

ASCIS
2023

2nd International Conference on
**ADVANCEMENTS IN
SMART COMPUTING &
INFORMATION SECURITY**

CONFERENCE PROCEEDINGS



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ABOUT ASCIS

Smart Computing, Industry 4.0, and Information Security have become extremely crucial in the era of Artificial Intelligence. The International Conference on Advancements in Smart Computing and Information Security (ASCIS) aims to bring forth academicians, researchers, and industry practitioners on a single platform for presenting their relevant ideas at this suitable platform. The ASCIS-2023 intends to bridge the gap between industry and academia through research intervention from the top leaders in intelligent computing and security. We believe this unique approach would create more opportunities for the scientific community to contribute fruitful research. Globally eminent experts from Academia and Industry have consented to be the founding members of the ASCIS-2023, including the top 2% of the Global Scientific Researchers from the Stanford list and industry who are our general co-chairs, programme chairs, industry-academia initiative, and track chairs. The ASCIS-2023 comprises experts from top-ranked Indian Institutes such as IITs, NITs and reputed foreign universities. The advisory committee, a robust programme committee, and branding & outreach will ensure good research submissions and identify the best research proposals to ignite cooperation between academia and industry.

CONFERENCE TRACKS



Artificial Intelligence (AI) &
Machine Learning (ML)



Computer
Networks



Smart
Computing



Interdisciplinary
Computer Application



Cyber
Security

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ASCIS 2023

Marwadi University, Rajkot

2nd International Conference on

Advancements in Smart Computing & Information Security

Conference Proceedings

Title Proceedings of
2nd International Conference on
Advancements in Smart Computing and
Information Security

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Published By Self-Published

**Publisher's
Name and Address** Marwadi University,
Rajkot. 360003

Printer's Details TRANSCAN, Rajkot

Edition Details 2nd Edition

ISBN 978-81-959510-6-2

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Message from Pro Vice-Chancellor



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

As rightly said by Albert Einstein that “You never fail until you stop trying” same is the research an undulating zeal of the researchers that had given a new paradigm to our scientific journey.

To foster an environment that empowers people, organizations, and societies through education, ideas, research, and training and the mission to provide quality education and thereby bring social transformation, create leaders through innovation and entrepreneurship, cultivate the culture of research advancements, imbibe universal consciousness, and stimulate growth through industrial and international partnerships. With the aforementioned Vision and Mission, Marwadi University corroborates its existence since 2016 and has assimilated the core ideologies of Lifelong Learning, Empathy, Adaptability, Diversity, Empowerment, and Respect to create ‘LEADERS’ in every member of its team.

A well-envisaged vision comprises two major components: Core ideologies and envisioned future. The core ideology of Marwadi University is its encouragement to experiment through project-based learning and this has been made possible through the innovative learning methods implemented by our research fraternity. To solve the unsolved problem innovatively and quench the inquisitiveness of the mind has been the purpose of our research journey. The efforts of our team have bestowed us with National Assessment and Accreditation Council A+ certification from the Government of India and Centre of Excellence from the Government of Gujarat for imparting quality education and excellent research. The diversity and inclusiveness within the research have been the heart of our learning environment. The goal of the university is just not only to increase the quantity of research but, more importantly, to ensure impact through high-quality research.

The second international conference on Advancements in Smart Computing and Information Security 2023 is a step towards increasing research activities as well as a platform for all of you to learn and explore in the field of research.

The quest for knowledge by our research team is exemplary and Marwadi University always encourages its scientific endeavour. It has been a proud privilege to share that within a year Marwadi University has excelled in the field of research publications, project grants, major research completion, and various publications peer-reviewed book chapters and books, the achievements that were garnered amidst the challenges.

As said by Zig Ziglar “You don’t have to be great to start, but you have to start to be great. Being a researcher requires dedication, hard work, and more than a little inspiration, hereby I urge each one of you to contribute in the areas of research.

Message from Registrar



Shri Naresh Jadeja
(Registrar, Marwadi University)

Marwadi University is the centre of quality education in the highly entrepreneurial region of Gujarat. Within a span of 14 years, the Institute has been successful in stretching its educational belt in 51 countries. With the mission of cultivating the culture of research and advancement, Marwadi University has taken advancing steps to inculcate the practice of research-based learning in its curriculum and at the same time provide opportunity through organizing international conferences in the niche areas.

I, wholeheartedly congratulate team of Faculty of Computer Applications for organizing the 2nd International Conference - ASCIS 2023 from December 7th to 9th, 2023 at Marwadi University, Rajkot. Apart from the topics that are revolving around the themes AI & ML, Smart Computing, Cyber Security and Computer Networks the organizers have wisely added the new theme Interdisciplinary Computer Applications because these technologies will be continuously making tremendous change in every field in the future also.

Message from Convener



Prof.(Dr) R. Sridaran

(Dean, Computer Applications, Marwadi University)

“Technology is the best when it brings people together”

I am extremely thankful to the academic community who have contributed research papers and invited talks during our 2nd International Conference on Advancements in Smart Computing & Information Security (ASCIS-2023). As every research opens a big world of opportunities for future research, I firmly believe that this compilation would greatly benefit the academic community to take up their next step in their chosen domains. I am also very much thankful to Springer CCIS for their continuous support and our sponsors especially SERB for their generous support. The invited talks by eminent Keynote speakers across the globe have really added a great value to the conference. The Technical Program Committee (TPC) have rendered their hard work in bringing a truly international quality in the paper selection process.

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Keynote Abstracts

Empowering Smart Computing through the Power of light

Prof. Dato' Dr. Shamala Subramaniam
Universiti Putra Malaysia.

The paradigms which govern technology and civilization is constantly emerging with innovations and transforming the definition of norms. These require pre-requisites encompassing the pillars which constitute the Industry 4.0, 5.0 and the subsequent revolutions. It is require discussing the ability to harness the wide spectrum of rich resources and discover the profound impact that the technology transformation is having on industry innovation, exploring the challenges and opportunities that this presents, and consider the significant implications.

Subsequently, leveraging co-existence strategies to address particularly, the Internet of Things (IoT) and the Internet of Everything (IoE) as a driving force behind further densification. The LiFi technology, which stands for light fidelity role in addressing the challenges emerging from densification and as a factor to optimize co-existences and interdisciplinary dimensions. It is require discussing the significant and high impact of the correlation between sports and technology encompassing creative LiFi solutions in this area. The realization of an idea is largely attributed to the ability of a researcher to deploy strategies to evaluate and gauge the actual performance of this idea. The substantial research findings in the area of Access Point Assignment (APA) algorithms in a hybrid LiFi – WiFi network require to be discussed. A Multi-criteria Decision-Making (MCDM) problem is formulated to determine a network-level selection for each user over a period of time The decision problem is modelled as a hierarchy that fragments a problem into a hierarchy of simple and small sub problems, and the selection of the AP network among various alternatives is a considered as an MCDM problem. The result of this research empowers the APA for hybrid LiFi networks with a new perspective.

Optimal Transport Algorithms with Machine Learning Applications

Dr. Sharath Raghavendra

Professor, Virginia Tech, USA.

Optimal Transport distance is a metric to measure similarity between probability distributions and has been extensively studied in economics and statistics since the 18th century. Here we introduce the optimal transport problem and present several of its modern applications in data analytics and machine learning. It is also require to address algorithmic challenges related to scalability and robustness and present partial solutions towards overcoming these challenges.

Some Research Issues on Cyber Security

Sheng-Lung Peng

Professor, National Taipei University of Business, Taiwan.

Recently, a cyber security model M is defined by a three-tuple $M = (T, C, P)$, where $T = (V, E)$ is a tree rooted at r having n non-root vertices, C is a multiset of penetration costs $c_1, \dots, c_n \in Z^+$, and P is a multiset of prizes $p_1, \dots, p_n \in Z^+$. The attack always begins at the root r and the root always has prize 0. A security system (T, c, p) with respect to a cyber security model $M = (T, C, P)$ is given by two bijections $c: E(T) \rightarrow C$ and $p: V(T) \setminus \{r\} \rightarrow P$. A system attack in (T, c, p) is given by a subtree T' of T that contains the root r of T . The cost of a system attack T' with respect to (T, c, p) is given by the cost $cst(c, p, T') = \sum_{e \in E(T')} c(e)$. The prize of a system attack T' with respect to (T, c, p) is given by the prize $pr(c, p, T') = \sum_{u \in V(T')} p(u)$. For a given budget $B \in Z^+$ the maximum prize $pr^*(c, p, B)$ with respect to B is defined by $pr^*(c, p, B) = \max\{pr(c, p, T') \mid \text{for all } T' \subseteq T, \text{ where } cst(c, p, T') \leq B\}$. A system attack T' whose prize is maximum with respect to a given budget B is called an optimal attack. In this talk, we first introduce the defined cyber security problem. We then propose some extended models for future research.

Smart Infrastructure and Smart Agriculture- Japan use cases

Mr. Krishna Kumar

Vice President - Corporate Strategy, Keisoku Engineering System Co., Ltd, Tokyo, Japan.

To understand the smart infrastructure and smart agriculture and its key aspects it is require to discuss the use cases of advanced countries. This explores the burgeoning landscape of smart computing applications in Japan, where the pressing challenges of population decline and an aging society have accelerated the adoption of intelligent systems. It also delves into the diverse applications of information and communication technologies (ICT) in pivotal sectors such as Agriculture, Infrastructure, Mobility, Energy, and Safety. By seamlessly integrating Artificial Intelligence (AI), Internet of Things (IoT), Big Data, and Computer Vision, Japan is witnessing a transformative wave of smart computing solutions aimed at enhancing efficiency and reducing time, cost, and labor.

Unveiling the Dynamics of Spontaneous Micro and Macro Facial Expressions

Dr. Deepak Jain

Associate Professor, Dalian University of technology, Dalian, China.

Facial expressions serve as a fundamental channel for human communication, conveying a rich spectrum of emotions and social cues. This study delves into the intricate realm of spontaneous facial expressions, examining both micro and macro expressions to unravel the nuanced dynamics underlying human nonverbal communication. Employing advanced facial recognition technologies and nuanced observational methods, we explore the spontaneous micro expressions that manifest in fleeting moments, lasting mere fractions of a second, as well as the more extended macro expressions that reveal deeper emotional states.

The research investigates the physiological and psychological mechanisms governing the generation of spontaneous facial expressions, shedding light on the spontaneous nature of these expressions and their significance in interpersonal dynamics. By employing cutting-edge techniques, including high-speed imaging and machine learning algorithms, we aim to discern subtle nuances in facial movements that often elude conscious awareness.

Furthermore, the study explores the cross-cultural universality of spontaneous facial expressions, examining how cultural and individual differences may influence the interpretation and recognition of micro and macro expressions. Understanding the universality and cultural variability of these expressions is crucial for developing more inclusive and accurate models of nonverbal communication.

Insights gained from this research have implications for fields such as psychology, human-computer interaction, and artificial intelligence, where a nuanced understanding of facial expressions can enhance emotional intelligence, interpersonal communication, and the design of empathetic technologies. The exploration of spontaneous micro and macro facial expressions opens new avenues for comprehending the subtleties of human emotion, enriching our understanding of the intricate tapestry of nonverbal communication.

AI Advancements in Biomedical Image Processing: Challenges, Innovations, and Insights

Dr. Sonali Agarwal

Indian Institute of Information Technology, Allahabad, India.

With the rapid development of Artificial Intelligence (AI), biomedical image processing has made remarkable progress in disease diagnosis, segmentation, and classification tasks, establishing itself as a key research area in both medicine and academia. Gaining insights into the use of deep learning for tasks such as identifying diseases in various imaging modalities, localizing anatomical features, and precisely segmenting target regions is important.

Deep learning models are data-hungry, but challenges arise due to the limited availability of biomedical data, data security concerns, and high data acquisition costs. To address these issues, exploring the emerging technology of self-supervised learning is important, as it enhances feature representation capture and result generation. While AI shows great potential in medical image analysis, it struggles with effectively handling multimodal data. Moreover, exploring the complexities of learning and diagnosing diseases in heterogeneous environments with limited multimodal images is essential.

Methods to enhance the interpretability of AI models include providing visual explanations with class activation maps and uncertainty maps, which offer transparency and rationale for model predictions. Conducting a SWOT analysis is crucial to evaluate the current state of AI methods, taking into account their strengths, weaknesses, opportunities, and threats in clinical implementation.

Emerging Technologies and Models for Data Protection and Resource Management in Cloud Environments

Dr. Ishu Gupta

Ramanujan Faculty Fellow, IIIT-B, Bangalore, India.

Cloud environments have emanated as an essential benchmark for storage, sharing, and computation facilities through the internet that is extensively utilized in online transactions, research, academia, business, marketing, etc. It offers liberty to pay-as-per-use sculpture and ubiquitous computing amenities to every user and acts as a backbone for emerging technologies such as Cyber-Physical Systems (CPS), Internet of Things (IoT), and Big Data, etc. in the field of engineering sciences and technology that is the future of human society. These technologies are increasingly supported by Artificial Intelligence (AI) and Machine Learning (ML) to furnish advanced capabilities to the world. Despite numerous benefits offered by the cloud environments, it also faces several inevitable challenges including data security, privacy, data leakage, upcoming workload prediction, load balancing, resource management, etc.

The data sets generated by various organizations are uploaded to the cloud for storage and analysis due to their tremendous characteristics such as low maintenance cost, intrinsic resource sharing, etc., and shared among various stakeholders for its utilities. However, it exposes the data's privacy at risk, because the entities involved in communication can misuse or leak the data. Consequently, data security and privacy have emerged as leading challenges in cloud environments. The predicted workload information is crucial for effective resource management and load balancing that leads to reducing the cost associated with cloud services. However, the resource demands can vary significantly over time, making accurate workload estimation challenging. This talk will explore mitigation strategies for these challenges and highlight various technologies, including Quantum Machine Learning (QML), which is emerging as a prominent solution in the field of AI and ML to address these issues.

Artificial Intelligence and Jobs of the Future 2030

Prof. Dr. T. Devi

Former Professor, Bharathiar University, Coimbatore, India.

The industrial revolutions Industry 4.0 and Industry 5.0 are changing the world around us. Artificial Intelligence and Machine Learning are the tools of Industry 4.0. Improved collaboration is seen between smart systems and humans, which merges the critical and cognitive thinking abilities of humans with the highly accurate and fast industrial automation. Artificial Intelligence (AI) is a pivotal tool of Industry 4.0 in transforming the future through intelligent computational systems. AI automates repetitive learning and discovery through data. Instead of automating manual tasks, AI performs frequent, high-volume, computerized tasks reliably and without fatigue. For this type of automation, human inquiry is still essential to set up the system and ask the right questions. AI adds intelligence to existing products. Automation, conversational platforms, bots, and smart machines can be combined with large amounts of data to improve many technologies.

To prepare the future pillars of our Globe to face the Volatile, Uncertain, Complex and Ambiguous (VUCA) world, and to help the academic community, Universities are revising the curricula to match with Industry 4.0. Towards this and to provide knowledge resources such as books, the author had co-edited five books titled Artificial Intelligence Theory, Models, and Applications, Big Data Applications in Industry 4.0, Industry 4.0 Technologies for Education Transformative Technologies and Applications, Innovating with Augmented Reality Applications in Education and Industry, Securing IoT in Industry 4.0 Applications with Blockchain.

Jobs of the Future 2030: Prominent sectors that will have more jobs in 2030 are Healthcare, Education, Information Technology, Digital Marketing, Automation, Manufacturing, and Logistics. The jobs in these sectors would include: Healthcare - Medical : doctors, nurses, pharmacists, drug developers - demand for better medicine and treatments are ever increasing; Education – Teachers (School, College), Other education professionals, Education support workers; Information Technology Specialists : Artificial Intelligence, Internet of Things (IoT), Data Analytics, Augmented Reality Computer Specialists; Digital Marketing; Automation Specialists : Drone pilots; Manufacturing : Automation using Robots and Artificial Intelligence; Logistics : as Globalisation will lead to more Global trade; and Restaurant Cooks

Artificial Intelligence Jobs in Future 2030: Automation and artificial intelligence will drive the world. Cars that drive themselves, machines that read X-rays and algorithms that respond to customer-service inquiries are new forms of automation. Automation can be applied more in sectors such as Pharmaceuticals (research and development, Marketing (consumer Marketing) Digital Marketing, Automotive (redesign and new development), and Oil and Gas.

New Age Cyber Risks due to AI Intervention

Dr. Ram Kumar G

Information Security and Risk Leader, Nissan Motor Corporation, Bangalore, India

Artificial Intelligence especially the generative variant is reshaping the world. Generative Artificial Intelligence (Gen AI) tool like ChatGPT - the new AI chatbot can hold entire conversations, speaking in the style of someone else, and play out nearly any imaginary scenario an user can ask it for.

Ever since its release late 2022, Generative AI tool ChatGPT has stormed the tech world with its amazing capabilities leveraging on generative Artificial Intelligence. While everyone is aware and excited about the immense potential and utility of such AI platform, it is important to understand the security and data privacy risks they pose.

With the corporate sector embracing generative AI tools for their benefit, there have been widespread concerns among security executives about the malicious usage of new age technology like Gen AI. Media reports highlighting cyber security risks of using Gen AI from real world incidents has only added to the apprehension among business executives about the blind adoption of such innovative tools without adequate safeguards about usage.

While the focus is on the cyber security and privacy risks arising from use of generative AI, it is also to be noted that AI tools can be used for defending against cyber threats and risks. Gen AI helps to enhance security and reduce risks which help in:

1. Detecting security vulnerabilities
2. Generating security code
3. Integration with SIEM/SOAR to improve SOC effectiveness
4. Enhancing email security
5. Improving identity and access management

In conclusion, it is critical for everyone to realize the security implications of cutting edge technology like Gen AI and make conscious decision to adopt safety precautions while using them. It will do a world of good for securing sensitive data including IP and protecting against AI-triggered phishing or malware attacks against businesses.

Challenges of 5G in Combat Networks

Col Mahesh Ramachandran

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While 5G technology promises to change the rules of telecommunication in terms of high data rates, accurate location services, security and SWaP (Size, Weight and Power), it is by no means a 'One size fits All' solution for all applications - especially combat networks which have their unique requirements and challenges. This is because technology that works in commercial static networks cannot be simply replicated and rolled out in tactical networks due to the huge challenges imposed by terrain, mobility, electronic/cyber-attacks, SWaP, EMI/EMC (Electromagnetic Interference/Electromagnetic Compatibility) and country specific encryption requirements.

Mission criticality through Quality of Service (QoS), Quality of User Experience (QOE), redundancy and reliability is of utmost importance to voice, video, data and application services, including GIS in Combat Networks. The issue is further exacerbated, given the practical constraints in placing the nodes at the optimum locations due to reasons of terrain, enemy threat and operational plans. The infrastructure provisioning has to be done with optimization of size, weight and power while reducing the electronic signature to a minimum.

Notwithstanding the fact that concurrent "Releases" approach used by 3GPP provides developers with a secure foundation for implementing features at a particular time and then enables the inclusion of new capabilities in subsequent releases, besides also enabling the features to be updated in a same release as technology advances over time, it is an irony that the new versions of 3GPP releases only have a minimal impact on tactical combat networks in terms of efficiency and speeds. In other words the high data rates, enhanced security and other features of new releases do not address the challenges of combat networks due to the uniqueness of such networks. This paper analyses the peculiar communication requirements of Tactical combat networks and the challenges of adapting 5g technologies for such networks.

Dark Side of Artificial Intelligence

H R Mohan

ICT Consultant, Chair - Events, IEEE CS Madras, Chennai, India.

While the potential of AI to transform our world is tremendous, the risks associated with its ethical norms, safety, privacy, security, bias and consequences of the use of bad data, unpredictability, wrong decision making, weaponization, inequality, accessibility, misinformation, deep fakes, regulation, legality, societal impact, transparency, accountability, explainability, reliability, environmental impact, geopolitical issues and human rights are quite significant, complex, fast-evolving and turning to be real. The unintended consequences of GenAI can cause disruptions globally with high stakes in all sectors of economy. This presentation on Dark Side of AI will elaborate on these risks associated with AI and the need for the global cooperation in its use and regulation.

Blockchain Integrated Security Solution for Internet of Drones (IoD)

Dr. Sudhanshu Maurya

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The rising reception of drones across different areas, including regular citizen and military applications, requires the improvement of cutting-edge insight, unwavering quality, and security for these automated airborne vehicles. This work proposes a blockchain-based security answer for the ‘Multitude of Drones’; current circumstance, planning to guarantee the mystery, unwavering quality, and protection of information move. The proposed technique considers consistent check and enrolment of drones, approval of administrators, sending and withdrawal of drones, information assortment from drones, and secure stockpiling and recovery of information in a blockchain-based framework. The assessment of the proposed strategy on reproduced drones exhibits its viability in giving prevalent information stockpiling security and keeping up with the classification and genuineness of communicated information. The use of blockchain innovation offers various benefits in the drone climate. Blockchain’s decentralized nature guarantees that all exchanges and information trades are recorded across various frameworks, making it almost unthinkable for unapproved gatherings to adjust or erase data. Moreover, blockchain’s innate encryption instruments give an extra layer of safety, defending information from potential digital dangers.

Besides, blockchain innovation can work with the making of a dependable and secure correspondence network for drones, assisting with forestalling unapproved access and impedance. By making a straightforward and unalterable record of all drone exercises, blockchain can likewise aid responsibility and administrative consistency. By consolidating blockchain innovation, this examination means adding to the advancement of more brilliant, more private, and safer drones. This could make ready for their extended use from here on out, in applications going from conveyance and observation to catastrophe reaction and ecological checking. The combination of blockchain into drone tasks addresses a huge forward-moving step chasing dependable and secure automated flying frameworks.

Generative Intelligence: A Catalyst for Safeguarding Society in the Age of GenAI

Dr. K. Vallidevi

Associate Professor, VIT, Chennai, India.

Generative Adversarial Networks (GANs) which is a subset of Generative AI (GenAI), can be used as a catalyst for fraud detection and prevention to shape the safety of the society in a better way. Though it is definitely a double edged sword, it could be efficiently used for proactively detecting fraudulent activities. GenAI plays a major role in video analytics for proactively detecting frauds by employing various techniques like Behavioural Analysis, Anomaly Detection and so on. By simulating fraudulent activities and generating synthetic data will help in detecting criminal activities in a proactive manner. Through this method, the intelligent system could analyse the various patterns involved in fraudulent activities and could identify them when such systems are used in real-time CCTV footage monitoring.

There are several use-cases for using Gen-AI in Proactive Policing.

- 1) Applying a face mask to the person's image
- 2) Removing face mask in the masked face image by generating the covered part of the face corresponding to rest of the face part with multiple outputs,
- 3) Checking similarity between resultant images and input images given by user,
- 4) Querying a person's availability in group image and
- 5) Face aging module where a person of any age is given along with the desired age number, where it generates the face image of the required age of a person. The found similar person can be checked for his outlook on various angles, by rotating the person's face. Face generation algorithms are prone to generate differentiating outputs when compared with the ground truth image.

As these algorithms generate only single output, there is a high scope these outputs not being closely matched with the original image. Hence, a new technique of multiple diverse output images being generated, increases the probability of achieving the highest similarity with the original image. Masking the face is attained by using Dlib library while the rendering of the face is achieved by using Generative Adversarial Networks (GAN). GANs, comprising a generator and discriminator, are trained to create synthetic facial images with accurately generated masked regions. The generator network learns to produce realistic facial features, including accurately placed and shaped masks, while the discriminator distinguishes between authentic and generated images.

Calorie Measurement and Food Recognition using Machine Learning

Muskan Peerzade

Abstract: This paper proposes a novel approach leveraging machine learning for accurate calorie estimation and food recognition. The system employs computer vision techniques to identify and classify food items from images, utilizing convolutional neural networks (CNNs) trained on diverse food datasets. Subsequently, it integrates this recognition with nutritional databases to estimate calorie content based on portion sizes and ingredients. K Nearest Neighbour, VGG16 Model, and image processing are used to enhance accuracy in recognizing various food items and their nutritional composition. The system aims to provide a user-friendly interface for individuals to track dietary intake, promote healthier eating habits, and facilitate more precise nutritional analysis. Experimental results demonstrate the efficacy of the proposed method in accurately identifying and quantifying food items, enabling more efficient and reliable calorie measurement for dietary management and health monitoring.

