with the website. Utilizing this approach, the site users can make the sending and receiving of payments super fast without the knowledge of the fact that the website interacts with the blockchain in the background through MetaMask. There's no need to wait for hours in line to have your transaction settled, and you don't have to disclose personal details. Blockchain does not have just one single node that controls everything because of the decentralized plan of the system, it is transparent, secure, and efficient (accessible). With this knowledge, this paper shows how comfortable DeFi and blockchain technologies are in developing better payment forms.

Optimizing Query Execution Time in Relational Databases using Cost-Based and Index Merge Strategies: A Case Study on E-Commerce Data

Patel Nilen, Dr. Himansu Maniar

Abstract: A good in-depth analysis of query execution time with optimization in relational databases, focusing on mainly two strategies which are cost-base and index merge by using e-commerce as a case study. In this era, the data is increasing with its complexity in e-commerce which needs efficient query optimization techniques that ensure accurate data retrieval by reducing the time. We explore the main principles of cost-based optimization, which involves the cost of different query execution plans evaluation and selecting the most efficient plan. In addition, we examine the index merge technique that reduces query execution time using multiple indexes concurrently. By doing various experiments on e-commerce databases, we show the improvements in query execution time achieved by these strategies. The result focuses on the best effectiveness of these two strategies in reducing resource usage and enhancing performance of relational database management systems. Our findings help database administrators and developers who are seeking to optimize query performance in large scale database or data-intensive applications.

Envisioning the AI-Driven Future: A Delphi Study on the Transformative Role of Artificial Intelligence in Higher Education

Dr. Meeta Joshi, Ms. Janvi Bhindi

Abstract: The study aims to investigate the ways in which AI is being utilized in HEIs and the possible impact that it may have on the future of education and teaching. To anticipate the various ways in which AI might be employed and the consequences it will have on HEIs, the research intends to collect the opinion of specialists using Delphi Methodology. The major research strategy was applied to include participation of various experts from variety of fields of AI, such as professionals working in HEIs, specialists in AI, and educational technologists. The study's findings indicated that AI has the potential to significantly alter a variety of HEIs. Personalized learning experiences, AI based examinations and assessment, administrative processes, admission processes, and student support services are among the most significant applications that have been identified. Artificial Intelligence is the most effective factor for the cultivation of interpersonal skills, including collaboration, creativity and critical thinking, both for the students and the educators. The outcomes contribute to institutional leasers, legislators and educators' valuable insights as they formulate a strategy for HEIs that are influenced by AI.

Consumer Usage Intention Factors for Mobile Food-Delivery Applications Using Task Technology Fit Approach

Ms. Shweta Shirolkar, Dr. Kanchan Patil

Abstract: Consumer decision-making for continuous usage of food delivery apps amid cut-throat competition requires rigorous, disciplined marketing strategies and evaluation. The catalyzing restaurants use online food ordering apps as an alternative channel to reach consumers for delivering the order. This research seeks to verify the dimensions of consumer usage that impact consumer satisfac-tion and their inclination to continue using online food delivery aggregator applications. Survey questionnaire data from 531 users were collected and spread across the age groups for the analysis and model testing. The results showed a significant impact of Application functionality, Task characteristics, and Task technology fit on consumer satisfaction and continuance intention. The results showed an insignificant association between "perceived ease of use", "perceived usefulness", and "consumer satisfaction". Task Technology Fit significantly af-fects perceived ease of use, perceived usefulness, and consumer satisfaction. This research study will help practitioners to accord with the competition in the food delivery mobile application sector. The current research also discussed the impli-cations of the findings theoretically and practically with future research agendas.

