ICRCET

2024

12th International Conference on Recent Challenges in Engineering and Technology

23rd-24th April, 2024 | Bangalore, India

Organized by

Institute For Educational Research and Publication (IFERP)

Theme

"Engineering Excellence in the Face of Technological Challenges"

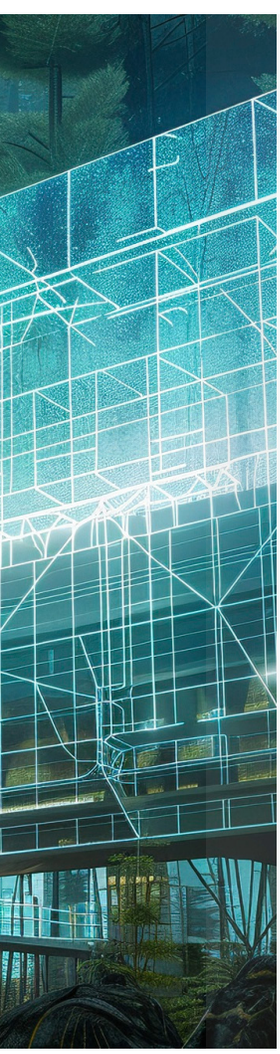
IFERP®

Explore Your Research Journey...

Publisher: IFERP Explore

9 789392 105692

Table of Contents



ICRCET

Conference Theme

"Engineering Excellence in the Face of Technological Challenges"

Preface

We are delighted to extend a warm welcome to all participants attending 12th International Conference on Recent Challenges in Engineering and Technology (ICRCET-24) organized by Institute For Educational Research and Publication (IFERP) taking place in Bangalore, India at Aloft Bengaluru Whitefield, Bangalore on April 23rd-24th, 2024. This conference provides a vital platform for researchers, students, academicians, and industry professionals from all over the world to share their latest research results and development activities in the field of Educational Research. It offers delegates an opportunity to exchange new ideas and experiences, establish business or research relationships, and explore global collaborations.

The proceedings for ICRCET-24 contain the most up-to-date, comprehensive, and globally relevant knowledge in the field of Engineering and Technology. All submitted papers were subject to rigorous peer-reviewing by 2-4 expert referees, and the papers included in these proceedings have been selected for their quality and relevance to the conference. We are confident that these proceedings will not only provide readers with a broad overview of the latest research results in Engineering and Technology but also serve as a valuable summary and reference for further research in this field.

We are grateful for the support of many universities and research institutes, whose contributions were vital to the success of this conference. We extend our sincerest gratitude and highest respect to the many professors who played an important role in the review process, providing valuable feedback and suggestions to authors to improve their work. We also extend our appreciation to the external reviewers for providing additional support in the review process and to the authors for contributing their research results to the ICRCET-24.

Since January 2024, the Organizing Committees have received more than 350+ manuscript papers, covering all aspects of ICRCET-24. After review, approximately 100+ papers were selected for inclusion in the proceedings of ICRCET-24. We would like to thank all participants at the conference for their significant contribution to its success.

We express our gratitude to the keynote and individual speakers and all participating authors for their dedication and hard work. We also sincerely appreciate the efforts of the technical program committee and all reviewers, whose contributions made this conference possible. Finally, we extend our thanks to all the referees for their constructive comments on all papers, and we express our deepest gratitude to the organizing committee for their tireless work in making this conference a reality.

About ICRCET-2024

The 12th International Conference on Recent Challenges in Engineering and Technology (ICRCET-24), scheduled for April 23rd - 24th, 2024, in Bangalore, India, offers a unique opportunity for Engineers, Research Scholars, and Students to engage with technology experts. This event serves as a platform to showcase new equipment, technologies, and procedures, fostering discussions on engineering challenges and effective problem-solving. Participating in this conference provides a significant chance to broaden your technical perspective, enhancing your potential for career advancement through insightful presentations and exposure to innovations.

PURPOSE OF ICRCET

Knowledge Exchange: The primary objective of the 12th ICRCET is to facilitate the exchange of knowledge among engineers, researchers, and scholars.

Latest Developments: The conference aims to provide a platform for attendees to gain insights into the most recent developments in engineering and technology.

Engaging Discussions: Through scheduled discussions, ICRCET encourages participants to engage in meaningful conversations on contemporary issues and emerging trends in the field.