Mean Harris Hawks Optimization (MHHO) based Feature Selection and FFNN-LBAAA for Semen Quality Predictive Model

C. Shanthini, Dr. S. Silvia Priscila

Abstract: Assess fertility potential of a male partner plays a significant role in semen analysis. Changes in people lifestyles, such as alcohol consumption, smoking, eating habits, etc., are main causes. According to recent scientific investigations, environmental and lifestyle factors have a considerable negative impact on men seminal quality. One crucial part in influencing the possibility of semen for incidence of pregnancy is a Machine Learning (ML) algorithm. Previous studies used unbalanced datasets with performance results that tended to favour the majority class and local training methods were easily prone to local minima. In this paper, start with dataset collection, and pre-processing the dataset by normalization. Then, Synthetic Minority Oversampling Technique (SMOTE) data balancing approach has been developed for balancing normal and aberrant occurrences. Afterwards subset of features is chosen using Mean Harris Hawks Optimization (MHHO). The next step is to feed features into a Feed-Forward Neural Network and a Learning-Based Artificial Algae Algorithm (FFNN-LBAAA) classifier. University of California, Irvine (UCI) provided semen quality prediction dataset. Performance evaluation metrics are precision, sensitivity, specificity, f-measure, accuracy. The proposed system is contrasted with various systems are Multi-Layer Perceptron (MLP), Back-Propagation Neural Network (BPNN), Artificial Neural Network with Sperm Whale Optimization Algorithm (ANN-SWA).

An Extensive Examination of Utilizing Big Data Analytics in Cancer Detection Techniques

Ritu Nagila, Dr. Abhishek Kumar Mishra

Abstract: Cancer is a disease that is defined by a relatively small number of cells in the body developing in an uncontrolled manner and spreading to other organs in the body. Since there are so many cells in the human body, cancer can appear almost anywhere. The second most common cause of mortality worldwide is cancer. However, survival rates are increasing for many cancer types as a result of improvements in cancer screening, therapy, and prevention. Big data can aid in the victory in the fight against cancer. Advanced predictive analysis is poised to revolutionise risk reduction, early illness detection, and the reduction of cancer death rates as a result of the expansion of data mining in the healthcare industry and sophisticated machine learning. Examining, analysing, classifying, and identifying current limitations in cancer research methodologies is the main objective of this article. Future obstacles to the development of such strategies by medical experts have been recognized following a thorough evaluation, critical assessment, and comparison of the existing literature to state-of-the-art treatments.

Price Forecasting of Potato using ARIMA Model on Cloud Platform

Sachin Kumar, Vijendra Pratap Singh, Sarika Srivastava,
Raghvendra Pratap Singh, Priya Jaiswal

Abstract : The major focus of our paper is to benefit farmers by providing them with knowledge of the future price of potatoes in the different bazaars of Uttar Pradesh. So, the farmers can get extra profit by selling their potatoes in the market where the price is high. In this proposed research paper, we have developed a model to forecast the cost of potatoes. We have selected the best model by comparing different parameters (Table 3). All the implementations have been done at Banaras Hindu University in the Agronomy department using the ARIMA (Autoregressive Integrated Moving Average) model available on the Google cloud platform i.e. Google Colab. We have implemented the ARIMA model to help farmers of eastern Uttar Pradesh. The ARIMA (1, 1, 2) is fit for potato cost forecasting because the ARIMA model demonstrates better accuracy.

Analysis of Exoplanet Habitability using RNN and Causal Learning

Premanand Ghadekar, Arunav Chandra, Bijin Jiby,
Anveshika Kamble, Rohit Arole, Aditya Pratap Singh Kirar

Abstract: The quest to discover exoplanets with the potential for habitability is a captivating area of research that offers valuable insights into the origins of life in the universe. The proposed model investigates the application of causal learning and deep learning techniques to analyze the TESS, JWST, and KEPLER datasets. The primary objective is to classify exoplanets based on their habitability by uncovering significant features and relationships within the data. Using the transit method and other observations from these telescopes, the most essential elements such as planet gravity, eccentricity, mass, radius, and stellar temperature are extracted. The model is then trained in a deep learning architecture, specifically an RNN (Recurrent Neural Network), to recognize patterns in the dataset and predict which exoplanets are most likely to be habitable. The JWST dataset consists of approximately 8000 planetary observations, TESS comprises of around 6000 observations and the KEPLER dataset consists of around 9000 en-tries. Upon careful observations it is noticed that the LSTM model outperforms the RNN model in terms of accuracy and related scores.

Evident Based Perspective Assessment and Evaluation of the Current Educational System for Hard of Hearing and Mutant Students

Chitra A, Dr. Agusthiyar R

Abstract: The student's capacity to learn, communicate, and interact with others can suffer severely from the effects of hearing loss. If there is no auditory rehabilitation during the peri-lingual phase, the student will have lifelong speech issues. This paper's goal is to adopt a learning system, comprehend its principles, and demonstrate how it may help the educational industry. Learning systems have made it possible for more developed nations to catch up with those that do in terms of having more sophisticated educational systems and higher educational outcomes. Additionally, a brief evaluation of the technology and development concept is provided. This indicates that variables to improve the communication between the instructor and the learners should be taken into account when expanding the educational system. This research also tries to provide some insight on the prevalent learning styles and the difficulties associated with implementing new learning systems. In this study, 30 open-ended inter-view questions and a series of questionnaires collected from 462 students are studying in BCA, B.com department from St.Louis College for deaf and Presidency college students are used to examine the effects of educational factors. This study analyses what knowledge actually is, how it is obtained, and how it improves academic success for this population in hard of hearing students. To conduct a questionnaire-based study of students are attending special schools for hard of hearing and mutant in order to identify the socio-demographic, educational factors will be gathered by using regular text, American and British sign languages. The collected Questionnaires parameters are used to assessing and evaluating the educational factors by linear regression, ANOVA and several factors using SPSS tool.

Exploring and Improving Deep Learning-based Image Filtering and Segmentation Techniques for Enhancing Leukemia Images

G. Deepa, Dr.Y.Kalpana

Abstract: Pathologists often diagnose leukemia by examining a blood smear under a microscope, which reveals an unusual proliferation of leukocytes in the bone marrow and blood. Pathologists diagnose and classify leukemia based on the numbers and shapes of specific cell types. However, thorough knowledge and patience are required for the morphological inspection of bone marrow cells due to their varied shape. In order to lessen the workload, lower the chance of making mistakes, and increase productivity, an autonomous diagnosis system that makes extensive use of image analysis and pattern recognition technologies is urgently required. Traditional diagnostic techniques take a long time and may be influenced by the doctors' experience and training. These conventional approaches are time-consuming and may be impacted by the knowledge and ability of the medical experts performing the diagnostic procedures. Methods based on image processing can be used to examine microscopic smear pictures automatically and rapidly in order to diagnose leukemia. In the proposed study, the combined techniques namely filtering and segmentation attempt is made to ex-amine the available works in the field of medical image processing of blood smear pictures, with an emphasis on automated leukemia identification. The existing publications in the relevant field are evaluated in light of the segmentation technique employed. Even if there are numerous studies for the diagnosis of acute leukemia, there is just a handful for the detection of chronic leukemia.

Ocular Disease Prediction using Feature Maps with Convolutional Neural Network (CNN) Method

A. Ibrahim Kaleel, Dr. S. Brintha Rajakumari

Abstract: The most essential and sensory organ for humans is eye whereas de-generative conditions as well as diseased eyes a great concern that effect function of the significant organ. These diseases or issues can frequently be immediately cured or significantly alleviated with accurate early diagnosis by professionals. At present, eye disease diagnosis is labointensive, prone to error, and challenging. Diagnosing ocular disease has influences Machine Learning (ML) which is very likely for human eyes from disorders such as Diabetic Retinopathy (DR), glaucoma, cataract, myopia etc., beyond the time limit. Image classification is a type of image processing that assist to understand various features through images. This research focuses feature mapping which act as an interactive classification on Deep Learning (DL) that assists in ocular pathological studies involved automatic recognition of diseases from fundus images. Dataset considered research involves 6392 images from 5000 patients for identifying different ocular diseases. Moreover, feature mapping is used in identifying the best feature set for the available eye disease dataset. Hence, Modified Convolution Neural Network (MCNN) has involved with various sequence to involve feature mapping through internal representation of certain inputs in every convolutional layer of the model. Thus, 97.39% accuracy of MCNN model obtained in right eye help in predicting eye disease in earlier stage to avoid complete blindness.

Modified Extreme Gradient Boosting Algorithm for Prediction of Air Pollutants in various Peak Hours

Dr. Shyamala K, Sujatha R

Abstract: Machine learning is a fascinating field that involves teaching machines to learn patterns and make predictions or decisions without being explicitly programmed to do so. Machine learning continues to advance rapidly, with ongoing research and development pushing the boundaries of what is possible. It is a crucial technology in the era of big data, providing powerful tools for extracting insights and making predictions from large and complex datasets. Air pollution is a combination of dangerous substances that can be both generated by humans and naturally produced. The major sources of pollution cause by people are motor vehicle emissions, petroleum products and normal gas used to heat home, waste from industry and power plants, especially coal-fired ones and smells from chemicals. This study demonstrates how urban centers' morning and evening rush hours are related to air pollution from transportation. The main goal of this research is to comprehend how the pollutants PM 2.5, PM10, SO₂, and NO₂ vary throughout different peak hours. The pollution data set was collected and evaluated from the suburbs of Chennai, including Alandur, Arumbakkam, Kodungaiyur, Manali, and Velachery. This paper proposed novel technique called Modified Extreme Gradient Boosting Algorithm (MXGBA) to forecast fluctuations in PM_{2.5}, PM₁₀, SO₂, and NO₂ levels during peak hours. The algorithm's performance was compared to that of the Extreme Gradient Boosting (XGBA) and the Modified Extreme Gradient Boost Algorithm (MXGBA) demonstrated improved prediction accuracy and reduced error rate.

AI-Powered Automated Methods for Predicting Liver Disease: A Recent Review

Jayashree Patil, Shwetambari Chiwane

Abstract: The diagnosis of liver disease using invasive method is a major concern for people. The invasive method like biopsy may be the last decision of doctors after many non-invasive methods like ultrasound sonography, clinical predictive score or elastography may be etc. The early detection of liver disease helps doctors to start the proper treatment in early stages. The artificial intelligence can be integrated into non-invasive diagnostic methods to improve the diagnosis in early stages. This study focuses on the systematic review of studies of AI based diagnosis of liver diseases in recent years since 2018. There is a good potential for the diagnosis of liver diseases using AI-assisted systems. The study's comparative analysis revealed that different AI algorithms are applied by researchers on clinical data and image data from scanning tests. The purpose of this study is to find the new direction of research in diagnosis of the liver disease in early stages. This study emphasized on an AI techniques on variety of liver diseases such as distinguishing between normal and infected liver, fatty liver, non-alcoholic fatty liver, measurement of fibrosis, advancement of 0 etc.

Development of Processing Algorithms for the Retrieval of Snow/Ice Parameters from SAR Data

Preksha Patel

Abstract: The primary objective of this project is to extract wet/dry snow parameters which helps in snow avalanche effect. The most powerful way to evaluate the degree of snow cover extent (SCE) and the method of snow melting. The most significant connection between natural phenomena and human activities is SCE. This research is conducted by using satellite images of Sentinel-1 and Sentinel-2. For snow avalanche and snow melt runoff modelling related studies in this field, the retrieved snow density is highly useful. This research is mainly based on backscattering value of that particular region with snow density. The ESA SNAP is used for basic satellite image filtration, and then the python model is developed. Satellite data will be used in this study for noise reduction, dimensionality reduction, and Geo-code correction. A calibration technique is used to reduce noise by normalizing SAR data to Sigma0 band values. Speckle filtering is used to standardize data from bigger (7x7) to smaller (3x3) windows. The Range Doppler method is used for geo-coding conversion in terrain rectification. Using the given approach, wet/dry snow may be discriminated by its band value parameter. As a consequence, to understand the snow avalanche effect, snow covers are the most significant environmental research. Earlier approaches operate on SCE or SWE, with certain exceptions. Both parameters are examined in this study. Filtering and prediction are performed for both parameters.

Image Quality Enhancement of Digital Mammograms through Hybrid Filter and Contrast Enhancement

Neha Thakur, Pardeep Kumar, Amit Kumar

Abstract: Digital mammogram images contain many noises (i.e., salt and pepper, speckles) and artifacts (i.e., opacity, markers, chest wall, date, and background). Artifacts, illumination, and fewer pixel resolutions lead to poor-quality images, reducing segmentation and classification accuracy. This work aims to develop an improved preprocessing method for breast cancer detection that can be achieved by integrating appropriate noise reduction and contrast enhancement methods. A hybrid filter (HF), consisting of an improved wavelet filter and curvelet filter, is used for noise and artifact removal, respectively. A pixel-based bilinear interpolation (PBI) algorithm is used for image scaling that changes the pixel information of the image. The resized images are passed through a contrast enhancement process to increase the contrast of the images and get a better view. The election-based optimization (EO) algorithm is used to improve the contrast value, which optimally adjusts the gamma intensity and enhances the quality of the images. Contrast enhancement doubles mammogram image quality after noise reduction. The proposed method is evaluated with two datasets, i.e. collected and digital database for screening mammography (DDSM) using the peak signal-to-noise ratio (PSNR) and mean square error (MSE) as parameters. It is found that the MSE value for the mammogram images is reduced using the proposed image enhancement technique. This reduction in MSE leads to an increase in PSNR and improves the image quality of mammograms.

Math Word Problem Solving with Guided – Context Tree - Structured Model

Evin Joju Xavier, Dominic John Mutholil, L Suganda Prasad, Dr. S. Jaya Nirmala

Abstract: Math Word Problems (MWP) are a complex task that perform very poorly when using traditional transformers like the T5 (Text-to-Text Transfer Transformer). While SEQ2Tree models have been put forth, most existing iterations of such models for Math Word Problem Solvers tend to perform rather poorly when compared to its counterparts such as SEQ2SEQ models. But Expression Trees tend to have upsides such as providing greater relational reasoning between quantities. Hence, we propose a model which improves on current iterations of Math Word Problem Solvers by making use of Expression trees with the help of added context to help guide the model to generate the intended equations. It presents the solutions with explainable deductive reasoning steps to iteratively construct the target expressions, involving a previous operation over two objects. We infer from the results presented in this paper how our model performs considerably well. There is an increase in expression accuracy of 30% and an increase in answer accuracy by 21% when comparing our model to the Graph-to-Tree Structured (GTS) model. Experimental results also suggest that the difficulty level of problems plays an important role in determining performance.

Multi-Model Chatbot and Image Classifier for Plant Disease Detection

Prof. Sonia Mittal, Prof. Tejal Upadhyay, Kanav Avasthi,
Aditya Singh, Anuj Shah, Aditya Pachchigar

Abstract: This study suggests a unique chatbot-assisted plant disease detection system that uses natural language processing (NLP) and image classification methods to give farmers an easily accessible tool for identifying plant illnesses and receiving treatment advice. The three main parts of the system are as follows: a user-friendly chatbot interface that allows for easy image uploading and retrieval of detailed disease information; a knowledge base of plant disease treatments and control measures that offers farmers customized treatment plans; and a strong image classification model that has been trained on an extensive dataset of plant disease images to accurately identify the disease. When the system's efficacy is compared to current techniques, it shows itself to be more accurate at identifying diseases and establishes itself as a priceless tool for raising agricultural output and reducing crop losses.

Generating Bug Reports using Topic-Modelling and Sentimental Analysis

Mohammed Sule, Dr. Bhavesh M. Patel

Abstract: User reviews are crucial for software troubleshooting and developers rely on them for spotting bugs. They are often posted on app stores or online platforms and provide insights into user experiences, feature requests, and bugs. However, manually navigating through a large number of reviews can be time consuming and inefficient. As such, there is a need for automated techniques and tools that can assist in the analysis and categorization of reviews. This study leverages topic modeling and sentiment analysis techniques to cluster reviews into topics and identify the sentiments associated with them. The study demonstrates how topic modeling and sentiment analysis can be utilized to summarize reviews and identify potential bug reports. User reviews for two popular mobile apps are analyzed using topic modeling and sentimental analysis tools known as BERTopic and VADER (Valence Aware Dictionary and sEntiment Reasoner). Our findings highlight the effectiveness of topic modelling in summarizing reviews, enabling developers to focus on addressing widely reported issues. Additionally, the use of sentiment analysis provides valuable insights into the sentiment expressed by users. By leveraging these techniques, developers can efficiently prioritize and address user concerns, leading to improved software quality.

Smart Dam Control: Embedded Systems and LSTM-based Water Level Prediction

Prof. Medha Wyawahare, Amit Subhash

Abstract: Monitoring and controlling water levels in dams in real-time is crucial for safety and stability. We present a low-cost and scalable prototype for dam water level monitoring and control, employing an ESP8266 microcontroller and ultrasonic sensor. Additionally, we integrate machine learning models, including logistic regression and LSTM networks, for advanced water level prediction. These models have an accuracy of 97.31%, which is good and will keep improving as the data gets collected. Real-time monitoring is done with the help of Blynk, which relays data and helps make decisions according to the safety thresholds for anomaly detection and proactive prediction. The standalone system operates at 2.5V, which reduces the running cost too. Our simulated dam environment testing validates the system's effectiveness, highlighting its potential to enhance dam safety, water resource management, and applications in irrigation, hydroelectric power, and water management domains.

The Datafication of Everything: Challenges and Opportunities in a Hyperconnected World

Tanu Singh, Arvind Panwar, Kuldeep Singh Kaswan,
Achin Jain, Urvashi Sugandh

Abstract: In the contemporary period characterized by heightened interconnectivity, the phenomenon of datafication has become a ubiquitous influence, fundamentally altering our modes of engagement with information, commercial enterprises, and the broader fabric of society. This presentation examines the significant difficulties and possibilities arising from the pervasive datafication of several aspects of human existence. Our objective is to conduct a thorough analysis of the complex phenomenon of datafication, identify the primary obstacles it poses, and emphasize the extensive possibilities it provides within a highly interconnected global context. In order to accomplish these aims, a comprehensive examination of the current body of literature pertaining to datafication, hyperconnectivity, and their resultant effects was undertaken. In addition, we conducted an analysis of case studies spanning many areas in order to demonstrate the practical consequences. The findings of our study indicate that the process of datafication, while its potential for fostering innovation, economic advancement, and informed decision-making, nevertheless poses notable obstacles. The obstacles include several issues such as data privacy concerns, flaws in security, ethical considerations, and the complications associated with regulations. The study also emphasizes the need of taking a comprehensive approach in order to address these issues and take full use of the potential that datafication presents. Understanding the complexities and repercussions of datafication is crucial since it has become a strongly related idea with innovations and changes in modern society. Governments, business owners, and scholars who want to comprehend and navigate the intricate terrain of the data-driven, highly interconnected world will find this article to be a valuable resource.

Deep Learning Approaches for Liver Tumor Segmentation

M. Kasipandi, C. P. Chandran, S. Rajathi, Dr. Dimple Thakar

Abstract: Liver tumor segmentation using CNN and LeNet is a process of automatically detecting and segmenting liver tumors from medical images using deep learning techniques. In this approach, the input medical images are fed into a neural network, which then learns to extract relevant features and classify the liver tumors. The process involves two stages: segmentation and classification. In the segmentation stage, the aim is to isolate the tumor region in the image from the surrounding healthy liver tissue. LeNet is used to segment the liver tumors from the computed tomography (CT) images. In the classification stage, the aim is to classify the segmented liver tumors as A CNN is used to learn the features of the segmented tumors and classify them based on these features. The CNN is trained on the segmented tumors to improve the segmentation accuracy. The performance of the liver tumor segmentation and classification using CNN and LeNet can be evaluated using various metrics, including the Dice coefficient, which measures the overlap between the segmented tumor region and the ground truth. The proposed method has shown promising results in accurately segmenting and classifying liver tumors and has the potential to assist radiologists in accurate diagnosis and treatment planning for liver cancer.

Anemia Prediction using machine Learning algorithms

Abdul Hafiz, Sangeeta Rai

Abstract: Anemia is one of the issues with global public health, mostly affecting children and expectant mothers. A WHO study states that 42% of children under the age of six and 40% of pregnant mothers worldwide are anemic. Iron deficiency is the cause of this condition that affects 33 percent of people worldwide. The detection of anemia in modern times is one method used in the non-invasive diagnosis or detection for clinical disorders such as the use of machine learning algorithms. This work used a machine learning approach to identify iron deficiency anemia by utilizing the algorithms Naive Bayes, Random Forests, SVM, Logistic Regression, and decision trees. The Logistic Regression approach yielded the highest accuracy in this investigation.

A Sentiment Analysis on Opinions of COVID-19 Vaccination in Social Networking Site

Yamuna Rajarathanam, Shubashini Velu

Abstract: Sentiment Analysis is widely regarded as the prevailing text categorization tool, mostly employed to assess incoming messages and ascertain the prevailing sentiment as positive, negative, or neutral. The primary objective of this study is to do sentiment analysis on the expressions of Malaysians on the Covid-19 vaccine as shared on various social media platforms. Additionally, the study aims to analyze the outcomes derived from the sentiment analysis. The primary objective is to gather posts pertaining to vaccination shared by Malaysians on social media platforms through the utilization of an application programming interface (API). Furthermore, the datasets that have been gathered will be utilized for the purpose of doing sentiment analysis. The statistics that have been subjected to analysis will encompass data pertaining to the viewpoints of Malaysian individuals on the Covid-19 vaccine. These datasets will be presented and visualized through the utilization of dashboards. The attainment of herd immunity is contingent upon the acceptance and participation of the general people. However, surveys pertaining to the acceptability of the COVID-19 vaccination have indicated a comparatively diminished figure, notwithstanding the escalating magnitude of everyday new instances of individuals afflicted with Covid-19. There exists a significant scarcity of individuals who display willingness to undergo vaccine registration. Consequently, the objective of this study is to instill confidence and conviction in the efficacy of the vaccine by examining the viewpoints of Malaysian individuals.

Freezing of Gait Prognostication in Parkinson's Disease

Disha Parmar, Shivam Zala, Madhu Shukla

Abstract: Parkinson's disease (PD) affects millions worldwide, and a significant portion experience freezing of gait (FOG), a disabling symptom that impedes mobility and increases fall risk. Despite extensive research, the underlying mechanisms of FOG and effective treatment strategies remain elusive. Objective and precise FOG detection and classification are crucial for advancing our understanding and management of this symptom. Existing FOG detection methods face limitations in accuracy, generalizability, and the ability to distinguish between FOG subtypes. Moreover, current treatment options for FOG are limited and often provide suboptimal outcomes. To address these challenges, we propose a novel approach utilizing machine learning and wearable sensor data to accurately detect and classify FOG episodes. We employ a comprehensive dataset comprising 3D accelerometer data from the lower back of FOG subjects. Using advanced machine learning models, we aim to identify the onset and cessation of FOG episodes and classify them into three distinct types: Start Hesitation, Turn, and Walking. This approach holds the potential to overcome the limitations of existing methods and provide a more comprehensive understanding of FOG. Our research aims to shed light on the intricate mechanisms of FOG, paving the way for the development of more effective treatments and improved quality of life for individuals living with Parkinson's disease.