Securing Sign-Up and Sign-In in the Indian Market: Fraud Prevention in CIAM for CRM - A Comprehensive Review and Future Directions

Dr. Nitesh Behare, Dr. Manesh R. Palav, Dr. Sharmishthadevi B. Deshmukh,
Dr. Shrikant Waghulkar, Prof. Vinod Pal

Abstract: Customer Identity and Access Management (CIAM) has always been critical in digital Customer Relationship Management (CRM) systems specifically in safeguarding customer's identity in diverse digital landscapes like India. This paper presents a comprehensive review of CIAM's role in fraud prevention at the time of sign-up and sign-in processes of a customer within CRM platforms, with reference to the Indian market. It underscores the current practices of business processes, key challenges faced by customer as well as business and effective fraud prevention strategies, comprising the use of Multi-Factor Authentication (MFA), biometric verification and machine learning for real-time threat detection. Furthermore, it also analyzes India specific factors such as rules and regulations, people diversity and geographical and technological developments that define CIAM in the country. Moreover, decentralized identity management using blockchain, emerging trends in AI-driven fraud prevention and implementation of Zero Trust Architecture (ZTA) are also discussed to offer insights into the future of CIAM in the CRM domain. This aim of the study is to guide business to enhance their CIAM strategies to ensure vigorous security, regulatory compliance and seamless customer experiences, predominantly in the evolving digital market of India.

Predicting Stock Price Movements with Recurrent Neural Networks: An LSTM-Based Approach

V. Srividya, Chandramohan M, Rathimala Kannan, Sujatha R

Abstract: This paper explores utilizing Machine Learning algorithms, specifically LSTM, for stock price prediction. The dynamic nature of the financial markets presents a significant challenge for investors and analysts in making in-formed decisions. Fundamental and technical analysis which are traditional methods of stock price prediction, have been supplemented by advanced ML algorithms because they can analyze historical data and recognize underlying pat-terns. This research aims to bridge the theoretical and practical aspects of stock price forecasting by utilizing LSTM model to process 45 months of historical data (from March 2020 to January 2024) of Nifty 50. The dataset contained low, adjusted close, high, volume traded, and open prices obtained from Yahoo Fi-nance. The study adopts an exploratory research design, using the Weka software tool for model deployment, and evaluation was done with and without the appli-cation of technical indicators – EMA, ROC & RSI to the data, separately and combined. The models are assessed based on their prediction accuracy, employ-ing metrics such as MAE, RMSE, RAE and RRSE. Experimental results indicate that LSTM outperforms traditional ML models (SVM, RF, and Decision Tree) in predicting stock prices, demonstrating lower error values and higher correlation coefficients in all market volatile conditions. This study promotes the field by providing empirical evidence of the efficacy of LSTM model in stock price pre-diction, offering valuable insights for investors, financial analysts, and policy-makers.

Brain Tumor Diagnosis using Deep Learning: A Systematic Review and Meta-Analysis of MRI Image-Based Studies

Patel Kruti D, Dr. Himanshu Maniar

Abstract: Traditional methods for the categorization of brain tumors identification and mostly depend on radiologists' time-consuming manual interpretation and subjective. Detecting a brain tumor in its early stages can be quite very difficult for doctors. Traditional methods for the categorization of brain tumors identification and mostly depend on radiologists' time-consuming manual interpretation and subjective. This process can be subjective,difftastic and laborious. Recent developments in deep learning have greatly improved the automation and accuracy of medical image processing, including the categorization and identification of brain tumors from MRI scans. . The study emphasizes how crucial it is to solve MRI IMAGE dataset: A variety of datasets, including medical datasets, are hosted by Kaggle, a platform for data science competitions (Kaggle offers datasets related to brain tumors at (https://www.kaggle.com/datasets)in MRI image constraints, optimize segmentation algorithms, and incorporate cutting-edge methods like data. MRI pictures may be more susceptible to noise and other environmental disruptions. Doctors find it more challenging to diagnose the tumor and its sources as a result. In order to overcome this, we created a method that uses grayscale image conversion to identify brain tumors from images. To remove noise and other distracting elements from the image, We employ filters. The system's processing will include a preprocessing step for the selected image. To find brain cancers in the MRI pictures, multiple algorithms are applied at the same time.However, the edges of the image may not be crisp and distinct in the early stages of a brain tumor. As a result, to identify the edges in the pictures, we are using image segmentation. We have developed a number of filtering algorithms and segmentation procedures to extract information from photos. Precision can be increased overall with this strategy.