Cutting-edge Technologies: Attendees can anticipate presentations and live demonstrations showcasing cutting-edge technologies, offering a firsthand experience of innovations in the industry.

Collaboration: ICRCET is designed to foster collaboration among professionals, encouraging interdisciplinary interactions and partnerships.

OBJECTIVE OF THE ICRCET

These objectives collectively underscore ICRCET's commitment to fostering collaboration, knowledge sharing, and innovation for the advancement of engineering and technology on a global scale.

Knowledge Dissemination: Facilitate the dissemination of recent research findings and technological advancements in various engineering disciplines.

Interdisciplinary Exchange: Foster interdisciplinary collaboration by bringing together researchers, academicians, and industry professionals from diverse engineering and technological backgrounds.

Innovation Promotion: Provide a platform for the presentation and discussion of innovative ideas, methodologies, and solutions in response to current challenges in engineering and technology.

Networking Opportunities: Create opportunities for networking and relationship-building among participants to encourage future collaborations and partnerships.

Research Enhancement: Encourage the exchange of insights and experiences to enhance the quality and relevance of ongoing and future research endeavors

About IFERP

The Institute for Educational Research and Publication (IFERP) is a professional association devoted to the advancement of the fields of engineering, science, and technology through the funding of research activities, propagation of the latest research insights, furtherance of industry trends, and other related ventures. IFERP aims to digitalize this entire process of innovation, collaboration, and knowledge-sharing through the fostering of a unified virtual scientific community worldwide. Everything from networking and joint ventures to learning, research assistance, publication, and more, will be carried out as part of this objective.

IFERP has established robust scientific, academic, and industry networks throughout Asia, the Middle East, and Europe. Some of the countries that IFERP has its presence in, include Iraq, Maldives, Thailand, Malaysia, Singapore, Philippines, Indonesia, Taiwan, Vietnam, UAE, Australia, Japan, Sri Lanka, Nepal, Ghana, and Africa.

MISSION

"Upskilling the knowledge hub through technological innovation and excellence for the benefit of humanity"

VISION

"A Digitally equipped robust, dynamic & swift professional community integrating academics & industry for upgraded technical knowledge implementation."

Message from Managing Director, IFERP

Mr. A. Siddth Kumar Chhajer
MD & Founder, IFERP
Technoarete Group

On behalf of Institute For Educational Research and Publications (IFERP) & the organizing Committee, I express my hearty gratitude to the Participants, Keynote Speakers, Delegates, Reviewers and Researchers. The goal of the 12th International Conference on Recent Challenges in Engineering and Technology (ICRCET-24) is to provide knowledge enrichment and innovative technical exchange between international researchers or scholars and practitioners from the academia and industries in the field of Engineering and Technology.

This conference creates solutions in different ways and to share innovative ideas in the field of Engineering and Technology. ICRCET-24 provides a world class stage to the Researchers, Professionals, Scientists, Academicians and Students to engage in very challenging conversations, assess the current body of research and determine knowledge and capability gaps.

12th International Conference on Recent Challenges in Engineering and Technology (ICRCET-24) will explore the new horizons of innovations from distinguished Researchers, Scientists and Eminent Authors in academia and industry working for the advancements in Science and Engineering from all over the world. ICRCET-24 hopes to set the perfect platform for participants to establish careers as successful and globally renowned specialists in the field of Engineering, Technology.

Message from Chief Executive Officer, IFERP

Mr. Rudra Bhanu Satpathy
CEO & Founder, IFERP
Technoarete Group

IFERP is hosting the 12th International Conference on Recent Challenges in Engineering and Technology (ICRCET-24) this year in month of April, 2024. The main objective of ICRCET-24 is to grant the amazing opportunity to learn about groundbreaking developments in modern industry, talk through difficult workplace scenarios with peers who experience the same pain points and experience enormous growth and development as a professional. There will be no shortage of continuous networking opportunities and informational sessions.

The sessions serve as an excellent opportunity to soak up information from widely respected experts. Connecting with fellow professionals and sharing the success stories of your firm is an excellent way to build relations and become known as a thought leader. I express my hearty gratitude to all my Colleagues, Staffs, Professors, Reviewers and Members of Organizing Committee for their hearty and dedicated support to make this conference successful. I am also thankful to all our delegates for their pain staking effort to make this conference successful.