Empirical Analysis of Machine Learning Algorithms for Predicting Thyroidism

Neel H. Dholakia, Teesha Kshatriya, Vipul Ladva, Madhu Shukla

Abstract: This paper focuses on early-stage prediction of Thyroidism, particularly among young women, due to sedentary and stressful modern lifestyles. Various machine learning techniques (decision trees, random forests, support vector machines, naive bayes, and K-nearest neighbors) were simulated for disease probability assessment. Thyroid disorders result from hormonal imbalances caused by stress or infections. The study identifies key clinical indicators and employs K-Nearest Neighbor (KNN) as the best-performing classifier for thyroid prediction. This research aims to improve thyroid disease diagnosis using effective classifiers and machine learning algorithms based on data classification accuracy and performance evaluation.

LSTM, RNN and GAN Models Effectiveness for Flute Music Generation: A Thorough Expedition

Bhavesh A. Tanawala, Dr. Darshankumar C. Dalwadi

Abstract: Within the realm of algorithmic music composition, machine learning-powered systems alleviate the necessity of painstakingly crafting composition rules by hand. This paper embarks on a symphonic journey into the realm of automatic music generation, where the magic of deep learning orchestrates musical masterpieces. The resulting compositions take shape as enchanting sequences of ABC notes. In our modern age, the harmony of music technology harmoniously resonates with the grandeur of vast datasets. When it comes to crafting musical wonders through the wonders of deep learning, maestros often choose the eloquent rhythms LSTM or the graceful melodies of Vanilla GAN and Cycle-GAN models for their symphonic canvas. In this melodious endeavour, where music becomes a sequence of moments, different GAN models shines as the virtuoso of choice, playing the sweetest of notes. Also the results of evaluation by human experts shows the ability of different GAN models suggested in this article. The results mentioned in the article shows the generated music is more compare to human generated music and is human audible.

A Systematic Study on Fake Review Detection Approaches on E-Commerce Platforms

Asha Patel, Helly Patel, Ketan Patel, Bhavesh Patel

Abstract: Customers' reliance on reviews for product information has experienced a substantial increase. However, the integrity of online reviews is undermined by the existence of deceptive reviews that provide a distorted perception of product quality and it significantly impacts consumers' purchase decisions. The credibility of online reviews holds significant importance for businesses due to its direct impact on their reputation and financial success, thus necessitating utmost attention. Some businesses use methods that some people consider to be unethical to gather reviews. These methods include paying people to post fake reviews. This practice leads potential customers astray when making purchasing decisions. This paper presents a comprehensive and systematic study of different approaches to detecting fake reviews on ecommerce platforms. It also summarizes the available research approaches along with experimental methodologies used with findings. By assessing the strengths and limitations of these approaches, it gives holistic understanding of the current situation of fake review detection and shed light on the potential direction of future research in this critical area. It also elaborates the scopes for improvements of fake reviews detection approaches on E-commerce platforms.

Towards Seamless Sidewalk Navigation: On-Device Machine Learning for Real-time Obstacle Detection in Visually Impaired Assistance

Zahiriddin Rustamov, Jaloliddin Rustamov, Medha Mohan Ambali Parambil,
Soha Glal Ahmed, Sherzod Turaev

Abstract: Undeniably, visual impairment severely affects the quality of life and impacts many daily activities of visually impaired individuals. Visually im-paired individuals have difficulty navigating on sidewalks. There are many as-sistive tools available for navigational assistance for visually impaired individu-als. The majority of assistive technologies for sidewalk navigation in visually impaired individuals rely on server-based models, introducing challenges of la-tency, data costs, and privacy. This research investigates on-device machine learning as an alternative, emphasizing real-time feedback and user experience. We assessed algorithms, including EfficientDet-Lite, SSD, and YOLOv4, optimizing them for mobile deployment. The resultant Android application, embed-ding the top-performing model, demonstrated the potential for immediate, serv-er-independent feedback. This research not only bridges a notable gap in the lit-erature but also paves the way for research on more accessible, immediate, and discreet navigation tools for the visually impaired community.

Global Optimization with Petal Guided Flower Pollination Algorithm

Sameer Bhave, Pratosh Bansal

Abstract: Heuristics are known to infuse various search procedures with intelligence. Metaheuristic Algorithms are general purpose heuristics that are in general inspired by nature. There are several phenomena in nature that can be studied and utilized to solve different types of decision-making problems in engineering and other domains. It is definitely an interesting domain of research where the modeling of natural processes is done in mathematical context to extend further sup-port of computing prowess to solve various types of problems. The novel algorithm named as Petal Guided Flower Pollination Algorithm, proposed in this paper, is modeled on the Flower Pollination approach and is specifically intended for global optimization purpose. Benchmarking functions are typically used to analyze optimization algorithms. The focus is on function optimization where benchmarking functions have been used. The comparison of this new algorithm has also been carried out with the standard Flower Pollination Algorithm. The Petal Guided Flower pollination algorithm does work well in the context of several benchmarking functions. A very basic statistical analysis has also been carried out for both algorithms to gain better insight. Evolution curves along with measures of central tendency have been used in this context.

A Novel Stance Labeling Algorithm for Misinformation Detection

Jatinderkumar R. Saini, Shraddha Vaidya

Abstract: With the ease with which the data is accessible over the Internet, the spread of ubiquitous information is increasing rapidly, resulting in long-lasting effects on people, businesses, the economy, and so on. Detecting and mitigating the misinformation generated online is still challenging due to its rapid generation. Researchers have developed models that detect and classify misinformation by extracting numerous features from the textual contents and defining user-specific features. One of the important features is a stance, which articulates the viewpoint of the speaker and assists in determining the truthfulness of the articles. Recent literature does manual labeling of stance and true and false categorization of information, making it an uphill task. Therefore, in this research, authors have proposed a novel algorithm that can classify the stance automatically into two categories: support and denial. Further, these features are used to build models to classify news articles as true and false. With this approach, the model showed the highest accuracy of 85.26%.

An Unsupervised Artificial Intelligence Strategy for Recognising Multi-Word Expressions in Transformed Bengali Data

Subrata Pan, Alope Roy

Abstract: Multiword expressions are linguistic phrases that are both distinctive to each language yet universal. Handling multiword expressions is crucial in natural language processing applications since it presents several challenges. This article describes the process of identifying multiword phrases in the investigated Bengali corpus using association rule mining algorithms. The proposed system executes ten procedures in three phases: preprocessing, extraction of frequent item sets, accuracy evaluation, and validation. This experiment used a restricted amount of data since extra computer resources and standard multiword phrases were needed to confirm the computational findings. The ideas of entropy and Naive Bayes are used to validate the results of this experiment, which has undergone extensive investigation. This experiment was primarily carried out by employing a few phrases from the Agriculture domain of the experimented corpus. Based on validation using the Naive Bayes theorem, our experiment reveals that top-ranked terms have a high possibility of producing multiword expressions. Finally, we accomplished phrases with a high likelihood of becoming multiword expressions as a result of the n-gram combinations.

A Study on Datasets, Risk Factors and Machine Learning Methods Associated with Alzheimer's Disease

Vivek Gondalia, Dr. Kalpesh Popat

Abstract: There are several diseases being observed today that were never known before and these diseases are affecting human genes majorly. When we talk about genes, we need to understand that these genes are such biological matter that constitutes an individual. It is a gene that stores the most important matter of a human body called DNA. These genes, which are made up of several DNAs, act as an instructor to the human biological systems. Few of these genes give an instruction to several DNAs to make molecules called proteins. Though very few genes do the production of proteins, those helping in generation of proteins are considered to be important genes. Misfolding of protein leads to neurodegenerative diseases. Epilepsy, Alzheimer's disease, Migraines, Strokes, Parkinson's disease, Multiple Sclerosis are few examples of neurodegenerative diseases. These neurological disorders start due to genetic mutations and the symptoms grow gradually years after years. One of the latest bioscience areas falls in understanding Alzheimer's disease and the patterns of dementia observed in Alzheimer's patients. This disease is very uncommon yet very much observed in humans. A study focusing on the available datasets, the associated risk factors and the methods of machine learning that helps in early diagnosis of Alzheimer's Disease is carried out here.

A Machine Learning Approach for Tackling Deceptive Reviews in E-Commerce

Swathi Mummadi, Venkatesh Ch, Praneeth Ch, Manideep B, Krishnaveni B

Abstract: Machine learning algorithms utilized by False Review of Internet Products enable customers to identify deceptive online reviews. Social media evaluations have prompted users to provide feedback on products, now a feature on many ecommerce platforms where users can rate purchased items. These consumer assessments significantly impact a product's reputation. False or biased reviews commonly appear on online shopping sites, aiming to discredit or overly promote products, potentially causing financial losses or rapid business growth. The proposed work demonstrates the application of sentiment analysis to effectively detect fake and spam reviews using SVM, offering a solution to this issue.

Preserving Cultural Heritage: Enhancing the Documentation and Promotion of Indian Handicrafts through Machine Learning

Neel Patel, Vasu Nindroda, Prof. Hardik M. Patel

Abstract: In the digital age, the preservation and promotion of local craftsman-ship play a pivotal role in sustaining cultural traditions. While India has been home to a myriad of artisanal talents, many artisans find it challenging to connect with a global audience. This paper introduces "HandiIndia," an innovative web platform designed specifically for Indian artisans. Leveraging cutting-edge technologies, particularly the BERT (Bidirectional Encoder Representations from Transformers) model in machine learning, HandiIndia aims to bridge the gap between local artisans and global consumers. By employing BERT, an advanced natural language processing model, the platform enhances the understanding of user preferences and interactions. HandiIndia enables artisans to showcase their work, share their stories, and connect directly with customers, fostering a community that values authenticity and tradition. Through the application of BERT, the platform can analyze user engagement metrics and feedback more effectively, providing valuable insights into user preferences and trends. This research assesses the potential impact and scalability of HandiIndia in reviving and promoting India's artisanal heritage in the global market, with a specific focus on the role played by the BERT model in enhancing user experience and platform performance.

Performance Analysis of Feature Selection and Feature Extraction Methods on Biomedical and Healthcare Data

D.Shashikala, S.Rajathi, C.P.Chandran, Jaypalsinh Gohil

Abstract: The work “performance analysis of feature selection and feature extraction methods on Biomedical and Healthcare data on tuberculosis were carried out effectively. The various feature extraction algorithms such as Principal Component Analysis (PCA), Locally Linear Embedding (LLE), Auto Encoder (AE), Independent Component Analysis (ICA) were employed and the performance are analyzed. It is observed that the ICA, i.e Independent Component Analysis out performs and resulted 95%.

Classification Rule Mining for Biomedical and Healthcare data

D. Shashikala, S. Rajathi, C. P. Chandran, Dr. Kalpesh Popat

Abstract: In this work the classification Rule mining for biomedical and healthcare data is carried on tuberculosis dataset. The various classification algorithms such as Decision Tree, Random Forest classifier, Logistic Regression, Naive Bayes, K-Nearest Neighbor and Support Vector Machine were analyzed. Highest accuracy is achieved for the algorithms SVM, Random Forest and Decision Tree algorithms.

Multimodal Sentiment Analysis using Deep Learning: A Review

Shreya Patel, Namrata Shroff , Hemani Shah

Abstract: Multimodal Sentiment Analysis (MSA) is a burgeoning field in natural language processing (NLP), also known as opinion mining. It determines sentiment (positive, negative, neutral), subjective opinion, emotional tone, sometimes even more fine-grained emotion like joy, anger, sadness, and others. The evolution of sentiment analysis from its early days of text only analysis to the incorporation of multimodal data has significantly enhanced the accuracy and depth of sentiment understanding. MSA is poised to play a pivotal role in extracting valuable insights from the vast amount of multimodal data generated in today's digital age. Various fusion methods have been developed to combine information from different modalities effectively. Additionally, the field has seen significant contributions from lexical-based, machine learning-based, and deep learning-based approaches. Deep learning, in particular, has revolutionized MSA by enabling the creation of complex models that can effectively analyze sentiment from diverse data sources. This survey provides an overview of the critical developments in MSA, highlighting the evolution of methods. It also presents a comparative analysis of state-of-the-art models and their performance on benchmark datasets and future potential, helping researchers and practitioners choose the most suitable approach for their specific tasks. The surveyed models SKEAFN, TEDT, UniMSE, MMML and others have exhibited impressive performance across various datasets.

Evolutionary Data Mining Approach for Hepatitis B Classification: Prediction and Detection

Dr. Rajasekaran S, Asadi Srinivasulu, Dr. Shaik Mastan Vali

Abstract: The main goal of employing an evolutionary data mining approach in the prediction and detection of Hepatitis B is to devise a method that can both predict a person's likelihood of contracting Hepatitis B and detect the presence of the virus in the body with accuracy. By applying evolutionary algorithms, this approach scours through vast amounts of data to discern patterns that are instrumental in predicting and identifying the virus. The ultimate purpose is to enable healthcare providers to take preemptive steps to curb the virus's spread, improve patient treatment, and enhance the early detection of Hepatitis B. Hepatitis is a disease that affects people from all walks of life and all age groups, and Hepatitis B is one specific variant this study focuses on. This disease is not just fatal but also diagnosable and treatable if detected early enough. In this research, we propose a new approach to diagnose Hepatitis B, utilizing an optimized deep learning method. This method facilitates automatic feature extraction with minimum redundancy and dimensions, allowing for effective data modeling from a low to high level. It can be employed as a data mining method in computer-assisted medical systems to aid in knowledge discovery and extraction. To ensure the proposed method's viability, it is compared against previous methods based on a set of evaluation criteria, including accuracy. Hepatitis B is a viral infection that can lead to significant liver damage. To prevent its progression and mitigate liver-related complications, early detection and treatment are crucial. Real-time classification, a machine learning technique, enables data grouping into preset classes instantaneously. The application of evolutionary data mining in real-time classification is grounded in the integration of genetic algorithms and data mining techniques to identify patterns and relationships in extensive, complex datasets. Numerous studies have shown promising results in detecting Hepatitis B using a combination of real-time classification and evolutionary data mining. Tools like decision trees, artificial neural networks, and genetic algorithms have been utilized in these studies to classify patient data and predict Hepatitis B.

Machine Learning Technique for Detecting Leaf Disease

Dr. P Aurchana, Dr. G Revathy, Dr. Shaji. K. A. Theodore,
Ms A. S. Renugadevi, Dr. U. Sesadri, Dr. M Vadivukarassi

Abstract: Rice is a major crop that has a major impact on the Indian economy. Indian farmers face many financial problems when rice cultivation suffers from diseases that direct to decline of the mixed economy. The most important economic and scientific challenge in agriculture is the categorization and identification of rice disorders. Detection and monitoring of theses disease is the critical issue. If these diseases are identified at the first stage appropriate action could be taken in order to restrain the economic loss of the farmers. To overcome this, four different rice diseases are acquired from the kaggle datasets. Using transfer learning, we can transfer small or large amount of tagged data from one domain to another to build a predictive model. So fully connected or softmax layer is detected. The remaining of the network is utilized to extract features and train the model in a new, fully connected layer. The extracted features are given as the input to Random Forest which classifies into four primary rice plant diseases namely leaf blast, bacteria blight, sheath blight, and brown spot which gives the satisfactory results of 90%.

Cardio Vascular Disease Prediction based on PCA-Relief Hybrid Feature Selection Method with SVM

L. Pushpalatha, Dr. R. Durga

Abstract: In the whole world, Cardio Vascular Diseases (CVDs) are the main reason of death. The outcomes of patients are significantly improved by early detection and precise prediction of CVDs. We offer an in-depth process for feature extraction and classification for CVD risk identification in this paper. By combining the strength of Support Vector Machines (SVM) classification with Linear Discriminant Analysis (LDA), Principal Component Analysis (PCA) and PCA with ReliefF feature retrieval methods, this study presents an investigation into feature extraction approaches for CVD classification. On a variety of CVD datasets, tests were run to see how well the PCA-ReliefF feature extraction strategy performed when combined with SVM. In this study, we emphasize the significance of not only accuracy but also recall as a key metric, shedding light on the model's ability to correctly identify individuals with cardiovascular illnesses. The PCA+ReliefF+SVM model outperforms other algorithms with a consistently higher accuracy ranges from 91.4% to 93.4%, a recall between 82% to 84% and precision ranges from 82% to 84%. The language used for execution is Python.

DRL-CNN Technique for Diabetes Prediction

A.Usha Nandhini, Dr. K. Dharmarajan

Abstract: In this research process, a medical decision model is developed for disease prediction based on DL (Deep Learning) models. The major benefits of computer-based algorithms are exact results, adaptability, transparency, and better decision-making. The proposed work three major steps are preprocessing, feature selection and classification. Firstly preprocessing, data analysis pre-processing is the major step in identifying exact methods. Most of the clinical data consists of missing information and inconsistent data. WB-SMOTE (Weighted Borderline Synthetic minority oversampling technique) concept is applied to asses and solves the unbalanced. Secondly feature selection, selections of features are the process of choosing a subgroup of the most associated attributes in the concerned dataset to indicate the final identifier. Wrapper-based approaches are applied to extract the features from the given dataset. Finally classification, accurate prediction of diabetic disease based selected number of features. Classification approaches are Decision Tree (DT), Random Forest (RF) and Enhanced Convolution Neural Network Layer (ECNN). The output comparison among the DRL-OCNN model and some other ML Models is offered. While analyzing diabetes data, it is identified that DRL-OCNN models produce better results with 95.75% of accuracy rate. The received results demonstrate that this suggested DRL-OCNN model produces better performances with a precision of 0.93 and recall of 0.91. This enhancement can decrease time, labor services, effort, and decision exactness. The planned system was assessed on PID (Pima Indians Diabetes) and illustrates an excellent performance in forecasting diabetes illness. The tool used for execution is python.

Classification of Heart Diseases Using Logistic Regression with Various Preprocessing Techniques

Mrs. K. Hepzibah, Dr. S. Silvia Priscila

Abstract: Machine learning (ML) based heart disease prediction has emerged as a crucial and fruitful field of study and application. They are used to analyze medical data, identify cardiac disorders, and make precise predictions about their presence or absence. Utilizing the effectiveness of LR (Logistic Regression) in combination with sophisticated preprocessing methods has emerged as an important strategy in the classification of heart-related diseases. By addressing data variability and differences in feature sizes, the use of decimal scaling and min-max normalization, in particular, improves the interpretability and flexibility of the model. By detecting complex underlying patterns and nonlinear interactions within the data, the use of Isomap (Isomeric Feature Mapping) normalization enhances the LRs (Logistic Regression) discriminative powers. This Scope of research has shown the possibility to produce higher classification results through a thorough review procedure that includes accuracy, precision, and recall criteria. Isomeric Feature Mapping along with LR gives best result with accuracy of 91%, precision of 0.89 and recall of 0.87 respectively. This proposed system is compared with the existing methods like Min-Max Normalization+ LR, and Decimal Scaling Normalization+ LR. The tool used for execution is python.

Plant Disease Detection Automation using Deep Neural Networks

Gajavalli J, Jeyalakshmi S

Abstract: Automation in the agriculture field is a priority when compared with other fields, as the latest growth of Agriculture and Farming is dependent on technologies for production. The next major important requirement in Plant diseases is early prediction and necessary related recommendations. In this re-search, the proposed method is implemented with the plant leaf dataset, which consists of 16 classes of diseased and healthy data of various plant leaves. The prediction and classification of the diseased plant leaves is achieved by deploying the deep neural network models CNN, ResNet50, AlexNet and Proposed model ProliferateNet. Finally, the experimental output values of these models show the significance of the Neural Network models in the detection of plant disease, as well as the efficiency of neural networks. During training a Neural Network model, data augmentation can solve a number of issues, including limited or imbalanced data, overfitting, variance, and complexity. The dataset is augmented using image-based data augmentation techniques before being applied to deep neural networks. The accuracy of the various models is evaluated, and ProliferateNet attained an average training accuracy of 93% and testing accuracy of 99%.

CT and MRI Image Based Lung Cancer Feature Selection and Extraction using Deep Learning Techniques

R. Indumathi, Dr. R. Vasuki

Abstract: Cancer treatment is conceivable on the off chance that can ready to identify it at a beginning phase. For the most part, Side effects of disease are found in human body in last stage, however with assistance of trend setting in-novation where PC supported frameworks are utilized; we can identify it in a beginning phase. Right now, various AI strategies are utilized for such computerized location frameworks to distinguish cellular breakdown in the lungs in beginning phases. For such computerized identification, we utilized CNN and CT images. Using DL methods, this study enhances a novel method for Computer tomography and Magnetic resonance image-based lung tumour detection feature selection and extraction. The CT and MRI lung images that were used as input were processed for noise removal and normalization. Following that, a gradient support vector discriminant neural network and kernel convolutional component analysis are used to features selection with feature extraction from the processed images. The experimental analysis is carried out based on para-meters Random accuracy, F-1 Score, mean average Precision (mAP), dice coefficient, kappa Co-efficient for various MRI and CT image dataset. Performed algorithm had Random result of rightness 95%, 75% of F-1 score, mAP of 81%, dice coefficient of 68%, kappa Co-efficient of 55% for MRI image and Random accuracy of 96%, F-1 Score of 66%, mean average Precision (mAP) of 55%, dice coefficient of 68%, kappa Co-efficient of 63% for CT image.

A Novel Image Filtering and Enhancement Techniques for Detection of Cancer Blood Disorder

Pulla Sujarani, Dr. M. Yogeshwari

Abstract: Cancer Blood Disorder has an impact on the development and operation of our blood cells. Blood disorders can affect platelets, blood plasma, white and red blood cells, or any one of the four main components of blood. Proposed work goal is to identify cancer blood condition. In this research, Images of cancer and blood disorder are preprocessed utilizing enhancement and filtration methods. In research suggested a 2D Hybrid Wavelet Frequency Domain Bilateral Filter (2D HWFDBF) for noise removal. To increase the clarity of an image, image enhancement is used. Apply, proposed a 2D Edge Preservation Histogram Improvement (2D EPHI) technique for image enhancement. Real time data set was collected for image preprocessing. The proposed filtering technique is very effective and produced the best result when compared to the other filtering techniques such as 2D Hybrid Median Filter, 2D Adaptive Log Color Filter and 2D Frequency Domain Filter. Proposed image enhancement technique carried out the best outcome when compared to the other techniques such as Contrast Limited Adaptive Histogram Equalization, Image Coherence Improvement and 2D Adaptive Mean Adjustment. MATLAB software can be used to implement the proposed system. To evaluate proposed system by using RMSE (Root Mean Square Error) and PSNR (Peak Signal to Noise Ratio). These outcomes are compared to the existing methodologies. Finally, results of filtering and enhancement techniques shows the better outcome than compared to the existing approaches.

Enhanced Oxygen Demand Prediction in Effluent Re-actors with ANN Modeling

Tirth Vishalbhair Dave, Vallidevi Krishnamurthy,
Surendiran Balasubramanian, D. Gnana Prakash

Abstract: The amount of oxygen present in water, known as Dissolved Oxygen (DO), is impacted by a range of physical, chemical, and biological factors. This measurement is pivotal for assessing the condition of water, as it directly reflects the ability of aquatic ecosystems to sustain marine organisms. Evaluating water quality frequently involves the use of Chemical Oxygen Demand (COD). In the context of facilities treating wastewater, a combination of biological, physical, and chemical techniques is employed to manage industrial waste and remove contaminants before they are discharged into water bodies. Discharging untreated industrial waste into natural water sources is a major cause of water contamination. Standards mandate that the concentration of DO in waste should exceed 3 milligrams per liter. However, industries aim to maintain low DO levels to minimize the risk of pipe corrosion. Due to the time-consuming nature of manual COD measurement, industries often neglect to check DO levels before disposing of waste. The proposed study seeks to forecast the COD of treated waste from a wastewater treatment plant by utilizing crucial data gathered by sensors from the initial waste. This approach ensures that industries undertake suitable waste treatment before disposal, safeguarding marine life and enhancing the quality of water accessible for daily use.