MERN Stack Website for Government Officials

Rohit A. Patil, Dr. Kalpana S. Pawase, Jyoti S. Sarwade
Tushar D. Suryawanshi, Kaustubh D. Chaudhari

Abstract: In today’s life, with the hectic pace, it is very important to have effective communication in due time, particularly in administration where decisions are made to promote the well-being of thousands of people. To this end, however, many government officials are still using very old communication tools that cannot set them on the same page, and a decision cannot be taken in due time. Commulink is likely to fill this gap, constituting a revolutionary communications platform to change the way government staff could work as well as communicate with one another. Commulink facilitates communication in different government sectors in such a way that interaction is fast, safe, and in real-time. Through this platform, various sector employees can easily interact with each other without the usual hassle, ensuring smooth, timely decision-making processes. With a suite of robust features-from instant messaging, safe file sharing, and video conferencing to the integrated task management-Commulink streamlines communication but makes things much more efficient at the operational level. One feature of Commulink is inductivity. It really focuses on accessibility, where everyone, regardless of their disability, can participate in a communication process. Thus, Commulink is considered a versatile solution for diverse teams because of equal engagement for all employees. Additionally, Commulink emphasizes security concerns; it is, after all, very sensitive information that involves government departments.

Transforming EHR Systems Using the HyperLedger Fabric Blockchain Framework

Neha A. Samsir, Arpit A. Jain

Abstract: An Internet-connected network of nodes running a distributed protocol called a blockchain simulates a "trusted" computing service. Each node owns a portion of the asset that the service generates or represents. Blockchain technology's main objective is the decentralization of information and data management and storage. The popularity of permissioned blockchain platforms has significantly increased recently. One such permissioned blockchain technology is called Hyperledger Fabric, and It runs as one of the HyperLedger projects under the Linux Desktop Federation's administration. A modular and extendable open-source method for launching projects is called Fabric. Smart contracts (chaincode), endorsers, committers, validators, andOrderers are among the constituents comprising the Fabric. These platforms maintain a high degree of anonymity for their users while guaranteeing total transparency of the activities documented on the ledger, data security, and resistance to tampering.

IoT Integration for Smart Agriculture: Prioritizing Key Factors using WASPAS Approach

MKP Naik, Anand Jaiswal, Ashish Yadav, Teena Singh

Abstract: The study aims to investigate IoT integration for smart agriculture by identifying and ranking significant factors impacting IoT adoption. It emphasizes the importance of prioritizing factors in order to ensure optimal implementation. The study uses the MCDM approach of the Weighted Aggregated Sum Product Assessment (WASPAS) to comprehensively analyze thirteen key factors, crucial for the efficient integration of IoT in smart agriculture, identified through literature review. Data was collected on a 5-point ranking scale from farmers, government experts, research, and academicians. The findings suggest that skill short-ages and high capital investment costs are significant barriers to IoT implementation in this context. Addressing these barriers is critical to promoting wide-spread adoption, emphasizing the need to close skill shortages and investigate cost-effective alternatives along with other identified factors. The study's findings offer practical recommendations for stakeholders, policymakers, and agricultural practitioners, enabling them to overcome barriers and accelerate the integration of IoT technologies into agricultural practices, ultimately improving efficiency and sustainability in food production.