Comparative and Comprehensive Analysis of Cotton Crop Taxonomy Classification

Yuvraj Wagh, Ashwin R. Dobariya

Abstract: India's economy is built upon agriculture, which offers the common of the country's inhabitants with an existing and accounts for 40% of the nation's overall GDP. Agriculture is a major component of argo economy like India's. The Indian economy benefits from the agricultural sector as well as the industrial sector and foreign import and export trade. Even while the agricultural sector in India currently employs the most people nationwide, its contribution to the economy is shrinking. One of the most significant commercial crops grown in India is cotton, which makes up around 25% of all cotton produced worldwide. Around 6 million cotton growers and 40–50 million workers in industries like trading and cotton processing depend heavily on it for their livelihoods. The objective of this article is to provide a summary of the machine learning techniques used to identify and predict a variety of diseases in cotton crops using machine learning and artificial neural networks. An article has thoroughly examined numerous machine learning algorithms and their uses in the field of agricultural disease for this goal. The study also shows how machine learning methods are used in the subject of agricultural disease identification in a comparative and comprehensively tabular manner. In the field of cotton crop disease identification, the article also covered the potential application of machine learning algorithms in the future.

CSDM-DEEP-CNN based Skin Multi-Function Disease Detection with Minimum Execution Time

N.V. Ratnakishor Gade, Dr. R. Mahaveerakannan

Abstract: Skin cancer is a prevalent and potentially fatal disease. Early detection is important for successful treatment. Traditional methods face challenges in identifying skin cancer regions. CSDM-Deep-CNN is a novel approach for efficient skin disease detection with minimal execution time. CSDM-Deep-CNN leverages deep convolutional neural networks with batch normalization. The objective of this study is to address the complexities in dermatology and the increasing impact of skin disorders on individuals' psychological and social well-being. The proposed CSDM-Deep-CNN approach offers a promising solution by leveraging machine learning and deep learning technologies. The CSDM design and implementation involve pre-processing steps, image resizing, and the use of convolutional neural networks for disease prediction. The optimization process includes batch normalization to prevent overfitting, enhancing the training efficiency of the deep convolutional layer. The study reports promising results, including an accuracy rate of 84%, a training time of 1.59 seconds, and a total execution time of 4.23 seconds.

Improving Skin Lesion Diagnosis: Hybrid Blur Detection for Accurate Dermatological Image Analysis

Bhanurangarao M, Dr. Mahaveerakannan R

Abstract: Accurate diagnosis of skin lesions is crucial for early detection and effective treatment of dermatological conditions. However, blurry artifacts present in dermatological images can significantly hinder diagnostic accuracy. Existing research primarily focuses on either shape analysis or deep learning techniques individually, with limited consideration of hybrid approaches that can leverage the complementary strengths of both methodologies. To address this research gap, we propose a novel hybrid blur detection method for enhancing skin lesion diagnosis. Our approach integrates shape analysis techniques with deep learning methodologies to improve the accuracy of dermatological image analysis. Shape analysis algorithms capture intricate shape features of skin lesions, which are then utilized by a deep learning model trained on a di-verse dataset of dermatological images. Experimental evaluations demonstrate the effectiveness of our hybrid approach in accurately identifying and localizing blur regions within skin lesion images. By mitigating the impact of blurry arti-facts, our method enhances image quality and facilitates accurate analysis, enabling early detection and intervention for improved patient outcomes. This research contributes to the advancement of skin lesion diagnosis by providing a robust tool for clinicians and dermatologists. The proposed hybrid blur detection method has the potential to significantly improve the precision and reliability of dermatological image analysis, leading to more accurate diagnoses and timely treatment decisions.

Swarm Based Enhancement Optimization Method for Image Enhancement for Diabetic Retinopathy Detection

R. Vinodhini, Dr. Vasukidevi Ramachandran

Abstract: A common severe phase of diabetes mellitus known as diabetic retinopathy (DR) results in anomalies on the retina that affect eyesight. The likelihood of visual deterioration will be greatly lowered by early identification and treatment with DR. Because of the complexity of imaging environments, fundus images are usually hampered by noise and poor contrast problems. This study proposes an algorithm for enhancing image quality by lowering noise and enhancing contrast. For the purpose of de-noising and enhancing a color fundus image, the incorporation of proposed Edge Preserving filters and Swarm Based Enhancement Optimization method is implemented. A common public dataset called DIARETDB0 is used to assess the experimental findings. The Mean Square Error (MSE), Peak Signal to Noise Ratio (PSNR) and Structural Similarity Index (SSIM) which have been measured as 0.000121, 42.37 and 0.999 respectively, are three performance parameters been used. In comparison to other filtering techniques, the suggested algorithm demonstrated improvement in optimizing the quality of images. The tool used for execution is MATLAB.

Classification of Intrusion using CNN with IQR (Inter Quartile Range) Approach

G. Gowthami, Dr. S. Silvia Priscila

Abstract: Cyber-attacks are getting more and more complicated, using intricate patterns that are challenging to find using conventional techniques. IDS (Intrusion Detection System) are essential for defending computer networks from online risks. This article undertakes a thorough review of three preprocessing methods used with a Convolutional Neural Network (CNN) for intrusion detection along with SMOTE, Z-score, and IQR (Inter Quartile Range) which will be used for feature extraction. The study carefully evaluates the evaluation parameters such as accuracy, precision, and recall, to ascertain the most efficient preprocessing approach. When dealing with sequential data in intrusion detection systems, utilizing a CNN to classify intrusion is a potent technique. The accuracy and dependability of an intrusion detection model can be improved by combining CNN with preprocessing methods like IQR. By handling outliers using the IQR approach, the CNN model is trained on a more accurate and reliable dataset. From the results obtained proposed IQR+CNN produces Accuracy of 90.3%, Precision of 0.90, Recall of 0.87 and F Measure of 0.9. The tool used is Jupyter Notebook and language used is python.

Enhancing Heart Disease Prediction using Artificial Neural Network with Preprocessing Techniques

R.Mythili, Dr. A.S. Aneetha

Abstract: Heart disease and other cardiovascular disorders continue to be the most prevalent cause of death. ML(Machine Learning) algorithms in particular have shown promise in forecasting for early identification and prevention. Using innovative preprocessing methods like Z-score normalization, IQR outlier handling, and Synthetic Minority Over-sampling Technique (SMOTE) for class imbalance, the present research investigates the use of ANN (Artificial Neural Networks) in the early detection of cardiovascular disease. When compared with various preprocessing techniques, SMOTE and ANN regularly exceed them in terms of precision, sensitivity, and specificity, according to the results of the study. The balanced illustration of both positive and negative cases in the synthesized dataset gives the NN(Neural Network) a more thorough learning experience. Since there are fewer false negatives (greater sensitivity) and false positives (more specificity) due to the ANN model's increased accuracy for forecasting heart disease, there are fewer false positives as well. From the results obtained proposed SMOTE+ANN produces Accuracy of 91%, Specificity of 0.86 and Sensitivity of 0.91. The tool used is Jupyter Notebook and language used is python.

Entropy Binary Dragonfly Algorithm (EBDA) based Feature Selection and Stacking Ensemble Model for Renewable Energy Demand (RED) Forecasting and Weather Prediction

Lekshmi Mohan, Dr. R. Durga

Abstract: Wind speed, solar radiation, weather conditions are famous and extensively used RE sources in the global. As a result of their high carbon content used to produce them, fossil fuels like coal, natural gas, and petroleum cannot be replenished. Demand forecasting heavily depends on irregular renewable sources, whose production is weather-dependent. It was carried out using Machine Learning (ML) techniques. This study proposes a new algorithm to use weather forecasts and data on consumption and generation to generate energy demand. Utilizing a model that extends beyond upcoming day-ahead auction, hourly electricity price forecasting is done. Initially data normalization is used to pre-process the dataset. Then, Entropy Binary Dragonfly Algorithm (EBDA) was introduced to select the most important features at the same time as enhancing the prediction accuracy. Finally, Optimized Stacking Hermite Polynomial Neural Network Ensemble (OSHPPNNE) model is introduced. HPNN parameters are optimized using EBDA to increase prediction accuracy and enhance classification capacity. Kaggle is used to collect hourly energy demand generation and weather datasets. Determining the electrical components by extrapolating them based on influence of weather forecasts on their time, location, climate. Metrics like Root Mean Square Error (RMSE), Mean Absolute Error (MAE), Pearson Correlation Coefficient (r), Nash Sutcliffe Efficiency (NSE) to assess results of forecasting approaches.

Development of Intrusion Detection using Logistic Regression with Various Preprocessing Approaches

R. Saranya, Dr. S. Silvia Priscila

Abstract: Preprocessing is very important to predict Intrusion Detection System (IDS) with respect to any parameters. It entails prepping and converting raw data into a format compatible with Machine Learning (ML) algorithms. ML approaches are used to categorize network activity as either legitimate or malicious to create IDS. For binary classification problems like intrusion detection, one such approach is LR (Logistic Regression). The data must be preprocessed for modeling to be effective. In the present investigation, Min-Max Normalization, SMOTE for controlling class imbalance, and Z-score Normalization were used in conjunction with PCA feature extraction and LR (Logistic Regression) for classification of intrusions. It is possible to considerably increase the accuracy, f1-score, precision, and recall of the IDS by combining the preprocessing method Z-score Normalization for normalization with PCA feature extraction. From the results obtained proposed Z Score+LR produces Accuracy of 88.3%, Precision of 0.86, Recall of 0.84 and F Measure of 0.8. The tool used is Jupyter Notebook and language used is python.

A Deep Learning based Emoticon Classification for Social Media Comment Analysis

S. Sankari, Dr. S. Silvia Priscila

Abstract: Social Network plays a vital role in exchanging information in this smart world. In such situations, the usage of words is an important one to re-strict the abusive information and text in the comment sections. This word usage was restricted by using text mining algorithms and classification techniques. But the word usage was reduced after the emoticons usage. Using emoticons also, the users can convey the harsh comments. As they combine both text and emoticons in their message, the identification of emoticons is important. Based on this, in this work, the identification of emoticons is performed using the Deep learning algorithm called Deep Neural network. Here, the emoticons from different groups were used as the input dataset. This emoticon was processed by using the proposed user defined convolutional neural network layer for emoticon classification. This emoticon classification performance will be analyzed to evaluation metrics. To enhance its accuracy further, the hyper parameters of proposed attention based DNN like learning rate and batch size will be tuned using Particle swarm algorithm. Then, its performance will be evaluated using evaluation metrics for identifying the best deep learning approach for emoticon classification. The whole process will be realized using MATLAB R2022a software.

Efficient Palm Image Preprocessing for Person Identification and Security System Using Machine Learning Approaches

J. Sheela Mercy, Dr. S. Silvia Priscila

Abstract: Due to its non-intrusive aspect and distinctive biometric features, palm print identification technology has attracted a lot of attention recently and is now a crucial part of contemporary security mechanisms. This study explores how to improve palm print image preprocessing methods for security systems using an entirely novel approach called Receiver Operating Characteristic (ROC) assessment. Furthermore, it investigates the extraction of attributes using three well-known techniques: Scale-Invariant Feature Transform (SIFT), Local Binary Patterns (LBP), and Speeded-Up Robust Features (SURF). This study, which highlights its improved performance in terms of Mean Squared Error (MSE), Root Mean Squared Error (RMSE), and Silhouette Score, is important for looking at the collaborative influence of ROC analysis in combination with SURF. From the result obtained we can prove that SURF produces MSE of 0.00248, RMSE of 0.05850, Silhouette Score of 0.6, SSIM of 0.998 and PSNR of 42.35 respectively which is better than other algorithms. The tool used for execution is Jupyter Notebook and the language used is python.

Differential Evaluation Multi-Scale U-NET (DEMSU-NET) Architecture for Classification of Lung Diseases from X-ray Images

A. Balaji, S. Brintha Rajakumari

Abstract: Worldwide, lung diseases are a common occurrence. It consists of pneumonia, asthma, TB, fibrosis, Chronic Obstructive Pulmonary Disease (COPD), and others. However the early detection of this disease is crucial. Thus several Machine Learning (ML) and image processing methods have been introduced for disease detection from images. Deep learning (DL) is an effective ML approach which integrates the procedure of supervised training by feature distribution and unsupervised training to shorten optimization. Lung disease diagnosis from Chest X-Ray (CXR) images has been extensively studied using the U-NET architecture. Differential Evaluation Multi-Scale U-NET (DEMSU-NET) Architecture, multi-scale feature maps are extracted from every convolutional of the U-NET encoder. Noisy or insufficient annotations may decrease the accuracy of U-NET model; it may be solved by auxiliary confidence maps. It takes place less emphasis on the limits of the provided target detection of lung disease. Differential Evaluation (DE) is implemented to adjust the background and foreground weights based on the population X-ray image. National Institutes of Health (NIH) chest X-ray images are gathered from the Kaggle repository to experiment the detection methods. Results of the proposed system and current methods are assessed using measures such as precision, recall, $F\beta$ -score, and accuracy.

Sliding Window Based Multilayer Perceptron for Cyber Hacking Detection System (CHDS)

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

Abstract: Cyber Hacking Detection System (CHDS) plays a major important role to identify any type of incidents that occur in the system. For instance, a successful CHDS could identify when an invader has compromised a system with the help of the system vulnerability. In addition, many CHDS are capable of monitoring reconnaissance activities, which indicate whether the attack is impending or it is for a particular system or the characteristics of a system that carries specific interests to intruders. The major aim of the work is to design a new CHDS. In this paper, pre-processing SMOTE algorithm and Linear Discriminant Analysis (LDA) by feature selection has been introduced for CHDS. SMOTE preprocessing in Cyber Hacking Detection System (CHDS) can result in a representative and well-balanced training dataset. The LDA method determines a projection vector that decreases the within-class scatter matrix in the feature space while increasing the between-class scatter matrix. For classification, X Gradient Boosting, K Nearest Neighbor (KNN) and Sliding Window based MultiLayer Perceptron (MLP) is used for CHDS. MLP classifier is a set of input-based values to their corresponding outputs. From the results obtained, the proposed Sliding Window based MLP produces Accuracy of 90.70%, Precision of 0.89, Recall of 0.87. The tool used is Jupyter Notebook and the language used is python.

You Only Look Once (YOLO) with Convolution Neural Network (CNN) Classification for Preterm Baby's Retinopathy Images

G. Hubert, Dr. S. Silvia Priscila

Abstract: Retinopathy of Preterm (ROP) is becoming more common in babies as the number of preterm individuals grows dramatically around the world. ROP can be effectively treated, but it requires constant screening and early diagnosis. Implementing a computer-aided approach based on image processing is among the simplest ways to diagnose ROP. Deep learning approaches have shown to be quite effective in medical image analysis in this regard. For Noise removal Laplacian of Gaussian (LoG) filter is used. In comparison to Random Forest (RF), Artificial Neural Network (ANN) and Convolutional Neural Network (CNN), the method proposed in this research aims to detect the ROP by using YOLO algorithm to accurately detect and classify retinal fundus images according to its severity. Dataset is collected from Kaggle and the Python package. The experimental studies show that the suggested work is stable, trustworthy, and yields promising ROP detection results with accuracy of 94.63%, sensitivity of 0.94, specificity of.

Twitter Sentiment Analysis Tweets using Hugging Face Harnessing NLP for Social Media Insights

V. Jayalakshmi, Dr. M. Lakshmi

Abstract: In the era of information overload, social media platforms like Twitter have become invaluable sources of real-time public sentiment. Sentiment analysis, the process of gauging the emotional tone of text data, plays a pivotal role in extracting insights from these vast repositories of user-generated content. This paper presents a comprehensive exploration of sentiment analysis on Twitter tweets using Hugging Face, a leading natural language processing (NLP) library. This study harnesses the capabilities of Hugging Face's models, particularly transformers, to perform sentiment analysis on Twitter data. It delves into the methodology of data collection, preprocessing, and model selection, showcasing the versatility of Hugging Face's transformer models. The practical applications of this research are far-reaching. By analyzing Twitter sentiments, can uncover valuable insights for businesses, policymakers, and researchers. Sentiment analysis on Twitter can help companies gauge the reception of their products or services, enabling data-driven decision-making. Policymakers can utilize sentiment analysis to gauge public opinion on critical issues, aiding in the formulation of effective policies. "HugSent" represents a state-of-the-art sentiment analysis algorithm, leveraging Hugging Face and NLP techniques. This cutting-edge method has demonstrated an exceptional level of accuracy and reliability with perfect precision, recall, F1-score, and support values of 1.00 for sentiment categories, 1 and 0. These refinements aim to enhance its versatility and practicality, catering to industry-specific needs, and making it a more adaptable and nuanced tool for sentiment analysis in diverse contexts.

Efficient Development of Intrusion Detection Using Multilayer Perceptron Using Deep Learning Approaches

R. Saranya, Dr. S. Silvia Priscila

Abstract: The term cyber-attack or intrusion is expanded as an unauthorized process that includes one or more of the above three components of the network system. The intrusion detection (ID) process helps the administrator of the system to build up security mechanisms that recognize the legitimate or illegitimate of the system. The illegitimate user of the network system is named an intruder which can be a person within the organization or outside the organization. IDS are constructed with the concept of observing the unauthorized behavior of the user concerning the authorized behavior activities. The deviation noted based on the comparison is considered an intrusion. Many novel techniques are developed through research to observe and identify the current activities. In this research three algorithms namely R-SVM, Adaptive Boosting and Multi-Layer perceptron have been used. From the results obtained Multi-Layer perceptron produces Accuracy of 92.3%, Precision of 0.89, Recall of 0.87 and F Measure of 0.8. The tool used is Jupyter Notebook and language used is python.

An Efficient Filtering Technique for Detecting Vehicle Traffic in Real-Time Videos

S. Shamimullah, Dr. D. Kerana Hanirex

Abstract: Filtering strategies are frequently used in instantaneous video processes, particularly for applications such as identifying items for traffic recordings, to increase the standard of the footage frames and the precision of object recognition processes. Several varieties of filters can be employed for this, including the Kalman filter, mean filter, and Wiener filter. Key photographic metrics involving PSNR (Peak Signal-to-Noise Ratio), SSIM (Structural Similarity Index), and MSE (Mean Squared Error) are used to evaluate how well these filters work. According to findings from experiments, the Kalman filter operates better based on PSNR, SSIM, and MSE numbers than conventional mean and Wiener filters. Improved visual clarity is the result of the Kalman filter's greater decrease in noise skills and preservation of the underlying structure of the film's pixels. As a result, the precision of current traffic object recognition systems is greatly improved by these excellent frames. Applying the Kalman filter produced noticeably better outcomes for each studied output parameter producing MSE of 0.000123, PSNR of 42.35 and SSIM of 0.998 respectively. The tool used for execution is python.

Efficient Feature Extraction Method for Detecting Vehicles from CCTV Videos using a Machine Learning Approach

S. Shamimullah, Dr. D. Kerana Hanirex

Abstract: A critical task in the field of monitoring and traffic administration is the identification of vehicles in CCTV footage. The scope of the proposed work is vehicles detection from CCTV videos. This article provides a thorough analysis of three well-known feature retrieval methods for detecting vehicles in CCTV images: SURF (Speeded-Up Robust Features), HOG (Histogram of Oriented Gradients), and KAZE. RMSE(Root Mean Square Error), MSE(Mean Square Error), and Silhouette Score are some of the assessment measures used in this study. In terms of RMSE, MSE, and Silhouette Score, the research results show that KAZE operates better than SURF and HOG, proving that it's better at detecting fine features and durability in a variety of lighting and settings. The novelty of proposed work is better at vehicle detecting fine features from CCTV videos. This research also emphasizes how crucial it is to use the right feature extraction methods for precise and effective vehicle identification in practical settings. Applying the KAZE produced noticeably better outcomes for each studied output parameter producing RMSE of 0.02709, MSE of 0.000115 and Silhouette Score of 0.2 respectively. The tool used for execution Jupyter Notebook and language used is python.

Efficient Segmentation of Cervical Cancer using Deep Learning Techniques

Tonjam Gunendra Singh, B. Karthik

Abstract: Cervical cancer is a major health concern, and healthcare images play a major role in the analysis and handling of this disease. Three popular deep learning models that can be applied for cervical tumor identification and segmentation. The 3D U-Net model is a customized version of the standard U-Net framework, designed to handle 3D medical imaging data. DeepLab v3+ is another popular semantic segmentation model that uses atrous convolution to combine fine multi-scale related data. RPN is a popular object recognition model that applies a deep CNN to propose candidate regions in an image that may contain an object of interest. The cervical Cancer Risk Classification Dataset is collected from UCI Repository for assessment of the suggested DL models. The outcome of the DL models is evaluated based on the Dice Similarity Coefficient (DSC), Hausdorff Distances (HD) and Kappa Score (KS). Among the three models 3D U-Net provides better outcomes based on measured output metrics and gave DSC of 0.996, KS of 0.820 and HD of 9.7526 respectively. The tool used for execution is Matlab.

A Novel Method for Efficient Resource Management in Cloud Environment using Improved Ant Colony Optimization

Dr.M.Yogeshwari, Dr.S.Sathya, Dr.Sangeetha Radhakrishnan, A.Padmini, M.Megala

Abstract: Cloud has a revolutionary change in Information Technology (IT) for data storage and retrieval operations compared to the traditional system. The drastic change in demand for cloud services has put several challenges for efficient resource allocation to customers. Moreover, competitive cloud service delivery and Service Level Agreement (SLA) violation have required a proficient technique to manage cloud resources. But, traditional resource management policies are unable to provide an appropriate match, hence inappropriate match leads to performance degradation. Swarms are capable of efficiently identify resource requirements through the computation process by using the available number of Virtual Machines (VMs) and allowing their optimal utilization. This research work has opted Ant Colony Optimization (ACO). The new proposed Adaptive Resource Availability Based Multiple Ant Colony Optimization (RABMACO) algorithm has generated an optimal solution for VMs allocation based on availability. The research work addressed in the way for developing a method used to optimize the performance of existing cloud environment by taking parameters for ACO algorithm, which was further experimentally determined. Then, the ACO algorithm has been optimized to the next level by developing resource availability based VM configuring and allocation. The experiment has been implemented with Datacenter, Host and a set of 5-50 VMs for running 100-1000 tasks of Montage dataset under the work flow simulation platform. The results have been evaluated on the basis of execution cost, execution time and VMs utilization. It has improved the availability of resources by releasing VMs earlier for performing next set of tasks.

Study on Analysis of Defect Identification Methods in Manufacturing Industry

Vinod Kumar Pal, Dr. Pankaj Mudholkar

Abstract: The quality check, control and monitoring is an important aspect of any product in the industry. The early detection of product defects is crucial in quality control in manufacturing. Automatic defect-detection technology has more advantage over manual detection of defects. In the first part of the paper, we present a general taxonomy of the different defects that fall in six categories Stain, pitted surface, Crack, black spots, Line and Mono weld defect. These defects would result in increase of cost and service life of manufactured product. This paper presents the state of the art traditional methods and learning based approach in defect detection in the manufacturing industry. We continue with a survey of various defect detection based on statistical, spectral, model based approach and learning based approaches. The main purpose of this study to classify the defects of the products, such as fabric material, steel, metal parts, leather product, beverages product and ceramic tiles. The automated defect detection methods and algorithms have been reviewed in depth with their characteristics, defect detection accuracy, strengths, and shortcomings.

An Efficient Algorithm for Vehicle Detection and Counting

Puhsp B. Patil, Samreen Mulla

Abstract: The implementation of detection technology in captured videos extends across various domains. This emerging technology when implemented over the real-time video feeds could even be beneficial. The supreme good thing about vehicle detection within the real-time streaming video feed is to trace vehicles in busy roads or Bridges. An accident occurred anywhere which may rather be detected. This paper looks into the difficulty of current existing problems the fields of unsupervised surveillance, security, support from traffic police etc. Improved algorithm Single Shot MultiBox Detector (SSD) and machine learning frameworks Open CV, Tensor Flow are utilized for the implementation of detection for automobiles. Different methods are employed to find and tally the quantity of automobiles. Even the count of automo- biles being counted from night time videos is made easier with this method.

Malaria Detection using Smear Images

Dr .Mahesh U. Nagaral, Mohammadi Jamadar

Abstract: Malaria is induced by parasites belonging to the Plasmodium genus, a blood disease spread by mosquitoes. The traditional method of diagnosing malaria involves examining the patient's stained blood cells under a micro-scope. The rapid and accurate detection of the illness in microscopic images of blood smears is essential for the treatment and control of malaria. This paper presents an approach to malaria detection utilizing a recurrent neural net-work(RNN) with long short-term memory(LSTM), renowned for its ability to effectively process sequential input. A skilled technician examines the slide while paying close attention to both visual and mental details. In this study, Plasmodium parasites in blood smear slides were identified and measured using a novel approach in image processing that produces a machine learning system that can gather, distinguish, and classify different types of infected cells.

An Exploration of Human Brain Activity using BCI with EEG Techniques

N. Sakthivel, M. Lilly Florence

Abstract: Brain-computer interface (BCI) acts as an important domain to determine human brain activities. Human Brain activities can be determined through various interfaces or electronic gadgets. BCI acts as an interface between the human brain and the computer. This paper describes various terminologies of wavelength used to determine human activities. It also describes the mode of detection of BCI such as MEG, fMRI, NIRS, and EEG with their classification, methodologies, and components. This Paper provides an exploration of various approaches and adaptations of the human brain's activities with various EEG techniques.

Predicting Student's Campus Placement Chance using Machine Learning Algorithms

Vinod S. Agrawal, Sarika Shelke Kadam

Abstract: This research paper focuses on the prediction of placement chance for student. This research paper works on students academic records like 10th, 12th, Graduation score, Graduation trade, PG score, work experience etc. In this research paper we are going to predict the placement chance of student using various machine learning models (algorithms) based on the historical academic records and to validate hypotheses regarding significant relationships between these academic records and a student's placement success. To accomplish this, we have used SPSS (Statistical package for Social Sciences) tool for analyzing the dataset. By using SPSS, we assess the statistical significance of each variable in relation to the placement outcome. The results not only validate the hypotheses but also contribute to the understanding of the factors influencing a student's placement chances. However, this endeavor is not without its challenges. obstacle is the potential presence of outliers and anomalies in academic records, which could impact the reliability of the predictive models. Furthermore, the integration of work experience into the predictive framework adds another layer of complexity. Capturing the impact of work experience on placement success requires careful consideration.

Review on Boosting Online Advertising ROI: using Machine Learning

Ms. Vishnuba Chavda, Dr. Savan Patel

Abstract: Engagement of users with internet encourage and makes online advertisement as one of the prominent marketing strategy compare to traditional advertisement. Online advertisement marketing industry earn good amount of ROI floating marketing message on various online platform like social media, search engine, video marketing etc. With the diverse usage of online platform and variety of digital devices online industry struggling to reach right audience at right time with right content. Integration of machine learning techniques helps to reach target audience and maximize ROI in online advertisement Industry. Machine learning algorithm works on huge volume of data to predict probable customer and also helps to increase effectiveness of advertisement campaign. This review paper presents a comprehensive examination of the current state of research and practice in the domain of leveraging machine learning to enhance online advertising ROI.

Role of 5G Internet in Smart City Applications using IOT and AI/ML

Sujata Kondekar, Ashwini S. Nandure, Renuka Patil

Abstract: This paper delves into the life changing ascendancy of 5G on the Internet of Things (IoT) ecosystem. We examine how 5G's enhanced capabilities have amended the perspective of IoT, AI/ML applications by enabling real-time data processing, remote control, and seamless integration across industries. Through comprehensive analysis and case studies, we highlight the profound impact of 5G on IoT in areas such as healthcare, smart cities, agriculture, and industrial automation. Additionally, we address the challenges and opportunities brought about by this synergy, including security concerns, scalability, and the emergence of new business models. This research underscores the pivotal role of 5G in driving the evolution of IoT, unlocking its full potential to revolutionize how we live, work, and interact with our surroundings.

Comprehensive Survey of Machine Learning Techniques for Ear Recognition System

Ulka P. Patil , Dipak.N.Besekar, Suhas G. Sapate

Abstract: Ear biometrics is non contacting and so it can be applied for identification of a human at a distance, making it a helpful supplement to facial recognition, law enforcement, crime investigation etc. Although ear detection and identification systems have rapidly improved to a certain extent, their success is still confined to specific circumstances such as an occlusion of hair. A major challenge for researchers nowadays is to recognize human based on ear with pose variations and occlusion. This summarized survey aims at identifying the research gap which is helpful in proposing a novel machine learning approach as a pathway for budding researchers. Most of the selected articles have common and a wide variety of preprocessing, feature extraction techniques such as SIFT, Gabor filter, shape features are gain. Performance of all surveyed methods is evaluated for comparison purposes using evaluation metrics such as Precision, Recall and Accuracy. The challenges before an effective Ear recognition system are discuss. This comprehensive survey article will be useful for identifying research gaps as a pathway for the same researchers to get the idea regarding of Ear recognition system which further can be transformed into a marketable product. This article at the end presents the prototype model.

Rule Based Approach for Contextual Classification of Twitter Dataset

Mr. L.K. Ahire, Dr. S. D. Babar, Dr. P. N. Mahalle

Abstract: The amount of data on social networks and the number of users has been growing quickly in recent years. Any time an event or activity occurs nearby, nearby individuals express their thoughts and reactions on social media. When a new product is introduced, users on social media platforms also comment on it. It is challenging to ascertain the genuine state of emotions because of sophisticated ways of presenting various perspectives. Sarcasm is the use of words to convey a negative emotion in a humorous way. Machines have an extremely difficult time comprehending and recognizing these caustic remarks when trying to discern sarcasm from text, it helps to know the context of the content. In this research, we propose a novel method called the Rule Based Approach for Contextual Classification (RBACC), which uses the context of tweets to identify sarcasm using a variety of already available methods. RBACC uses four features that were taken from tweets that were acquired using the tweeter API, and rule-based evaluation is done using the linguistic data of the four characteristics. The RBACC technique ensures flexibility and energy efficiency, according to experimentation. The RBACC technique is also scalable because performance and functionality are unaffected by an increase in the quantity of tweets. Results demonstrate that RBACC accurately identifies the context of text when given a variety of datasets that contain both type of data balanced as well as imbalanced.

Performance Evaluation of GPT for Sentiment Analysis of Movie Reviews in Indian Languages

Nikita Desai, Ayush Thakor, Dev Desai, Rajan Patel

Abstract: This study evaluates GPT's performance in sentiment analysis of Indian-language movie reviews, focusing on Hindi and Gujarati. Trained primarily on English data, the model's accuracy in predicting sentiments beyond English is investigated using a 0-shot approach. The observed accuracies present a nuanced landscape of GPT: 61% for Hindi reviews, 59% for Gujarati reviews, 40% for sarcastic Hindi reviews, and 17% for sarcastic Gujarati reviews. The findings reveal varying levels of success, highlighting GPT's strengths and areas for improvement, especially in neutral sentiments and nuanced cases like positive sarcastic reviews. The research establishes a foundation for future NLP advancements in sentiment analysis across diverse languages. By explicitly discussing GPT's results, the study provides valuable insights into its potential as a tool for sentiment analysis in multilingual contexts. Emphasizing the need for continued refinement, the research outlines a roadmap to address unique challenges, marking a crucial step toward optimizing GPT's performance in languages beyond English.

Automated Narrative Craft: Exploring Machine Learning in Story Generation

Lakshmi Padmaja Dhyaram, Mrunalini Kota,
Krishna Sriharsha Gundu, Surya Deepak G

Abstract: With the advancements of Artificial Intelligence, we currently have NLP software like Grammarly that takes care of correctness, clarity, engagement of readers and also provides tone detection of text. However, they are only useful for grammatical purposes. For complex NLP tasks such as story generation, models such as machine translation, summarization or segmentation etc. has no relationship with the plot, events, actions and characters of a story. It purely focuses on the correctness and optimization of the given text. This led to the development of statistical and neural language models. Story generation by machines produces a story from a set of inputs using artificial intelligence. The aim of the paper is to examine numerous procedures used for Story Generation and to figure out the most competent procedure that can be adopted. This paper is a comparative study on some of the existing neural story generation algorithms. It seeks to identify the how far a story can be made interesting and relevant by neural networks.

Wood Surface Defect Detection using Discrete Wavelet Transform and Deep Net Model

Rohini A. Bhusnurmath, Shaila Doddamani

Abstract: In the realm of the modern economy, wood structures and products hold immense significance, serving a wide array of applications. However, within production systems handling wood raw materials, numerous challenges arise. The high variability in raw materials, accompanied by a diverse range of structural flaws, presents complexities in the production processes. Verifying these flaws, whether online or offline remains a critical task, often relying on manual inspection. Yet, manual procedures not only encounter challenges and biases but also prove ineffective and misleading. The study shows discrete wavelet analysis's effectiveness in defect detection across diverse wood types. However, accurately classifying defects becomes challenging due to the complexity of higher-level directional coefficients obtained from DWT. To address this, the proposed DWT-Deep-Net model combines CNN and RNN (LSTM). This fusion simplifies defect classification after DWT, using mean square energy from detailed coefficients, enhancing defect diagnosis across various deep learning classifiers. In the DWT-Deep-Net model, the CNN and LSTM components work in tandem: the CNN adeptly extracts abstract features from raw subsequence data, automating this process, while the LSTM specializes in capturing long-term relationships within time series inputs. This integration allows for efficient extraction of abstract feature representations from the data, optimizing the classification process. Notably, the proposed methodology demonstrates superior classification accuracy when compared to existing state-of-the-art methods. This enhancement in accuracy underlines the effectiveness of this combined CNN-LSTM approach in addressing the challenges posed by defect classification post-DWT decomposition, offering promising results for wood defect detection.

Convolutional Neural Networks with the ID3 Algorithm: A Hybrid Approach for Accurate Retinal OCT Analysis

Dr. Aziz Makandar, Miss. Nayan Jadhav

Abstract: This proposed work explores advancements in medical imaging, with a focus on the diagnosis of retinal diseases using Optical Coherence Tomography (OCT). The research introduces a comprehensive approach that integrates various techniques to enhance the accuracy of retinal OCT analysis. The preprocessing phase incorporates the Kernel Bilateral Filter (Kernel BF) to effectively reduce noise in OCT images while preserving essential edge information, thereby improving image quality for subsequent analysis. Following this, Linear Histogram Transformation (LHT) is applied to enhance image contrast, emphasizing subtle structural features without compromising integrity. Feature extraction is performed using Convolutional Neural Networks (CNNs), renowned for their capacity to extract intricate features from images. The CNN captures high-level representations of retinal layers, providing enriched information for subsequent classification. These extracted features form a robust basis for accurate disease discrimination. The classification stage employs the Iterative Dichotomiser 3 (ID3) algorithm, a decision tree-based technique known for its simplicity and interpretability. ID3 constructs decision trees by selecting optimal features for informative splits, effectively categorizing retinal OCT images into disease categories. The iterative nature of ID3 allows for the refinement of the decision tree, adapting to complex data distributions.

A Comprehensive Study of Machine Learning Algorithms to Predict Autism Spectrum Disorder (ASD)

Ms. Pournima P Bhangale, Dr. Rajendra B Patil

Abstract: Autism Spectrum Disorder (ASD) is a multifaceted neurodevelopmental condition marked by a diverse set of symptoms concerning social communication, limited interests, and repetitive actions. Primary diagnosis and intervention are vital for improving the quality of life for those with ASD and their families. In this study, we conduct a comprehensive investigation into different prediction algorithms for ASD. We collect diverse datasets, perform data preprocessing, employ feature selection and engineering techniques, and evaluate the performance of various algorithms like Random Forest(RF), Naive Bayes(NB), Support Vector Machines(SVM). Our findings shed light on the strengths and limitations of different algorithms in predicting ASD, contributing to improved diagnostic and predictive capabilities in ASD research and clinical practice.

Deep Learning RBFNN MPPT Development for Hybrid Energy Microgrid

R. SathyaPriya, Dr. V. Jayalakshmi

Abstract: The role of a significant Maximum Power Point Technique (MPPT) in augmenting the energy extraction and conversion efficiency of a variable power source such as Photovoltaic (PV) system is indispensable. So, an effective Radial Basis Function Neural Network (RBFNN) MPPT approach, which is based on Gaussian activation function is adopted in this work owing to its exceptional attributes of quick learning and universal approximation. The proposed approach focusses on the working of a microgrid that entails Wind-PV-Battery along with a capacitor bank. The fluctuation in power output caused by varying weather conditions inherent in wind and photovoltaic (PV) primary energy sources can be effectively mitigated by integrating a Battery Energy Storage System (BESS). The inclusion of a capacitor bank provides the essential voltage stability to the microgrid by minimizing the effects of voltage fluctuations in addition to storing of surplus electrical energy. Achieving a consistent and steady power supply from photovoltaics (PV) is accomplished by employing a DC-DC Boost converter alongside the RBFNN MPPT technique. Utilizing a Proportional Integral (PI) controller manages the Pulse Width Modulation (PWM) rectifier, facilitating the establishment of a reliable DC power source from the Doubly Fed Induction Generator (DFIG) within the Wind Energy Conversion System (WECS). A three-phase voltage source inverter (3ϕ VSI) is used to convert the stable DC link voltage to AC, and an LC filter is used to reduce harmonics. The grid voltage synchronization is accomplished based on dq theory with the assistance of PI controller. The performance of RBFNN MPPT in heightening the efficiency of PV system is appraised using MATLAB simulation and the RBFNN MPPT technique is estimated to operate with an excellent efficiency of 97%.

Image Splicing Detection: A Deep Learning based Approach

Bhavana Kaushik, Smita Jha, Vishwa Pratap, Vinay K, 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.

Facial Recognition using Webcam through the Strategies of Deep Learning

Simrin Fathima Syed, Rajgopalan Suresh

Abstract: The most significant function in face recognition may be seen in the detection and extraction of facial expressions. This study employed RNN (Recurrent Neural Network) for the extraction and classification of features and the radial basis function to develop a deep learning method for automatically detecting live facial expressions. Otsu algorithm detects edges of the face picture as well as helps in best backgrounding. The findings of the implementation were tested on the Kaggle facial expression database with the crowd expressions recognition and five facial expressions of an Indian male namely happy, anger, disgust, neutral and surprise. Typically, a practical recognition system may record numerous facial photographs from each individual using a camera or a computer. A possible tactic for enhancing the system's performance is selecting face photos with high tones. For analyzing the facial expression, the authors have suggested a learning-to-rank system based on a strong fundamental structure that may be used to build more complex systems. The process of feature extraction is improved by this phase. In pattern recognition, it is common to create a picture from its component parts. For the identification of expressions, the identification rate has become as high as 99.97%. The accuracy and loss values are calculated using the suggested system. When this method is compared to the prior algorithm, suggested algorithm outperformed the prior algorithms. This can be used to collect, collate, analyse, and make a pattern of people's state of mind to identify those who may require counseling. The facial expression recognizing people under depression can be extracted, followed up, pattern drawn and further recommended for suitable counseling. The project will be very useful if implemented in studying and counseling students in colleges and universities. The application is also useful to detect in what condition people are at a certain point of time. The main aim of this research work is that it benefits the society, stressed students in institutions particularly through live data detection, analyzing and understanding the condition in which the person is.

Proposed Kidney Disease Optimized Multi-Layer Perceptron (PKD-OMLP) Classifier for Disease Detection

Preethi.I, Dr. K.Dharmarajan

Abstract: Kidney diseases are commonly viewed among people. Medical analysis of Chronic Kidney Disease (CKD) is performed with a blood test and urine test. In recent times, data mining and analysis concepts are implied for predicting CKD through the application of patient details and recorded data. At this moment, predictive analysis modeling such as Support Vector Machine (SVM), Multilayer Perceptron (MLP), Linear Regression (LR) and proposed Optimized Multi-Layer Perceptron (PKD-OMLP) is executed for predicting CKD. Pre-processing is employed for reducing the level of misplaced data and impure data. During the processing stage, the identifiers are spotted which aid in the model forecasting. The selected three types of predictive algorithms are assessed and appraised relying on their prediction accuracy, precision values, and recall. The research study provides a decision-making tool that supports the forecasting of kidney diseases. The main goal of the study is to recognize CKD diseases at an earlier stage with the assistance of Machine Learning (ML) models like Linear Regression (LR), Support Vector Machine (SVM), and Multi-Layer Perceptron (MLP). In this study, models are designed with the use of Python programming with Python 3.7.0 and their performance is contrasted concerning the recall, accuracy rate, and precision.

Text Classification with Automatic Detection of COVID-19 Symptoms from Twitter Posts using Natural Language Programming (NLP)

N. Manikandan, Dr. S. Thirunirai Senthil

Abstract: Numerous nations have enacted total lockdowns in an effort to contain the Covid-19 pandemic, which is spreading quickly throughout the globe and claiming millions of people every day. As people tended to vent their emotions through social media during this time of lockdown, these channels were crucial in helping to distribute information about the pandemic around the globe. We created an experimental methodology to examine Twitter users' reactions while taking into consideration the terms that are frequently used to refer to the epidemic, either directly or indirectly. In order to carry out the text classification, the TF-IDF method is upgraded (TF-IDCRF) in this study. The dataset involved with 44,995 tweets from all over the world and the DL approach is utilized for improving classification accuracy by addressing the issue in inadequate classification of feature category. Finally, the suggested approach is compared to two DL methods with TF-IDF algorithms with Long Short Term Memory (LSTM) and Gated Recurrent Unit (GRU) and the better prediction of tweet category is determined in which GRU performs high accuracy as 92.4% than LSTM technique.

Efficient College Students Higher Education Prediction Using Machine Learning Approaches

L. Lalli Rani, Dr. S. Thirunirai Senthil

Abstract: Nowadays many students get enrolled in schools and colleges for their academic career. Early identification of students at danger level, alongside precautionary measures, can completely work on their richness. Recently, ML methods have been widely utilized in the education domain to forecast the performance of students. Predicting higher education rates using machine learning can be approached in several ways, based on the existing data and the definite factors being considered. In this paper, pre-processing, selecting features, reformulating the problem, learning the model, predicting performance, and analyzing results has been used as major steps. SVM, RF, and CNN approaches are applied to prognosis the performance of the learners. The suggested model is designed using Python software and the accuracy of the models is compared. Among the three models, CNN can produce a better result by giving accuracy of about 90.75% and Precision and Recall of about 0.90 and 0.88. Predicting higher education rates using machine learning can provide valuable insights into future trends and help stakeholders.

Efficient Lung Cancer Segmentation using Deep Learning-based Models

Monita Wahengbam, Dr.M. Sriram

Abstract: The most hazardous disease the globe is now dealing with is cancer-ous. It is challenging to find cancerous nodules inside the lungs, although many techniques have been used to do so. Lung cancer segmentation is a process of identifying and isolating lung cancer tissues from medicinal picture like CT or MRI scan images. This process is essential for accurate diagnosis and manage-ment planning of lung cancer. Computing techniques can be used to automate and increase the accuracy of lung cancer dissection. Deep Learning (DL) is a popular technique used in medical image analysis. It has become increasingly important in lung cancer segmentation is the main research work nowadays. This study applied three DL approaches like U-Net, V-Net and the Mask R-CNN for lung cancer separation. Among the three techniques, the U-Net model provides better outcomes based on their evaluation metrics like Accuracy, Sen-sitivity and Specificity. From the results obtained the proposed U Net gives ac-curacy of about 97% to 98.4%, Sensitivity of about 88.3% to 91% and Specific-ity of about 93.2% to 94.6% respectively. The tool used for execution is Matlab.

Lung Cancer Classification Using Deep Learning-Based Techniques

Monita Wahengbam, Dr. M. Sriram

Abstract: Cancer is currently the most dangerous sickness the world has to cope with. Finding malignant nodules inside the lungs is difficult, despite the fact that numerous methods have been employed. The process of recognizing and separating lung cancer tissues from medical pictures such as CT or MRI scans is known as lung cancer segmentation. This procedure is necessary for a precise lung cancer diagnosis and treatment planning. Lung cancer dissection can be made more accurate and automated with the help of computing technol-ogy. Cancer in lung is one of the primary reasons of demise universal. Timely recognition and accurate diagnosis are critical for improving patient outcomes. In this research study, the authors examine the use of three different DL(Deep Learning) classifiers, namely CNN (Convolutional Neural Networks), RNN (Recurrent Neural Networks), and SAE(Stacked Autoencoders) for the catego-rization of lung malignancy from CT(Computed Tomography) images. The performance of these models is compared in form of accuracy, sensitivity and specificity. The investigational outcomes show that the CNN model outper-formed the other models with an accuracy value of 92.63-%, the sensitivity rate of 0.91 and specificity value of 0.89. The tool used for execution is MATLAB.

Standardization in Cloud Computing: Unlocking the Potential of a Fragmented Industry

Aayush Kulkarni, Dr. Mangesh Bedeka

Abstract: The rapid ascent of cloud computing has transformed data management for both businesses and individuals. Despite its unprecedented growth, the industry grapples with formidable challenges, including vendor lock-in, interoperability issues, and security concerns. This paper advocates for the pivotal role of standardization in unlocking the full potential of cloud computing. We propose a comprehensive set of measures and regulations, focusing on the standardization of Application Programming Interface (APIs), Service Level Agreements (SLAs), cloud security, and data formats, complemented by the establishment of regulatory bodies. The multitude of cloud service providers (CSPs) offering diverse services, pricing models, and billing metrics has resulted in a lack of uniformity, complicating organizations' efforts to compare and optimize cloud resources effectively. Vendor lock-in is further exacerbated by proprietary systems, stifling competition, compromising data security and privacy, and hindering innovation. To address these challenges, we emphasize the adoption of standard APIs and SLAs to enable seamless integration between CSPs. The standardization of data formats is proposed to facilitate effortless data transfer between providers, providing enhanced flexibility for users. The establishment of regulatory bodies is advocated to ensure strict adherence to industry standards, fostering a more unified and standardized approach to cloud computing. Embracing these measures is envisioned to foster a harmonized cloud ecosystem, reducing fragmentation, stimulating innovation, and ultimately empowering businesses and individuals with heightened efficiency, security, and peace of mind. The call for standardization aims to level the playing field for businesses, irrespective of size, fostering healthy competition, and driving improved services and cost-effectiveness.

Call Data Records/Internet Protocol Data Records Analysis Using K Means and RFM Algorithm

Yeshasvi, Siddha Mehta, Simran Mehta, Utkrisht Trivedi,
Sonali Kothari, Snehal Bhosale, Pritam Shah

Abstract: Analysis involves looking at information we have and finding important connections in it. Law enforcement groups use detailed phone call and internet usage records, given by cell service providers, for thorough investigations. The data they receive is enormous, making it really hard to study. In this project, we focus on studying Call Records and Internet Protocol Details. Analyzing these records closely is crucial in solving crimes. It helps investigators quickly go through millions of people's records, and the results can be visualized graphically, making it easier for law enforcers to solve crimes. Usually, people causing trouble in society are linked to each other and give clues about specific groups' crimes. This makes analyzing phone and internet records super useful. This paper talks about how we use these records to detect fraud. We use methods like K-Means and Map Reduce for call records, RFM for internet records, and create graphs to display connections. The dataset utilized in the project is generated using scripts which has around ten thousand instances of data. Furthermore, feature selection was performed to increase the performance of the suggested model.

Revealing Insights into Criminal Behaviour: Exploring Patterns and Trends through Machine Learning Predictive Models.

Dr. Manisha M. Patil, Mr. Jatinkumar R. Harshwal,
Ms. Shivani M. Patil, Dr. Janardan A. Pawar

Abstract: This research paper explores the feasibility of machine learning models in predicting human criminal behavior based on historical and collected datasets. The study design involves data collection from public records, past criminal records, and evidence such as audio and video materials. The collected data is segregated according to specific requirements for analysis. Analytical techniques employed in this research include linear regression, K-Nearest Neighbors (KNN), Support Vector Machines (SVM), RNN, random forests, logistic regression, and Auto-encoders. Through extensive experimentation on diverse datasets amounting to 15.7GB, the proposed models yielded an overall prediction accuracy of 83.6%. The study contributes to the development of an artificial criminal behavior deduction model. However, it is essential to acknowledge the complexity and ethical implications of predicting human behavior. The paper emphasizes the need for caution in interpreting results and highlights potential biases and un-certainties. This research strives to present a comprehensive analysis of machine learning's potential in understanding human criminal mindsets, raising awareness about the capabilities and limitations of current predictive models.