Ubiquitous Computing of Low-Cost Pollutant Sensors for Monitoring Pollutant Gase s in the Construction Sector

Rebakah Geddam, Mohd Zuhair, Karm Vyas, Naitik Kanani

Abstract: The growing urbanization in India has been closely associated with the expansion of the cement industry. Acknowledging the significant impact of air pollution from the cement industry on the environment, human health, and the economies of affected nations is imperative. To safeguard individuals from health issues arising from air pollution, it is crucial to accurately and promptly anticipate the ambient air quality index. The pollution control board conducts an annual audit to ensure the implementation of Sustainable Development Goals (SDG) policies aimed at climate mitigation. A low-cost sensor employing a cloud-edge architecture was installed in the cement industry to monitor Ambient Air Quality for ubiquitous computing. The innovative approach in this study involves monitoring air quality by detecting anomalies during a calibration drive. Comprehensive emissions monitoring is achieved across various operational scenarios by combining data from multiple sensors, including pollution sensors, PPM sensor arrays, and environmental sensors. The results demonstrate a substantial enhancement in the accuracy of air quality monitoring and the early detection of potential health risks. The journal article elucidates anomaly detection algorithms, namely Isolation Forest (IFor), Local Outlier Factor (LOF), and DBSCAN, compared between the industry-set sensor sn and the environment lab-tested referenced sensor sv. After removing anomalous readings, RMSE scores of 22.75 and 17.7 were recorded. The article emphasizes adaptable solutions for avoiding unhealthy air, benefiting the environment, and improving public health.

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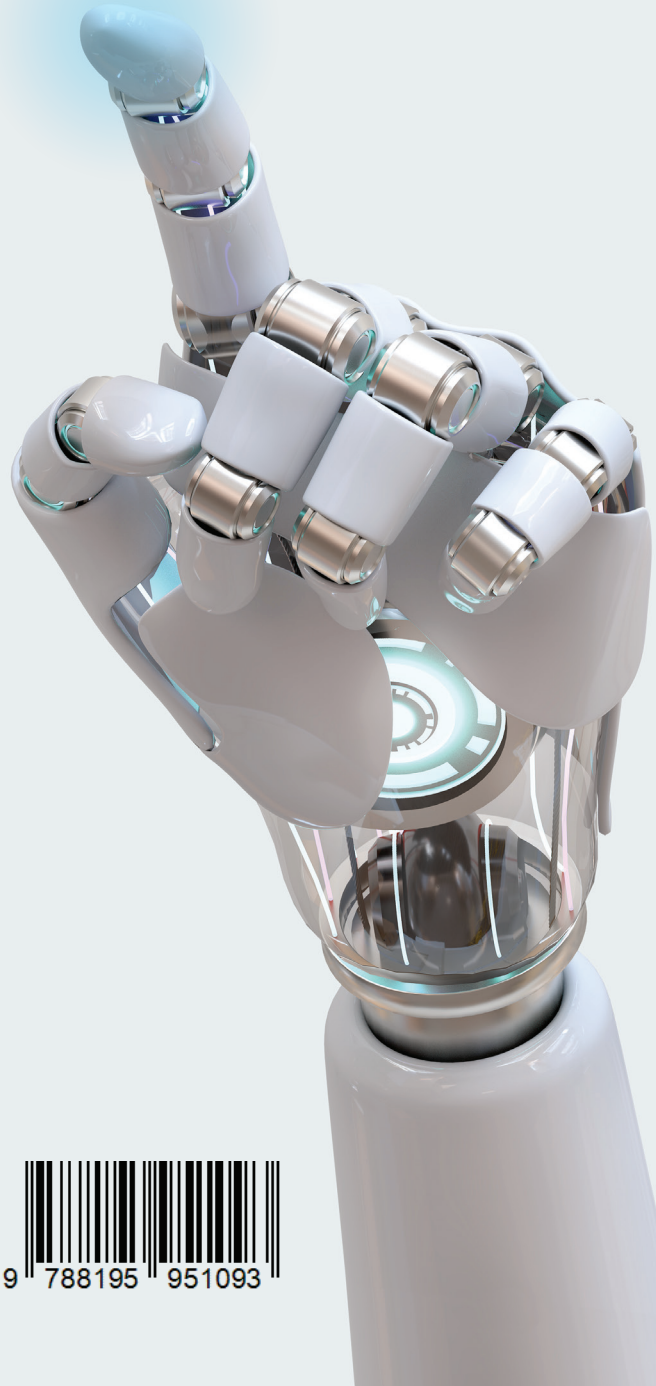

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