Securing Confidential Information on WhatsApp with Blockchain Technology

Urmila Pilonia, Manoj Kumar, Sanjay Singh,
Prateek Adhalkha, Tushar Satija

Abstract: The protection of sensitive information is a major concern in today's world. However, when it comes to preventing unauthorized screenshots, technology has yet to catch up. Despite this, the concept of securing data is not new, as we now live in an era where human beings are constantly connected to the internet, which is accessible 24/7 like a public park. Information is being shared at an incredible rate every second, and some of this information is particularly sensitive. If it falls into the wrong hands, it can lead to significant losses. This paper proposes a blockchain-based solution to prevent the misuse of WhatsApp screenshots. By using blockchain technology to create a network of shareable images, which are identified by their address and maintain a record of their previous sharing history, security can be improved. This approach also eliminates the need for a middleman to transmit data, reducing the cost of the proposed system.

A Text Encryption Approach for IoT Devices to Prioritize Security and Efficiency

Urmila Pilania, Manoj Kumar, Sanjay Singh,
Shrey Futela, Nachiketa Jha

Abstract: Encryption techniques are commonly used to protect the information, ensuring not only privacy but also data authentication, integrity, confidentiality, and availability. The security of these techniques depends on both the internal structure of the algorithm and the underlying mathematics. A crucial factor in the strength of the technique is the secret key if the key is compromised, the encryption technique becomes ineffective. Therefore, choosing the type of information used as a key, how the private key is distributed, and how the communication key is protected are all critical factors in encryption techniques. This work proposes a symmetric key algorithm to protect text messages, using a variable-size key that can be in the form of a number or text.

Network Traffic Classification: Solution to Detect Intruder

Sujata N. Bhosle, Dr. J.D. Pagare

Abstract: Network Traffic Classification is a challenging task in the of intrusion detection. Using the network traffic classification techniques, admin can identify whether the incoming request is genuine or fake. NTC can be done in 2-class and multi-class classification. In this paper, we have discussed the approaches such as port based; Flow-based which are helpful to tackle the intrusion, so Many researchers are finding ways to do proper classification. Some datasets are available for Network traffic Classification such as KDD'99, NSL-KDD, HIKARI-2021 AND UNSW-NB15; we have elaborated characteristics and effectiveness of dataset. We have provided existing literature study which will be helpful for the researcher to compare the techniques and results, Naïve Bayes classifier is widely used technique. UNSW-NB15 is an open-source dataset available for researchers to compare their results. This paper summarizes the statistical description of the dataset UNSW-NB15.

Review on Privacy Preservation Techniques and Challenges in IoT Devices

Prakash Meena, Dr. Brijesh Jajal, Dr. Samraat Khanna

Abstract: The Internet of Things has revolutionized by connecting everyday objects to the Internet, we interact with our surroundings. However, the massive procreation of IoT devices has heightened serious concerns about privacy and security. This article presents a comprehensive review of privacy preservation techniques and challenges in IoT devices. It explores various privacy-enhancing technologies and discusses the current state-of-the-art research in the field. The article also highlights the challenges faced by IoT devices in preserving user privacy and identifies potential solutions. Also, the article illustrates the privacy leakages in IoT. The findings of this review contribute to a better understanding of privacy issues in IoT and provide insights for future research.

Improving Copy-Move Forgery Detection: An Investigation into Techniques Based on Blocks and Key Points

Mr. Jaynesh H. Desai, Dr. Sanjay H. Buch

Abstract: Digital image forgery, especially in the form of “Copy-Move Forgery” a prevalent form of image alteration that threatens the authenticity of digital visual content. To combat this challenge, this research conducts a thorough comparative analysis of three prominent techniques for detecting Copy-Move Forgery: “Principal Component Analysis (PCA)”, “Discrete Cosine Transform (DCT)”, and “Scale-Invariant Feature Transform” combined with “Dyadic Wavelet Transform” (SIFT-DyWT). The PCA-based method employs eigenvectors of image patches to identify copied regions, while DCT leverages frequency domain information to detect duplicated areas. SIFT-DyWT combines the powerful SIFT algorithm with Dyadic Wavelet Transform to extract and match invariant features for forgery detection. Each technique is implemented and evaluated on a diverse dataset of manipulated images, with performance metrics including precision, recall, and F1-score being assessed. Efficiency is a crucial factor, particularly for real-time applications. As a result, these strategies' computational complexity is also examined. This aspect is essential for aiding researchers and practitioners in selecting the most suitable forgery detection method based on their specific application requirements. In conclusion, this research contributes significantly to the field of image forensics by presenting a comprehensive comparison of PCA, DCT, and SIFT-DyWT for Copy-Move Forgery detection. These discoveries offer valuable understandings regarding the weaknesses and strengths of each method, facilitating the development of more robust and efficient forgery detection tools. Experimented result shows the DyWT and SIFT combination exhibit superior performance, achieving an accuracy of 89.56%. This outperforms both DCT, with an accuracy of 86.55%, and PCA, with an accuracy of 83.96%. Ultimately, this research enhances the security and reliability of digital visual content in an era where image manipulation and forgery are prevalent concerns.

Multiple Memory Image Instances Stratagem to Detect Fileless Malware

Swapna M P, J Ramkumar

Abstract: Fileless malware is sneaky and sophisticated, it uses trusted preinstalled applications to steal information and carry out its harmful purpose. The prevalence of fileless malware is on the rise, which exclusively relies on legitimate programs for infection and leaves no trace in the file system. This type of malware is frequently adept at bypassing antivirus software. Fileless malware is estimated to have a high detection evasion rate, like 10 times than other types of malwares. The collection and analysis of volatile memory represent a dynamic field of research in cybersecurity, providing valuable insights into various malicious vectors. The proposed work explores memory forensics using multiple images from memory of a system at various time schedules to identify and analyze the prevalence of fileless malware. The approach aims to overcome the constraints of traditional memory analysis, which typically relies on a single memory image. The results depict the efficiency of the proposed method in enhancing the detection accuracy and reducing false positives.

A Survey of Machine Learning Techniques in Phishing Detection

Nishant Navinbhai Joshi, Dr. Sunil Lalchand Bajaja

Abstract: Phishing attacks, a prevalent method for illicitly acquiring individuals' sensitive information from the internet, pose significant threats to users' security. These attacks, orchestrated by hackers, involve the theft of protected passwords, private details, and even financial transactions, resulting in stolen money. Typically, perpetrators of phishing attacks manipulate and conceal well-known, legitimate websites to deceive users into divulging their personal data. To counteract such cyber threats, numerous websites and cybersecurity experts employ various techniques. Whitelisting and blacklisting, along with heuristic algorithms based on visual resemblance, constitute some of the prevalent strategies. However, this study proposes an advanced approach—a machine learning-based categorization technique enriched with heuristic features. These features are derived from critical characteristics such as the uniform resource locator (URL), source code, session details, security type employed, protocol in use, and the type of site being accessed. The proposed model utilizes five distinct machine learning techniques, including random forest, decision trees, and logistic regression, to comprehensively evaluate its efficacy. By leveraging these advanced methodologies, this study aims to enhance the accuracy and efficiency of phishing detection, ultimately fortifying defenses against these malicious online activities.

CyTIE: Cyber Threat Intelligence Extraction with Named Entity Recognition

Aravind P. C., Dincy R. Arikka, Anupama S. Krishnan, Bahja Tesneem,
Aparna Sebastian, Mridul J. Dev, Aswathy K. R., Rafidha Rehiman K. A., Vinod P.

Abstract: In the dynamic intersection of Natural Language Processing and cyber security, Named Entity Recognition plays a pivotal role in comprehending and countering cyber threats. This paper explores Named Entity Recognition techniques within the cyber security context, utilizing a meticulously curated dataset with 12 distinct entity types extracted from security blogs. Our study involves developing and comparative analysis of five Named Entity Recognition models: BiLSTM, BiLSTM-CRF, BERT, BERT-CRF, and BERT-BiLSTM-CRF. Rigorous evaluation reveals that the BERT-BiLSTM-CRF model outperforms others with an F1-Score of 0.9635, excelling at extracting entities from the intricate language used in cyber security texts. Through this paper, we contribute to the ongoing Named Entity Recognition discourse in cyber security, paving the way for advancements in Natural Language Processing techniques and fortifying cyber security measures against evolving digital threats. The implementation and dataset are accessible on our Github page: <https://github.com/OPTIMA-CTI/CyberNER.git>

Design and Implementation of Multilayer Encryption for Audio File Security

Lakhichand Khushal Patil, Dr. Kalpesh A. Popat

Abstract: Using audio encryption, secure information can be transmitted. By doing this, Sender and Receiver audio security is guaranteed. The security of delivering private audio data is crucial given the rapid advancement of communication technology. Applying a key (noise) and exact algorithm to the plain text is how audio encryption protects data in an audio file from parasitic assaults. To guarantee data privacy, high solidity, and trustworthiness, the security system must be extremely secure, quick, and robust. There are various drawbacks and difficulties with audio data encryption, such as the need for additional resources and expenses for implementation and maintenance, as well as the addition of complexity and hazards to data management. Additionally, it may hinder data visibility and usability and slow down data processing and analysis. The authors have analysed and compared the various audio file encryption methods at the beginning of the paper. The article suggests using the audio file encryption technique and its implementation to get around issues like the need for additional resources, increased expenses, and hazards associated with data management. Audio files can be encrypted using the suggested multilayer method, which increases security.

Development of Secure Framework in Mobile Cloud Computing using AES-HMAC Encryption Approach

P. V. Naveen, Dr. A. Poongodi

Abstract: The confidentiality, integrity, and availability of data and services in mobile cloud environments are crucially supported by security algorithms for Mobile Cloud Computing (MCC). This research paper presents a new framework for data encryption and integrity checking in an MCC environment called AES-HMAC (Advanced Encryption Standard- Hash-based Message Authentication Code). In a mobile cloud environment, this setup offers an excellent framework for protecting data while it is in transmission and at rest. While HMAC creates a hash-based message security code using a cryptographic hash method and a secret key to assure the validity and integrity of the data, AES assures that data is encrypted using a symmetric encryption technique. To evaluate the algorithms' efficiency in protecting private medical data, we simulated MCC security systems using the CloudSim simulator while processing a range of healthcare dataset. AES-HMAC can beat standalone AES, DES encryption and hash algorithms in terms of response time, error rate, and latency.

An Efficient CH Based Authentication and Authorization for Secure EHR using DF-BCrypt and Hashed Access Structure

S.Prathima, Dr.R.Durga

Abstract: An Electronic Health Record (EHR) is a standard collection of health data from the general population and patients that is electronically stored in a digital format. User authentication and data security are the key issues in distributing EHRs. For researchers, handling larger-scaledata along with preserving the patient's privacy has been an issue for a long duration. In data collection, storage, and distribution, the prevailing EHR suffers from data manipulation, delayed communication, and trust-less cooperation. Therefore, by utilizing Hospital id - Patient id Username – Public Private key Caesar Cipher Digit Folding BCrypt (HPU-PPCC-DF-BCrypt) and Correlation Coefficient based Elliptic Curve Cryptography (CCECC), an efficient Cipher Hash based user authentication, Hashed Access Policy verification along with Data Security was proposed. For engendering secure validates for authentication, HPU- PPCC is wielded. For changing the cipher text to hash code, DF-BCrypt is employed. By employing the hash codes generated by the Secure Hash Algorithm (SHA 512), the hash tree access structure is built for performing efficient authorization. The data is encrypted and decrypted by utilizing the CCECC for enhancing data security. The proposed method is compared to the current methodologies. As per experimental evaluation, the proposed method effectively secures EHR data.

A Novel Framework to Detect Business Email Compromise through Unconsented Email Autoforwards

Priti Kulkarni , Jatinderkumar R. Saini

Abstract: Contemporary business heavily relies on email communication as the official communication in the business. However, this pivotal communication medium has become a prime target by the attackers to find a way to enter into the organisation's network. Phishing is an email-based attack where an attacker sends a fraudulent email in such a way that it looks like the original email. This phishing email aims to get the victim's credentials. The attacks are known as Business Email Compromise (BEC). The most common BEC scams are 'CEO fraud' and 'man-in-middle' scams. The BEC attacks are fast growing attacks and it is necessary to control it. There are numerous papers addressing BEC attacks. The BEC attackers are using new approaches to mail scams. One of the techniques used by attackers is to set email auto forward rules to redirect emails to malicious email account. It is required to continuously monitor the email auto forward rules. But the traditional approach of manual control is difficult and attacks may go undetected. So, in this paper we are presenting an approach of automatic control by presenting a novel theoretical Email Auto forward Security Framework (EASF). The paper attempts to address an email auto forward, a new technique used by attackers for BEC which is the most dangerous threat. The EASF presents an automated approach to counter the increasing threat of BEC. The implementation of this framework will help the business to detect and mitigate BEC attacks through email auto forward, thus ensuring security and integrity of the communication. The paper also discusses the precautions and challenges for BEC.

A Novel Mechanism for Tuning Neural Network for Malware Detection in Android Device

Eslavath Ravi, Mummadi Upendra Kumar, Syed Shabbeer Ahmad

Abstract: Malicious software or code that is specifically targeted towards Android devices, such as smartphones and tablets running the Android operating system, is known as Android malware. The objectives of these malicious programs can vary, but they all generally try to compromise the security and privacy of the device or its user. Detecting Android malware using machine learning is a challenging but effective approach, as it can help identify malicious apps based on patterns, behaviors, and features. This paper proposes a Tuned Neural Network model for the detection of Malware in Android. The parameters of the NN are tuned using hyperparameter tuning with Random Search. The principal component Analysis method for correlation detection, has been included such that the dimensionality reduction helps in faster execution. The Android Malware dataset's split between harmless and dangerous applications is frequently skewed, with a much greater proportion of benign instances. This discrepancy might result in skewed models. are better at detecting benign apps than malware. Machine learning models rely on historical data, making them less effective at detecting new, previously unseen threats (zero-day vulnerabilities). Neural networks can be updated with new data and retrained periodically, allowing the detection system to adapt to emerging threats and zero-day vulnerabilities. It is critical to find a balance between accuracy (minimising false positives) & recall (minimising false negatives) in Android malware detection. Hyperparameter tuning can help adjust the model's threshold or other settings to achieve the desired trade-off between these two metrics. In the proposed model, it has acquired +1.06% accuracy than traditional approaches and made the loss approximately equal to 0%

Enhancing Security through QR code and enriched Blowfish Cryptography for Sensitive Data

Aishwarya Palaniappan¹, Lakshmi Priya V, Remegius Praveen Sahayaraj L

Abstract: In today's digital age, data security is of utmost importance as sensitive information is being stored, processed, and transmitted online. Recent advancement in banking cybersecurity strides in encompassing advanced threat detection, biometric authentication, and the integration of artificial intelligence and block chain to fortify defences against cyber threats. It provides insights in- to the industry's evolving strategies for robust financial system security. Confidential information such as personal details, financial information, trade secrets, and other sensitive data must be protected to avoid misuse, theft, or unauthorized access. Compliance with legal and regulatory requirements, maintaining customer trust, preventing cyberattacks, and ensuring business continuity are some other reasons why data security is critical. Implementing effective data security measures such as encryption, access controls, monitoring, and employee training is necessary to safeguard against potential threats and protect the privacy and confidentiality of individuals and organizations. The proposed system provides such protection by using enhanced blowfish algorithm with Attribute based DNA (ADNA) cryptography and Digital Signature Algorithm (DSA) along with a QR key transmission. This way, the system will secure the data shared between both sender and receiver, requiring more cryptanalysis efforts without much impact on performance and computational requirement.

A Survey on Secure Aggregation for Privacy-Preserving Federated Learning

Ankit Chouhan, Purushothama B R

Abstract: Federated learning, an innovative methodology that enables clients to train a global model collectively without disclosing raw data, protects data privacy when it comes to training Machine Learning (ML) models across decentralized devices. This survey provides a concise overview of privacy-preserving federated learning, discussing challenges, techniques, and applications. Various techniques are investigated, including federated learning, differential privacy, homomorphic encryption, Secure Multi-party Computation (SMC), and secret sharing, with a review of their advantages and disadvantages. The survey highlights the importance of secure aggregation methods, emphasizing the necessity for novel algorithms to address challenges such as data heterogeneity and communication latency. Overall, this survey offers valuable insights into privacy-preserving federated learning and its potential impact.

Taxonomy of Image Encryption Techniques - A Survey

Vilas Mahajan, Dr. R. Sridaran

Abstract: Image encryption employs complex algorithms to transform digital images into indecipherable formats, safeguarding them from unauthorized access and ensuring sensitive visual data remains secure. It's crucial in various domains like business, government, healthcare, military, and multimedia systems due to the paramount importance of information security. In today's context, the primary challenge is preserving data confidentiality and integrity during communication. Unauthorized access to sensitive image data can have severe consequences, and the potential for data interception or theft during transmission is a pressing concern. This paper aims to conduct a thorough survey and categorization of image encryption techniques. It also explores different terminology, commonly used encryption algorithms, and modified methods in the field. The main aim is to identify gaps in existing image encryption techniques, which can pave the way for improved methods of securing digital image data. The paper incorporates both qualitative and quantitative analyses of various encryption algorithms. These vital insights of information security equip researchers and practitioners for creating more robust encryption solutions. These advancements benefit the broader community by safeguarding sensitive data, preserving confidentiality, and maintaining data integrity in our increasingly digitized society.

Optimizing the Security and Privacy of Cloud Data Communication; Hybridizing Cryptography and Steganography using Triple Key of AES, RSA and LSB With Deceptive QR Code Technique: A Novel Approach

Mr. Edwin Xorsenyo Amenu, Dr. Sridaran Rajagopal

Abstract: The propensity of transmitting improperly protected data in the clouds securely to its intended destination, free of being intercepted and deciphered is highly low in this fast advancing technological era. Specialist in the field of data and information security have over the past multiple decades tried and experimented quite a number of hashing combinations, but not sufficiently enough to forestall the interception and deciphering of secret text in transit. This security concern of private and confidential information of either individuals, groups or institutions ending up plainly in the wrong third party hands, therefore, spark the need to absolutely encrypt and steganography data in such a securely deceptive manner above the knowledge of the 'Man-In-The-Middle'. The two current novel techniques that cybersecurity experts are exploring are the permutation of cryptography and steganography. We the authors in this paper will hence, explore a newer and higher dynamics of the combined data security technique. Methodologically, cryptography and steganography method will be diversified into using three (3) encryption keys under deceptive generated QR Code.

Fuzzy Membership Grasshopper Optimization Algorithm (FMGOA) based Feature Selection and Mean Weight Deep Belief Network (MWDBN) Classifier with Fusion Approach for Android Malware Detection (AMD)

Anuja A Rajan, Dr. R. Durga

Abstract: Android applications have been an obvious advancement recently, making them one of technological domains is advancing and successful the fastest. The necessity for active research efforts are presented to conflict these dangerous programs which develops vital as malware gets more and more capable of insightful these applications. In order to enhance Android Malware Detection (AMD), machine learning is becoming more popular. In this paper, feature selection and classification fusion strategy for AMD. Firstly, dataset is gathered from samples of Android apps. Secondly, Fuzzy Membership Grasshopper Optimization Algorithm (FMGOA) is introduced choose the most important features. FMGOA approach imitates the biological behaviour of grasshopper swarms searching for best selection of features with their accuracy. Thirdly, Stacked Ensemble Classifier Fusion (SECF) is introduced based on a multilevel architecture-based approach. It enables the efficient merging of machine learning algorithms including J48, Reduced Error Pruning Tree (REPTree), Voted Perceptron, and Mean Weight Deep Belief Network (MWDBN). Two ranking-based algorithms—Ranked Aggregate of Average Accuracy and Class Differential (RACD) and Ranked Aggregate of Per Class (RAPC)—have been presented that enable classifier fusion for stacking. Finally, Precision (Pre), Recall (Rec), F-measure (FM), and Weighted F measure (WFM) has been used to evaluate the results of classifiers.

Dual Security RGB Image Encryption Algorithm for Lightweight Cryptography

Vrushali Khaladkar, Manish Kumar

Abstract: An efficacious mathematical cryptographic algorithm for three plane RGB images based on an L-shaped fractal and a 1-D chaotic tent map is proposed. Since vast data sets of images and videos are transmitted daily over public channels, the security and authenticity of data are of utmost priority. Fractals are used in image encryption on a large scale due to their randomness property and infinite boundaries. One of the simplest implementations on the hardware of an IoT device is a one dimensional dynamical system called the 1-D Chaotic tent map. This map is frequently used in encryption due to its sensitivity towards initial conditions and impulsiveness. Due to the low dimensions of the 1-D chaotic tent map, this algorithm is more suited for lightweight cryptographic applications. The results of computer simulation on MATLAB are explained to analyze the capabilities of the proposed algorithm using statistical analysis. The test results of differential attacks, percentage cropping attacks, and noise attacks are tabulated to confirm the wholesomeness of the proposed algorithm. There is a table that shows how secure the proposed algorithm is by comparing it to other algorithms that are already out there using entropy, correlation coefficient, and robustness using differential attacks.

A Cyber Diplomacy Framework for Promoting Global Cybersecurity Norms and Cooperation

Niraj Kumar Singh, Salmiati

Abstract: In recent years, the escalating threat landscape in cyberspace and the imperative of maintaining a secure digital environment have garnered significant attention, necessitating the exploration of innovative approaches. This research introduces a novel "Cyber Diplomacy Framework for Promoting Global Cybersecurity Norms and Cooperation" to address the pressing challenges in the realm of cybersecurity. The primary goal of this study is to propose a comprehensive framework that emphasizes diplomatic efforts to mitigate cyber threats and foster cooperation among nations in establishing responsible cybersecurity norms at the global level. This research draws upon the constructivist theory of international relations to understand how norms are established and evolve through diplomatic interactions between nation-states. The constructivist perspective posits that the shared beliefs, values, and norms of actors in the international system play a vital role in shaping their behavior and interactions. Applying this theory to the realm of cybersecurity, the study explores how the Cyber Diplomacy Framework can contribute to the emergence of shared norms and responsible behavior in cyberspace through diplomatic engagement. By proposing a pioneering Cyber Diplomacy Framework and employing the constructivist theory as the underlying concept, this research aims to advance the field of cybersecurity and international relations. Through a comprehensive analysis of diplomatic strategies, international cooperation, and governance mechanisms, this study endeavors to provide valuable insights for policymakers, researchers, and practitioners in promoting global cybersecurity norms and cooperation.

Mitigation and Prevention Methods for Cross-layer Attacks in IoT (Internet of Things) Devices

Enoch Success Boakai, Dr. Ravirajsinh S. Vaghela, Dr. Parag Shukla

Abstract: Innumerable advantages as well as severe security challenges have been brought about by the fast spread of Internet of Things (IoT) devices across numerous industries. The emergence of cross-layer attacks, which takes advantage of flaws and exploit vulnerabilities in several tiers of the IoT technological framework, is a major concern. This is concerning and significant because there could be major repercussions, including unauthorized access, data breaches, service interruptions, and even the risk to people's safety or vital infrastructure. It takes a comprehensive strategy that includes both proactive and reactive tactics to counter these threats. Encryption, access control, intrusion detection systems, and robust security protocols must be implemented at various IoT architecture layers as proactive measures. Moreover, frequent updates and continual observation are crucial. Reactive strategies such as incident response protocols, anomaly detection systems, and fast recovery procedures are also essential for quickly detecting and minimizing the impact of cross-layer attacks in order to quickly return to normal operation. This study scrutinizes cross-layer assaults on IoT devices, presenting a thorough set of techniques and defenses to strengthen the resistance of IoT devices against complex and multi-layered attacks, greatly advancing the understanding of cross-layer security challenges in IoT environments. Furthermore, a thorough analysis of current mitigation and prevention techniques, along with newly developed approaches to bolster IoT security are covered.

A FAIRification Framework for the Findability, Accessibility, Interoperability and Reusability of Cyber Security Ontologies Using FAIR Data Principles

Tshepiso Larona Mokgetse, Hlomani Hlomani, Sridaran Rajagopal

Abstract: This paper proposes a FAIR-inspired framework for integrated cyber security ontologies that offers a systematic approach to applying FAIR data principles in the field of cyber security. The framework is developed based on a combination of adopted research and incorporates the FAIRification process. This FAIRification process is instrumental in guiding the development of cyber security ontology models, which are essential for realizing the principles of Findability, Accessibility, Interoperability, and Reusability. The framework addresses the absence of applied FAIR standards in existing cyber security ontology models, utilizing sampled cyber security models as reference systems for source data. The resulting cyber security ontology models create a virtual data warehouse, integrating data from domain experts and existing models. The FAIRification process emphasizes collaboration among cyber security stakeholders, including private and public entities, analysts, engineers, and administrators, to ensure the meaningful interpretation of data based on cyber security ontologies. Detailed discussions within the framework cover the FAIR principles, outlining specific criteria for Findability, Accessibility, Interoperability, and Reusability. Further components of the framework involve the curation and validation of data, development of cyber security ontology data models, and the creation of ontology metadata models. These models play a crucial role in making cyber security data Findable, Accessible, and Reusable, aligning with the FAIR principles. Additionally, data management systems, including the dataset integration system and resource metadata system, are introduced to facilitate the integration and annotation of ontologized data. The framework's use of a data triplestore, FAIR data, and the grlc server enhances the Accessibility of cyber security data on the web. The triplestore represents knowledge graphs in RDF, allowing for efficient querying through SPARQL. The grlc server further facilitates the generation of web APIs, making cyber security data Accessible in an open, free, and universally implementable manner.

Improving Security of Message by Enhancement of Vigenère Cipher by Generating Keys Automatically deriving from the Plain Text

Syed Usman Basha, Dr. S. Brintha Rajakumari

Abstract: Researches are performed at present in large number to offer protection to data. From a very long time, Cryptography has been used for preserving the confidential data and information both during transfer and storage from unknown persons. There are many classifications of cryptography based on its implementation method. Ploy Alphabetic substitution cipher is one such method where the plain text is converted to cipher text with the help of Tabula Recta. Vigenère Cipher is considered as an important form. This Cipher uses a single Key, which is repeated to match the length of the Plain Text. For this reason, the encrypted message can be decoded using frequent analysis tests. A new method is adopted by which the key is generated automatically based on the Plain Text. This makes the Cipher Text more complex such that it would be difficult to be decoded without knowing the Key.

An Efficient Network for Streamlined and High-Performance Blockchain based Consensus Algorithm

Deven A Gol, Dr Nikhil Gondaliya

Abstract: Blockchain technology has gained widespread acceptance across various sectors due to its decentralized, transparent, and secure nature. Central to this technology are consensus algorithms like Proof of Work (PoW) and Proof of Stake (PoS), which ensure the reliability and validity of blockchain networks. However, these current consensus algorithms encounter challenges related to scalability, energy consumption, and security vulnerabilities. To overcome these issues, a novel secure network has been proposed, designed to enhance the efficiency and security of consensus algorithms within blockchain technology. This innovative network integrates the strengths of PoW and PoS, resulting in a hybrid consensus algorithm that outperforms existing ones. Additionally, the network incorporates a dynamic sharding mechanism to enhance scalability, reducing transaction processing times. The primary goal of this proposed network is to provide a more robust and efficient blockchain platform capable of handling larger transaction volumes while preserving its security attributes. This advancement has the potential to reshape the application of blockchain technology across diverse industries, including finance, healthcare, and supply chain management.

A Comprehensive Study on VANET Security

Mayur J. Patil, Dr. Krishnakant P. Adhiya

Abstract: This study encompasses the following areas: vulnerability analysis, proposition of cryptographic solutions, design of intrusion detection systems, resolution of privacy problems, evaluation of key management, and assessment of overall performance in Vehicular Ad Hoc Networks (VANETs). The research endeavors to shed light on the development of intelligent transportation systems that prioritize efficiency and safety. Vehicular Ad Hoc Networks (VANETs) are playing a vital role in today's digital age, to make the lives of civilians easier and simpler in every respect. The VANETs focuses on boosting traffic regulation by reducing traffic congestion and monitoring unexpected events. The objective of this study is to ascertain vulnerabilities, assess potential risks, and propose viable remedies with the intention of enhancing the security of VANETs. This paper focuses on key management, performance evaluation, cryptographic solutions, intrusion detection, assurance management, privacy protection, and key management in an effort to shed light on the development of secure, intelligent transportation systems. With respect of delivering route as well as transport security, decreasing congestion bottlenecks, enhancing driving rules and providing entertainment amenities within a car, the VANETs is omnipresent and effective. Everything is online in today's digital world, so all the automobile companies are ready and equipped to connect their vehicles with information technology systems. VANETs shares important information with vehicles such as traffic guidelines, driving circumstances, and many more. This information is shared within the territory of the vehicle. For sharing this type of intelligence and improving the systematic transmission of data between the vehicles, VANETs came into the picture.

A Comparative Analytics for Dynamic Load Balancing Mechanisms intended to improve Task Scheduling in Cloud Computing

Kirit Patel, Dr. Ajay Patel, Dr. Bhavesh Patel, Ravi Patel

Abstract: Cloud computing is a term that encompasses a worldwide linked network of computer resources, including server infrastructure, connections, apps, equipment, and firmware. A good usage technique for resource utilization is load balancing. The practice of reassigning the total load to the individual nodes in a particular network is known as task distribution in the cloud. Since no specific research is carried out to perform comparative analytics in terms of different parameters of scheduling of task-based algorithms, it is crucial to develop a consistent comparison mechanism among them. Distribution of tasks is the primary concern of crucial elements that boost performance and optimize resource usage. FCFS, SJF, OLB, and GPA are the scheduling algorithms that are explored. This study surveys the various scheduling methods employed by cloud service providers. There are many scheduling approaches available to optimize performance and minimize execution time.

Exploring Data Ownership in Web 2.0 and Web 3.0 with the Integration of Blockchain Technology

Krupa Bhavsar, Ajay Patel, Krima Patel, Ravi Patel

Abstract : The emergence of Web 3.0, which is distinguished by a decentralized internet that gives priority to user needs through the integration of blockchain technology, has initiated a transformative era in the domain of data possession. In sharp contrast to the limited control that users exercise over their personal data within the centralized confines of Web 2.0, Web 3.0 holds the potential to reshape the dynamics of data ownership and empower individuals. Within the context of Web 3.0, a framework is introduced to explore the notion of user data ownership, with the aim of enhancing the understanding of personal data control within the decentralized online realm. Moreover, the framework advocates for guidelines that are designed to empower users by granting them greater autonomy over their data. The research investigates the current status of data ownership and control within the centralized web, examines the potential of blockchain technology and decentralized platforms, and identifies notable gaps and challenges present in existing research. The research methodology encompasses a comprehensive examination of pertinent literature, the analysis of case studies, and interviews conducted with experts. The effectiveness of the proposed framework will be evaluated based on its ability to effectively address challenges and opportunities pertaining to user data ownership in Web 3.0, as well as its practicality and feasibility for real-world implementation.

Evaluating TCP Performance with RED for Efficient Congestion Control

Hemali Moradiya, Dr. Kalpesh Popat

Abstract: TCP is a crucial component of the TCP/IP suite that makes sure that data integrity is upheld while being transferred from source to destination, i.e., that data is transferred in its correct format, in a timely way, and error-free. TCP creates a connection between the transmitter (source) and receiver (destination) and then transmits data over this connection after dividing the data into numerous packets. When nodes and links are overburdened with data during transmission, network congestion results. TCP protocols can help with this problem. Packet damage, insufficient bandwidth, outdated equipment, etc. are some of the causes of congestion. The requirement for a network simulation technology that is both dependable and scalable and can effectively handle congestion issues has increased due to the significant increase in network complexity and the number of computing devices on the network. Numerous variations of the TCP algorithm have emerged to address the Congestion Control problem, which is becoming more and more complex. Many of these TCP versions, including Reno, NewReno, Vegas, Tahoe, Westwood, BIC, and CUBIC, are discussed in this study. The performance analysis of TCP NewReno with the queue disciplines RED and NLRED is also included in this work. It is found that NewReno performs better with NLRED.

Impact of Scalability on BSM PDR Messages in VANETs

Satveer Kour, Butta Singh, Manjit Singh, Himali Sarangal

Abstract: Vehicular Ad-hoc Networks (VANET) has been considered as the prospective techniques for improving safety and providing other services to drivers and passengers. It has evolved as a critical component of the smart transport system. Several efforts have been made in this direction, but security in VANET has received little attention. Security is a crucial concern for VANET routing since various applications influence life-or-death decisions and unauthorized interference can impose critical disasters. When compared to other communication networks, the characteristics of VANETs exacerbate the difficulty faced in the secure routing problem. Another issue related to routing is effective data dissemination and data sharing in VANETs. More areas for advancement include the incorporation of privacy and security measures into routing protocols, as well as the establishment of priority routes for emergency and safety communications. Scalability refers to a VANET's ability to accept a rising number of communicating vehicles without experiencing disruption or loss in data transfer or traffic loading, which increases administrative complexity and reduces network performance. The designed VANET model is analyzed in this technical work across low and high scalable networks (based on number of nodes) and its impact on Basic Safety Messages (BSM) Packet Delivery Ratio (PDR) on a designed VANET scenario. The experiment is performed over four VANET routing protocols. The results are shown in graphical and tabular form, one of the best routing protocol is selected after the result analysis. Destination Sequenced Distance Vector (DSDV) is chosen as the best routing protocol in low and high scalable scenarios.

Contrastive Analysis of Healthcare Management System Using Different Use Cases Based on Block Chain Technology

Mahesh G, Dr. Renu Mishra

Abstract: The distributed, decentralized and secure network based Blockchain technology is used to store information about the patients in the medical field with patient centric control option. This information is spread out among many nodes and can't be easily altered. There are different levels of how complicated patient information can be, like in the case of Covid19. Only authorized doctors or staff can safely access this information for treatment reasons with the patient's permission. People outside of the patient's care team can decrypt the information for treatment or advise, but only they can see it. Along with the use of blockchain technology in medicine, new technologies like IPFS and IoT have been introduced to make things safer, more efficient, and easier to remember. Security, authentication, data collection, and the sharing of encrypted medical information all need to be improved, though. As part of a suggested review, papers would be compared based on platform, programming language, system application, consensus algorithm, key findings and tools used, which would included from different studies based on the use cases and challenges in blockchain based Electronic health record(EHR) management system along with the issues raised.

A Survey on SCADA's Security, Concerns and Attacks

John Sunder Singh T, Sheeba J.I, Pradeep Devaneyan. S

Abstract: The SCADA (Supervisory Control and Data Acquisition) system is an essential component for maintaining the smooth operation of critical infrastructure systems, including water supply, transportation, oil pipelines, and electricity. Its primary function is to monitor data from vital components such as pumps, valves, and transmitters. Over time, SCADA has evolved from a stand-alone system to a highly interconnected network, resulting in several advantages, including improved efficiency and reduced costs. But that has also made the SCADA system more vulnerable to cyberattacks. Currently, SCADA security relies primarily on IT systems, which may not be enough to counter the danger and hazard from field operations. Therefore, it is crucial to evaluate the potential cyber threats associated with SCADA. This survey aims to explore the security vulnerabilities of the SCADA system, categorize the relevant threats, attacks. Finally, the survey concludes by proposing a brief outlined hybrid IDPS (Intrusion Detection and Prevention System) to detect, prevent and mitigate cyberattacks on SCADA systems.

Comparative Analysis of Routing Algorithms in Opportunistic Network

Riddhi A. Joshi, Dr. Kalpesh A. Popat

Abstract: Opportunistic networks are developed by connecting interfaces for short-range communication. Routing is difficult in this type of Network. The existing routing algorithms are discussed in this paper and comparison is shown for the five algorithms which are used wisely in this Network. The comparison is made in Epidemic routing, Spray and Wait, First Contact routing, Prophet routing and Maxprop routing. In the comparison, we can see that in all routing algorithms overhead ratio is decreasing when buffer size is increased. And due to increase in buffer size, the delivery probability is also increased. Each algorithm has its own advantages and disadvantages.

An Analysis of Congestion Control Protocols with Performance Comparison of Conventional Traffic Network with Real-Time Video to Very High-Speed Networks

Sunil Kumar Kushwaha, Dr.Suresh K. Jain

Abstract: As the number of Internet users and apps has rapidly increased, especially after the corona pandemic, network congestion has grown increasingly, which seems to be a serious concern. In today's scenario most of the traffic is real time video rather than text. Congestion has been a big problem since the day of inception of the network and will remain forever. Congestion control for TCP has been developed to guarantee Internet reliability with fairness and effective bandwidth distribution. This research paper presents a brief survey and comparison of various network congestion control algorithms during the previous 25 years for normal as well as high speed network management protocols. It introduces the metrics for judging the best congestion management technique with aforementioned protocols have been compared and analyzed, by using parameters such as stability, fairness, efficiency, throughput, delay, dropping, performance, bandwidth-utilization, responsiveness etc. For the proper management of congestion control, a number of models and analysis techniques are also provided, including the nonlinear model used for minimizing, the control theory, fuzzy and the optimization approach using neural network. This essay seeks to assess and contrast the various control algorithms such as Westwood+, New Reno, BIC TCP, CUBIC, FAST, High-Speed TCP, Layered TCP, Scalable TCP, and XCP, and vegas using MATLAB simulations, to measure the performance. After doing considerable comparative study on congestion control challenges, the protocols for end-to-end communication as well as intermediate nodes were generalized. A few unresolved issues have been discussed for future implementation and as a challenge in forthcoming days. The limitations of all protocols designed for conventional data, real time high speed networks as well as wireless have also been studied.

Automatic Plant Watering System for Smart Water Management

Prof. Mukund Kulkarni, Dr. Kaushalya Thopate, Jidnyasa Anil Dadmal
Bhumika Chule, Aaditya Deshpande, Pritam Tushar Bhamare

Abstract: The research paper presents a groundbreaking contribution by introducing the "Advanced Irrigation System" to tackle the pressing issue of optimizing water and power usage in agriculture. This innovative solution encompasses several key features, including an automated water-pump operation system, a farmer-friendly interface via a mobile application, and seamless integration with Google Assistant for remote control. The proposed system addresses a crucial challenge faced by the agricultural sector, where efficient resource management is paramount. Traditional water-pump operating systems lack the sophistication needed to optimize water and power consumption, leading to inefficiencies and environmental concerns. Recognizing these limitations, the research paper puts forth the "Advanced Irrigation System" as a viable and practical solution. The heart of the system lies in its automated water-pump operations. By intelligently toggling the water pump on and off based on crop types and their specific moisture requirements, the system eliminates the need for constant manual oversight. This not only ensures that crops receive the optimal amount of water for growth but also minimizes water wastage, contributing to sustainable agricultural practices. Furthermore, the system introduces a farmer interface through a mobile application, presented in their regional language for user convenience. This interface empowers farmers with real-time information on crucial environmental factors such as humidity, temperature, and soil moisture. Armed with this data, farmers can make informed decisions about irrigation, fostering precision agriculture and resource-efficient farming practices. The integration of Google Assistant adds an additional layer of accessibility and user-friendliness to the system. Through voice commands, farmers can remotely operate the water pump, offering a hands-free solution that is not only convenient but also practical in scenarios where manual intervention may be challenging.

Edge Detection Using Watershed Algorithm for Polycystic Ovary Image

Dr. Kamini Solanki, Dr.. Jaimin Undavia, Dr. Rahul Vaghela,
Dr. Mittal Desai, Dr. Chetan Dudhagra

Abstract: Polycystic ovary syndrome (PCOS) is a common endocrine disorder that affects reproductive-age women. Image analysis techniques, particularly edge detection, play a crucial role in PCOS diagnosis and treatment monitoring. This research paper presents a comprehensive study on edge detection using the Watershed algorithm for analyzing Polycystic Ovary (PCO) images. The paper explores the application of the Watershed algorithm in detecting and segmenting ovarian cysts, follicles, and other key structures in PCO images. Various approaches, modifications, and pre-processing techniques are investigated to enhance the performance of the Watershed algorithm in PCO image analysis. Additionally, the paper discusses the challenges, future directions, and potential applications of Watershed-based edge detection in PCOS research and clinical practice.

Sculpting the Perfect Workforce: A Study of Cognitive AI and Machine Learning Algorithms in Reshaping the Future of Talent Acquisition and Fostering Synergistic HR-Technology Ecosystems

Dr. Meeta Joshi

Abstract: This study explores integrating Cognitive AI and ML algorithms into talent acquisition and assessing their impact on HR practices. The paper reviews the literature to contextualize this convergence, identifying gaps in real-world organizational usage. It outlines current trends, challenges, and opportunities. Discussions with HR professionals, AI experts, and executives employ a focus group approach. The qualitative framework spotlights applicant sourcing, screening, matching, and personalized experiences. Thematic analysis reveals fresh results and insights. Integrating Cognitive AI and ML induces a talent acquisition paradigm shift. Improved candidate sourcing accuracy and AI-based screening enhance the talent pipeline. Acknowledging challenges, like algorithmic bias, calls for ongoing vigilance and ethical considerations. The study underscores the transformative power of Cognitive AI and ML in talent acquisition while advocating ethical integration. Balancing innovation and deliberate adoption can steer enterprises toward an AI-empowered HR future.

Analyzing the Performance: B-trees vs. Red-Black Trees with Caching Strategies

Medha Wayawahare, Chinmayee Awale, Aditya Deshkahire
Ashwinee Barabadekar

Abstract: The objective of this comparison study is to evaluate the effectiveness of B-trees and Red-black trees when used in conjunction with caching strategies. Red-black trees and B-trees are both frequently used data structures for effectively storing and retrieving huge datasets. Contrarily, caching is a widely used approach that keeps frequently accessed data in a quick memory, like RAM, to improve the performance of data access operations. In this study, we analyse the effect of caching using several measures, including search time, cache hit rate, and cache eviction rate, to assess how caching affects the performance of Red-black and B-trees. The findings of this study can assist developers select the best mix of data structures and caching methods for their particular use case by illuminating the advantages and disadvantages of each data structure and caching method. The dataset used for this study consists of integer keys that are inserted in the data structures. Integrating caching techniques in B-tree operations yields a notable performance boost, reducing the execution time from 1e-06s without caching to a mere 7e-07s with caching. The caching strategy implemented for the Red-Black Tree did not prove to be efficient, as evidenced by an increase in search time from 600 to 3500 nanoseconds. Reevaluation and optimization may be necessary to enhance performance.

A Bird's Eye View of Microservice Architecture from the Lens of Cloud Computing

Nidhi Vaniyawala, Dr.Kamlendu Kumar Pandey

Abstract: In past couple of years, cloud computing has emerged as one of the fastest growing technologies across the globe. In order to keep pace with the advancements taking place in the cloud computing paradigm and to cater the needs of current businesses, there is a continuous evolution in the architectural patterns for building the distributed systems as well. Microservices is one of those architectural patterns which has emerged as an advanced variant of Service Oriented architectural style. Microservices architecture is entirely an amalgamation of notions like domain-driven design, continuous integration continuous delivery, DevOps, containerization, highly scalable and agile systems. As a part of the study, an exhaustive survey is carried out around the ecosystem of microservices architecture. This paper aims at exploring the recent development in microservice architectural pattern, emerging trends and the potential research gaps. The paper outlines the survey of the efforts done by various researchers in discrete aspects of microservice like design and implementation of applications in different domains based on microservices, strategies to empower maintainability and scalability of microservices, security aspects of microservices, strategies for data management and fault tolerance in microservices, orchestration of microservice and frameworks to achieve event sourcing in microservice architecture. The findings of this survey will set a path ahead for addressing the current challenges in various aspects of microservices architecture discussed in the study and further innovations to the same.

State of the Art in Zero-Knowledge Machine Learning : A Comprehensive Survey

Aneesh Sathe, Varun Saxena, Akshay Bharadwaj P, Dr. S. Sandosh

Abstract: In recent years, the field of Machine Learning (ML) has witnessed significant expansion, with its applications spanning various domains such as finance, healthcare, and cybersecurity. However, this expansion has brought about significant challenges concerning privacy and security, particularly as ML models deal with sensitive data. Both organizations and individuals have reservations about sharing proprietary or personal information, primarily due to concerns about potential data breaches and misuse. Furthermore, doubts surrounding model integrity and transparency have raised questions about the reliability of ML predictions. To address these issues, Zero Knowledge Proofs (ZKPs) have emerged as a promising cryptographic technique. ZKPs allow secure computations on encrypted data without revealing any sensitive information. They enable a prover to convince a verifier of a statement's truthfulness without disclosing any underlying data, thereby ensuring data privacy and confidentiality. The paper under consideration conducts an extensive analysis of the burgeoning field of Zero Knowledge Proofs within the context of machine learning applications. It emphasizes the advantages and limitations of ZKPs in preserving data privacy, ensuring computation integrity, and enhancing the security of machine learning systems. The ultimate goal is to foster a deeper understanding of the potentials and challenges associated with integrating ZKPs into modern ML workflows and systems.

IoT Based ECG to Grayscale Representation for the Prediction of Artery Deposition

G.Pandiselvi, C.P.Chandran, S.Rajathi

Abstract: The study and design entitled "IoT based ECG Grayscale representation for the prediction of Artery Deposition" was designed in response to the recent sharp rise in the number of different heart abnormalities affecting both older and younger people. The Internet of Things (IoT) age is far more beneficial for a variety of applications. The purpose of this study is to make it easier to get the ECGs of the patients, to continually monitor them, and to identify any patient problems. The Internet of Things (IoT) components needed to get a person's ECG include an Arduino UNO microcontroller, an AD8232 ECG Sensor, and ECG Electrodes. There are three phases to this work. Using IoT devices, we physically collect an ECG signal from a person in the first phase. We are removing the noisy data from the ECG we acquired in the second step. Additionally, we divided the ECG's 12 leads into segments, which were then represented as a grayscale image. To determine if the ECG is normal or abnormal, we analyze the data from the previous phase in the final phase.

AHP-MOORA Approach for Industrial Robot Selection in Car Paint: An Industrial Case Study

Dr. Ashish Yadav, Dr. Anand Jaiswal, Dr. Teena Singh

Abstract: Industrial robots are crucial elements of advanced manufacturing technologies because they allow manufacturing companies to generate high-quality products affordably. Industrial robots may carry out a wide range of operations, including welding, painting, assembling, disassembly, placing printed circuit boards precisely, palletizing, packaging, labeling, and product testing. All features are completed with extreme endurance, quickness, and accuracy. Several competing parameters that must be taken into account simultaneously in a thorough selection process affect how well industrial robots function. The practical method for choosing an industrial robot for vehicle painting activities is presented in this study article. It streamlines the decision-making process by combining the Analytical Hierarchy Process (AHP) and Multi-Objective Optimization by Ratio Analysis (MOORA) methods. It is a strategy that is used to rank and evaluate alternatives while taking into account their relative importance and effectiveness. The ranking derived using the MOORA method is displayed. The outcomes demonstrated the value of MCDM techniques for robot selection. The study's originality is in using MOORA MCDM approaches to select industrial car painting robots.

Review on Gene Expression Meta-Analysis: Techniques and Implementations

P. Marimuktu

Abstract: The massive use of high-efficiency gene expression evaluation progress over the last twenty years and certainly the majority of the produced research are stored in shared repositories. All further information's offers an essential resource for remodel to result in new understanding and scientific discovery. In this situation, considerable interest has been concentrated on meta-analysis techniques to blend and mutually inspect mismatched gene expression datasets. Here, this review outlines the major evolution in the gene expression meta-analysis, from data composition to the modern statistical techniques. This review addresses the major sets of applications and issues that could be addressed in protein expression meta-analysis studies and allows a relative outline of the useful software and bioinformatics tools. This review paper gives the researchers an overview of the approaches used to conduct meta-analysis on genome-wide data and new approaches can be invented with the help of previous one. This review has the aim of helping researchers to understand methodologies to perform meta-analyses based on gene expression data.

Exploring the Effectiveness of On-Page SEO for Webpage Ranking: A Critical Study

Ravi S. Patel, Jignesh A. Chauhan, Kirit C. Patel, Krupa Bhavsar

Abstract: A research paper titled "Exploring the Effectiveness of On-Page SEO for Webpage Ranking" investigates the importance of on-page SEO strategies on the ranking of webpages in search engine results. With the increasing importance of online visibility and website traffic for businesses and organizations, understanding the factors that influence search engine rankings has become crucial. The study employs a comprehensive approach, incorporating data from various sources, to assess the importance of on page SEO factors in influencing webpage rankings. To achieve this, a diverse set of webpages from different domains and industries were analyzed, focusing on key on-page SEO elements such as keyword optimization, meta tags, content quality, URL structure, and internal linking. Through a rigorous analysis of these on-page SEO factors and their correlation with webpage rankings, the research reveals valuable insights into the practices that can positively impact search engine visibility. Additionally, the study considers the evolving algorithms of major search engines and their effects on ranking mechanisms, offering a forward-looking perspective on SEO strategies. The findings of this research underscore the significance of on-page SEO as an important factor of a successful ranking strategy. By identifying best practices and areas for improvement, website owners, marketers, and SEO professionals can make informed decisions to enhance their webpage rankings and overall online presence. In conclusion, this research paper contributes valuable knowledge to the field of SEO by investigating the effectiveness of on-page optimization techniques on webpage rankings. It provides actionable recommendations for website owners and digital marketers seeking to improve their search engine visibility and achieve higher rankings for their webpages, ultimately leading to increased organic traffic and potential business growth. In the current scenario, everyone needs to rank their website on the first page of every search engine. But they are not following the standard guidelines or parameters of the search engine due to insufficient knowledge. Every search engine updates its parameters and algorithms frequently. Spam contents, spam links and keyword stuffing are the black hat SEO techniques. Which will degrade the website ranking.

Precision Tuning of PID Controller Parameters for Dynamic Stability Enhancement in GPSS-SMIB Systems: The HB-PSO Optimization Approach

Yogesh Kalidas Kirange, Pragya Nema

Abstract: This research work proposes to boost the transient stability of general purpose simulation system (GPSS) connected one machine unlimited bus system through proportional-integral-derivative (PID) controller parameters optimized using hybrid optimization approach. The major intention is to render flexible environment for modelling, simulating, and analyzing the functioning of an electrical power system to enhance the system's dynamic stability. Hybrid optimization approaches significantly improve stability of systems by fine-tuning PID controllers. This work focuses on hybrid butterfly-particle swarm optimization (HBPSO) uses to calibrate PID controller parameters for SMIB system is to enhance dynamic stability and control performance. HBPSO aims to effectively identify optimal or near-optimal PID controller settings by combining BOA and PSO. Its unique combination of PSO and BO improves control quality with decreased overshoot, settling time, steady-state error, robustness, responsiveness to changing system dynamics, enhancing SMIB system stability and reliability at various operating conditions. This research demonstrates the complex and nonlinear nature of power system dynamics through extensive GPSS simulation experiments and exhaustive simulations that an HB-PSO optimized PID controller effectively provides the required stability and disturbance attenuation. Simulation results demonstrate that the proposed HBPSO-based PID-MPSS configuration enhances damping performance compared to conventional MPSS approaches, validated through eigenvalue analysis confirming a favorable shift of unstable eigenvalues towards the stable region. Stability analysis for the hybrid controller at reducing 5%, 10%, and 15% load, the output of eigenvalue and damping ratio are $-1.59 \pm j4.34$ and 0.298. Also, implementing this technique not only settling time improve to 9, 4, and 3 seconds but also overshoot time to 7, 4, and 2 seconds by reducing 5%, 10%, and 15% load.

Enhancing Student Welfare: A Comprehensive Analysis of the User Interface for a University Mental Health Counselling App

Rahil Parikh, Himanshu Nimonkar, Saikrishna Karra,
Ashwini Dalvi, Irfan Siddavatam

Abstract: The critical relevance of mental health cannot be understated. A sizeable portion of university students face barriers to accessing counselling assistance. Many students hesitate to seek the crucial support they need for their mental health issues because of a lack of accessibility and practical problems connected with conventional counselling methods. This study presents a creative application called "Mento-peace" which is intended to successfully address this pervasive problem by offering an intuitive, cost-effective and easily available online system for counselling which is especially suited to the requirements of university students. This application includes a wide range of essential rehabilitative assets in addition to the system's main attributes, such as online discussions, reflective evaluation services, and cooperative mental health networks. A critical analysis of the effectiveness of this application and its impact on student mental health welfare will be analyzed through a survey conducted among university students.. Out of the university students who responded to the survey question concerned with seeking counselling services, it was observed that a majority of 87.4% are willing to opt for such services, if made available to them through the proposed application.

Leveraging Business Intelligence and Student Feedback for Enhancing Teaching and Learning in Higher Education

Hemant S Sharma, Dr. Hiren D Joshi

Abstract: The main objective of this study is to examine data, improve teaching quality, and accelerate ongoing development in higher education through the use of Business Intelligence (BI) tools and the incorporation of student feedback. Business Intelligence and other forms of technology play a critical role in improving the efficiency, effectiveness, and individualization of educational services. Higher education has a serious problem due to the lack of a well-defined plan to incorporate student feedback and data analytics into the classroom. Due to its absence, the potential to gain insightful information and improve educational experiences is hindered. A machine learning hybrid model is trained and proposed known as Convolution Neural Network (CNN)+ Long-Short Term Memory (LSTM) model to predict student feedback. The investigation reveals that students provide feedback in various forms, encompassing positive, negative, and neutral responses concerning faculty performance. The proposed hybrid model achieves an accuracy of 90.34% and a loss of 0.285 in classifying the sentiment analysis of the students. Also, the proposed hybrid model performs better as compared with other conventional approaches.

Raspberry Pi-driven Affordable Image-to-Braille Converter for Visually Impaired Users

Ananya Kulkarni, Maitri Shah, Nivedita Thakur,
Srushti Pednekar, Prof. Viral H. Shah

Abstract: Addressing the growing demand for affordable assistive technology for the visually impaired, this paper introduces an innovative system for real-time image-to-Braille conversion, utilizing optical character recognition and Raspberry Pi 4 technology. The system captures text from images and converts it into Braille characters, embossed by solenoids for tactile reading. The research aims to enhance inclusivity in education and daily life for visually impaired individuals, with a particular focus on developing countries like India.

Estimation of Skin Cancer with Integrated Extended Convolutional and Recurrent Neural Network Techniques on Image Dataset

Dr. Shaik Mastan Vali, Dr. Asadi Srinivasulu, Dr. Rajasekaran S

Abstract: Skin cancer is among the most prevalent and potentially deadly forms of cancer, emphasizing the importance of early detection using advanced computational methods. Techniques from machine learning, including random forest and Naive Bayes, have been employed to pinpoint skin cancer. Many research pieces have compared the effectiveness of AI-driven models in automatically classifying skin cancer to human expertise, laying a foundation for the successful integration of these AI tools in clinical pathology. The accuracy rate for detecting skin cancer with Naive Bayesian is 86%, and with the random forest technique, it's 87%. A proposed solution to boost accuracy is the use of an Extended Convolutional Neural Network (ECNN) that has 12 intricate processing layers, refining the diagnosis and detection precision for skin cancer. The ECNN system and the extended Recurrent Neural Network (ERNN) report accuracy levels of 94.02% and 87.32%, respectively. These studies examine three vital components in melanoma reader research: the nature of the test set, the source of the data (whether experimental or clinical), and the expertise level of the participants. The research encompassed topics like digital markers, histological studies, comprehensive slide imaging, advanced computational methods, melanoma identification, and skin cancer classification. The findings indicate that the ECNN and ERNN models are more robust and reliable than other prevalent transfer learning models.

Improved Genetic Algorithm based K-means Cluster for Optimized Clustering

F. Mohamed Ilyas, Dr.S. Thirunirai Senthil

Abstract: The Human Freedom Index (HFI) is an annual evaluation that measures a variety of factors, such as the rule of law, security, religion, expression, and regulation, to determine the degree of human freedom. On the basis of these considerations, relationships between social and economic factors have been developed. Several agents of intelligent software are frequently utilizing clustering techniques in filtering, extracting, categorizing materials that are already present on the World Wide Web since clustering approaches deal with the enormous volume of information. Dataset involved in this research is HFI at 2022 which involves 3464 observations and 141 features. The great sensitivity of the initial cluster centers, which may cause the K-Means method to become trapped in the local optimum is one of the major issues. The proposed work Genetic Algorithm (GA) using density method to address the drawbacks of K means cluster includes clustering numbers, as well as local optimization. In contrast to the initial cluster centroids that are chosen at random using the Improved Genetic Based K Means (IGBKM) clustering technique introduced for utilized chromosomes in creating cluster centroids. The K-Means clusters have commenced with the best cluster centers suggested using GA which maximize the fitness functions. In comparison to traditional K-means clustering technique, the results reveal in improving the K Means performance through genetic based by sensible selection for initiating the cluster centroids.

WSN Based Alert Architecture for Object Intrusion Detection and Fire Detection in Agricultural Farms in India

Dinesh Kumar Kalal, Dr. Ankit Bhavsar

Abstract: The crops on farms are frequently destroyed by local wildlife such as buffaloes, cows, goats, birds, and fire, amongst other things. This results in significant financial losses for the farmers. It is not feasible for farmers to fence off entire fields or to be on the land around the clock in order to provide security for it. As a result, the following is our proposal for an WSN based automatic crop protection architecture against animals and fire. This is a Wireless sensor based architecture that makes use of a microcontroller and is based on an Arduino Uno. Both an ultrasonic sensor and a smoke sensor are utilized by this architecture. The ultrasonic sensor is used to identify objects that are approaching the area, and the smoke sensor is utilized to detect fires. In such a scenario, the sensor sends a signal to the microcontroller instructing it to do an action. The microcontroller will now sound an alarm to scare the animals away from the field. It will also send an alert message to the farmer to know about the problem and allow him to travel to the location in the event that the animals do not flee in response to the alarm. If it detects smoke, it will switch the motor on as soon as possible and also send an alert message to the farmer to know about the fire in the field. Because of this, the crops are completely protected from both animals and fire, minimizing the risk of loss to the farmer.

Decentralized Disruptive Crypto Landscape: How Digital Currencies are Shaking Up Finance?

Manish Dadhich, Manvinder Singh Pahwa,
Ashish Mathur, Anurag Shukla

Abstract: Cryptocurrency has introduced significant disruptions. It also poses challenges and risks that must be addressed, such as regulatory concerns, market manipulation, scalability issues, and environmental impact. The paper aims to explore the long-term impact of Cryptocurrency on the financial market, which will depend on how these challenges are addressed and how technology continues to evolve. The rise of cryptocurrencies has prompted central banks to explore the development of their digital currencies. CBDC (Central Bank Digital Currency) aims to leverage blockchain technology for faster, cheaper, and more secure transactions while maintaining central bank control over monetary policy. This development could potentially reshape the traditional banking system. The study has attempted cryptocurrencies that have the potential to provide financial services to unbanked or underbanked populations worldwide. With access to the internet and a digital wallet, individuals can participate in the global economy and send and receive funds easily, even in areas with limited banking infrastructure. The paper may be helpful for FinTech experts, bankers, investors, and administrators to get inside financial markets and disruption

Multiplatform Mobile App for Multilingual OCR Based Translator for Tamil (MMOT)

Vallidevi Krishnamurthy, Pooja Ramesh, Rahul Kumar S, Kumar Rishi

Abstract: In an increasingly interconnected world, language barriers can pose significant challenges for communication and cultural understanding. This is particularly true for tourists from revolving around Tamil region, who may find it difficult to communicate with people in other parts of India or abroad. To address this issue, we have developed a Multiplatform application (Eke et al. 2019) using Kotlin (Moskala et al. 2017) that uses machine learning to identify text in images and translate it to Tamil (Nedumaran et al. 2009). The app leverages the power of the Google ML Kit and the Google Translate API to provide accurate and reliable translations in real-time. It is designed to be user friendly and intuitive, with various features that make it a valuable tool for tourists and anyone who needs to communicate with Tamil speakers or understand written Tamil text. Additionally, the app includes the ability to change its language to Tamil and uses a 3rd party library for taking pictures either from the gallery or camera, with editing capabilities. The app was evaluated through testing with a group of users and in a hackathon, where it demonstrated its effectiveness in translating text to Tamil. The motive behind choosing this project was to help Tamil oriented people freely roam and experience cultures without feeling any language barrier. In this paper, we describe the design and development of the application, discuss our methodology for evaluating its performance, and present our results and future work.

Analyzing EEG Signals While Doing Various Psychological Tasks

T.Manoj Prasath, Dr.R.Vasuki

Abstract: Stress is becoming a threat to a person's prosperity regardless of how old they are. The current way of life has made life so miserable that both mental and physical health is destroyed. Each of these has been seen as benefiting from yoga, which is also widely believed to be a method for reducing stress. We looked explored how the Electroencephalogram (EEG) responded to intensive, high-impact yoga with low power after finishing a mental activity while paying attention to sound in order to gauge the recovery effect of severe yoga on the EEG. When mentally calculating numbers or possibly paying attention to a 5 KHz unpleasant tone, the low-alpha wave's average sufficiency (8–10 Hz). Particularly, the mean adequacy in the low-alpha wave demonstrated a quantitatively vast difference between resting before pressure testing and psychological number juggling while standing and listening to the 5 KHz tone. Yet, after 20 minutes of rigorous yoga, the low-alpha wave was stabilised; the average abundance exceeded up to 29% of the sufficiency in the before focused on relaxing. Comparable Theta wave findings were attained. However, under test settings, other EEG rhythms with higher recurrence the outcomes and progress of the various stages was done in view of the information acquired from the estimations. At long last, the general progress of the proposed calculation was assessed and the qualities and shortcomings of the picked approach were examined. The determined qualities were contrasted with those from the headband with check whether the "eSense" calculation matches techniques in view of conventional methodologies.

“Obstacles in the way of Digital Payment” – An Analytical Study

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

Abstract: In the current highly competitive landscape, leading organizations find it increasingly challenging to maintain a competitive edge against global rivals in a world characterized by increasing interconnectedness. Electronic payments, encompassing a spectrum of financial transactions conducted devoid of traditional paper-based documents, have gained prominence. These transactions include the use of debit cards, credit cards, smart cards, e-wallets, e-cash, electronic cheques, and more. However, the acceptance and utilization of e-payment systems exhibit substantial variations across the globe, with some methods enjoying widespread adoption while others languish with lower utilization rates. This study is designed with the objective of meticulously identifying the multifaceted issues and challenges that confront electronic payment systems. Additionally, we will present potential solutions to enhance the digital payment system. It's important to note that while digital payment systems offer numerous opportunities, they also bring along lots of potential threats and challenges. The Rajkot District is the focus of the study, with 104 participants. Convenience-based sampling was used to choose the participants. Interview schedules and a Google form were used to collect primary data. The data was analyzed and interpreted using simple percentage analysis and the Likert scale. The study's findings highlight the region's persistent reliance on cash transactions. As a result, there is a clear need for increased customer awareness programs targeted at teaching customers about the convenience and benefits of digital payment channels as a replacement for cash transactions.

Finding the Optimum Roll-Off Rate of a Raised Cosine Filter at the Receiver to Achieve the Lowest Bit Error Rate for a given Modulation Order and a given $[(\text{Energy/Bit}) / \text{Normalized Noise}]$ Ratio

Prabir Banerjee, Sabyasachi Chatterjee, Rahul Ghosh, Asmita Bhattacharya, Riya Shil

Abstract: In the present age of digital communication, two parameters are of paramount importance- volume of data and the associated Bit Error Rate (BER). MIMO technique is a big help here. However, the phenomenon of multipath signals leads to Inter Symbol Interference (ISI). The pre-shaping of the pulse at the transmitter mitigates the ISI. Interestingly, the BER is dependent on the modulation order, the E_b/N_0 ratio and the roll-off rate of the filters. In this paper, we have studied the effects of the three mentioned parameters on the BER for a given system. The results do show some trends.

Security Assurance in the Software Development Process: A Systematic Literature Review

Kedir Lemma Arega, Asrat Mulatu Beyene, Sofonias Yitagesu

Abstract: A systematic review of the literature is a method for identifying, choosing, assessing, and critically evaluating recent research works to tackle ongoing research issues and concerns. This review attempts to investigate the current issues and faintness in system security assurance. A review protocol was created after a thorough analysis of the current methodology of the systematic review and consultation with subject matter specialists. A list of potential research topics, search strategy, potential sources, selection standards, selection process, and checklists for assessing the caliber of the research. Boolean ANDs and ORs were used to build the search strings, which were then put to the test against primary studies on system security assurance from well-known databases. Primary research studies that offered support for research questions were found and chosen using selection criteria. The inclusion criteria were as follows: research papers published between 2019 and 2023, software security assessment and evaluation of systems, and publications on software assurance and security that are only concerned with software.

Implementation of a Novel, Secure Module-Based Architecture for Blockchain-Based Real Estate Transaction Processing

Vishalkumar Langaliya, Jaypalsinh A. Gohil

Abstract: Purpose: This study suggests organizing real estate transactions in a decentralized manner by using private blockchain technology. The writers point out the main problems with India's present transactional procedures and advocate for the application of blockchain technology as a fix. The study's ultimate conclusion is that the recommended approach might be able to enhance transaction processes in Indian government offices, encouraging increased effectiveness, openness, and a decrease in dishonest behavior.

Methods/Design/Methodology: The present transaction procedure and the centralized technology are inspected at the government office using a physical observation method. The next step involves questioning a large number of people to recognize the main areas where the process is tense. Utilizing the insights from the talks, a blockchain solution addressing the issues raised is created. Interviewees are asked for their approval of the predicted model after the design.

Practical Implications: To streamline the real estate transaction process at the Indian government office, a private blockchain application is developed. The seller, the purchaser's property, and the payment are all entered into a single, intricate front end, and the sensitive data is stored in an appropriate database. When the required information has been subjected to the smart business logic, the data is sent to the isolated blockchain for ultimate execution. To verify the proposed system, one artificial effectiveness is made that places a significant load on it and measures the load trashing. To validate the proposed system, a massive amount of sample data is generated.

Originality/Value: Current studies specify that blockchain technology can increase transaction process confidence by improving efficiency, transparency, security, and data accessibility. Therefore, the proposed application is beneficial for the real estate transaction process in India going forward.

Secure and Immutable Payment Algorithm using Smart Cards and Hyperledger Blockchain

Dr. Ravirajsinh S. Vaghela, Dr. Kalpesh Popat, Vishalsinh Gohil, Bansi Chavda

Abstract: In doing digital transactions, there is a lot of risk of hacking and also a rising incidence of online fraud. When utilizing smart cards, users are concerned about fraud, security problems (hackers), the lack of availability of up-to-date information, and hidden fees. Recent studies clearly show that card-not-present fraud, skimming fraud, and website cloning methods have been used more frequently in the smart card system. The frequency of using plastic cards is expected to go up in the upcoming years. Card systems face a variety of issues such as fraud fears, lack of understanding, and other technological issues. The scope of the research is limited to the card that is particularly used in ATM and online purchase only, but by using this proposed system using blockchain aggregator, we can use any plastic card to purchase any things transparently and efficiently. The proposed method aggregates the number of cards which are provided by the card provider and makes each transaction secure.

Data Security Complications on Computing Technology In Mobile Cloud

Mr.A.Satishkumar, Dr.A.Vidhya

Abstract: Mobile devices resource limitations are a direct result of mobile computing rapid development. Nowadays, the gadget that was primarily used to receive calls and compose messages in earlier decades is capable of handling almost all of the duties currently carried out by computers. On the other hand, the development of mobile computing can be changed by combining mobile and cloud computing techniques, creating a new process known as mobile cloud computing technology. A mobile handler is now released from the constrained emission of currently available mobile devices as the information is deposited in the cloud's framework and the real implementation shifts to the cloud backdrop. Additionally, in order to utilize cloud services, wireless technology is used to transmit data between clouds and mobile devices. As a result, a few brand-new courses on privacy and security encounters are presented. Even if there are many disagreements, the resulting security elucidations have been projected and acknowledged in the literature by numerous researchers to counteract the experiments. Additionally, compare this effort based on various security and privacy preferences, and as a last point, discuss some open issues. This paper compares the existing RSA and AES algorithm with the proposed algorithm EMSA. The proposed algorithm shows more security than the existing algorithm and this can be used in cloud as well as mobile computing for storing confidential data.

An Evaluation of Hybrid RRT* with Anytime RRT* Algorithm for Wheeled Mobile Robot

P. Jai Rajesh, V.Balambica, M.Achudhan

Abstract: In robotics applications, real-time path planning is essential for allowing robots to travel effectively and independently in changing situations. While they offer the best results, traditional path planning algorithms cannot adjust to changing circumstances. This study suggests a hybrid strategy to accomplish effective and anytime-capable path planning for a wheeled mobile robot (WMR) by combining the advantages of the RRT* and Anytime RRT* algorithms. The anytime behaviour of Anytime RRT* is integrated into the RRT* algorithm via the hybrid algorithm known as Hybrid RRT* with Anytime RRT*. This enables the robot to repeatedly improve solution quality and quickly construct an initial viable path using RRT*. It may then adjust this path over time in response to changes in the environment. Real-time tests on a WMR platform and simulations are used to assess the algorithm's performance. Creating a simulation environment with different step sizes and iterations is part of the experimental setup. The algorithm's success is evaluated using performance indicators such as cleaning time, cleaning efficiency, collisions, and near-collisions. The comparison of the outcomes with the conventional RRT* and Anytime RRT* implementations sheds light on the flexibility and efficiency benefits of the hybrid method. Furthermore, the algorithm's performance in dynamic situations is validated by the algorithm's real-time implementation on the WMR. The study advances the area of real-time path planning by introducing a unique hybrid method that integrates the advantages of Anytime RRT* and RRT*. The results demonstrate the flexibility, effectiveness, and high quality of the solution provided by the algorithm.

Identification of Software Design Pattern and Deployment Strategies for AWS RDS using Pattern for Relational Database

Mini Bhola, Dr. Sunil Bajaja

Abstract: Cloud computing offerings program and continue services with elasticity, flexibility, broad availability, and minimal expense are all features that entice users to shift their main business processes to the cloud. However, there are various design as well as development issues to address before implementation. For that AWS RDS databases work with design patterns and are considered as a solution for programmers, designers, and developers. The paper introduces the concepts of developing and designing software using relational database patterns, as well as the concept of software deployment approach in the context of AWS. This research paper addresses the requirement of designing software by presenting different design patterns and solutions and discovering deployment strategies. Furthermore, potential design pattern possibilities are discussed based on the research.

Review on IoT Based Smart Traffic Management System

Bhavesh J Cholera, Dr. Sunil Lalchand Bajaja

Abstract: This work proposes an IoT-based system model to acquire and store real-time traffic data for such conditions because of the massive amount of private vehicle traffic that has ultimately led to exceedingly complex traffic in urban regions. The paper shows information about using roadside units to provide real-time traffic updates on traffic congestion and unusual traffic incidents, improve vehicle safety distances, and conduct data analysis. This paper also discusses the evolution of IoT technology, including its benefits and drawbacks, as well as smart traffic management systems with IoT. Simplified data is also useful for future work.

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