About
Keynote Speaker

Dr. Sushma Dave

Associate Professor and Head, Department of Applied Sciences,
JIET Group of Institutions Jodhpur, India

Mr. Swaroop Kaggere Shivamurthy

CEO and Founder
ProBVision, Ireland

Dr. Ahmad Fadhly Arham

Faculty of Business Management,
Universiti Teknologi MARA, Malaysia

About
Keynote Speaker

Dr. Neelesh Upadhye

Associate Professor, Department of Mathematics,
Indian Institute of Technology, India

Dr. Prebagaran Jayaraman

Chief Executive Officer
Samudera Management Consultants Sdn Bhd, Malaysia

About Committee Members

International Advisory Committee

Val Irvin Facturanan Mabayo
Instructor, College of Engineering and Technology, University of Science and Technology of Southern Philippines Cagayan de Oro, Philippipines

Dr. Nurshahira Binti Ibrahim
Senior Lecturer, Islamic Thought & Civilization, Universiti Teknologi Mara Cawangan Pahang, Malaysia

Dr. Aref Wazwaz
Associate Professor, Chemical Engineering, Dhofar University Salalah, Sultanate of Oman

Abdul Hafaz Ngah
Associate Professor, Business, Economy and Social Development, University Malaysia Terengganu Terengganu, Malaysia

Dr. Jegathambigai Rameshwar Naidu
Associate Professor, Bio Chemistry, International medical school, Management and Science University Melaka, Malaysia

Dhaval Sahija
Enterprise Solutions Manager, Digital Transformation Practice, Software Solutions Inc Dallas, USA

Dr. Iman Farshchi
Dean, Engineering, Built Environment and IT, MAHSA University Petaling Jaya, Malaysia

Ghadah H. Al Murshidi
Associate Professor, Instruction & Applied Linguistics, United Arab Emirates University Al Ain, United Arab Emirates

Dr. Vengadesh Periasamy
Associate Professor, Physics, University of Malaya Kuala Lumpur, Malaysia

Hadi Erfani
Others, Research and Development, Chemical Engineering Pishgaman Pardis, Iran

Eng. Lourdes P. Lasian
Faculty, Industrial Engineering, Adamson University Manila, Philippines

Dr. Ahmed Elngar
Associate Professor & Head, Computer Sceicne, Beni-Suef University Beni Suef, Egypt

Kuok King Kuok
Associate Professor, Computing and Science, Swinburne University of Technology Sarawak Campus, Malaysia

Dr. Chung Gwo Chin
Assistant Professor, Engineering, Multimedia University Cyberjaya, Malaysia

Hadiyanto
Professor, English & Professional Development Education, Universitas Jambi Jambi, Indonesia

Dr. Abdullah Al-JANABi
Associate Professor, Mechanical & Industrial Engineering, College of Engineering | Sultan Qaboos University Muscat, Oman

Dr. Lajwanti Kishnani
Assistant Professor, English & Professional Development Education, Amity University Dubai, United Arab Emirates

Intan Permatasari
Lecturer, Industrial Engineering, Widya Mataram University Yogyakarta, Indonesia

Eva Azhra Latifa
Lecturer, Civil Engineering, Politeknik Negeri Jakarta, Indonesia

Dr. Bishwajit Saha
Professor, Electrical & Electronics Engineering, International University of Agriculture and Technology Bangladesh, Bangladesh

Kevin Cereza-Taguiban
Teacher, Science, Carmona National High School Cavite, Philippines

National Advisory Committee

Dr. Surendra H J
Professor & Head, Civil Engineering, Atria Institute of Technology Karnataka, India

Dr. Vikram Kumar
Scientist, Planning & Development, Mausam Sewa Kendra Bihar, India

Dr. M. Vinod Kumar
Professor, Civil Engineering, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Tamil Nadu, India

Dr. P. Saravanakumar
Professor & Head, Civil Engineering, Sri Krishna College of Engineering and Technology Tamil Nadu, India

Dr. G. Prabhakaran
Professor, Civil Engineering, Siddharth Institute of Engineering & Technology Andhra Pradesh, India

Dr. S. Govindarajan
Professor, Civil Engineering, Aditya Engineering College Andhra Pradesh, India

Dr. Animesh Kumar Sharma
Head of Department, Mathematics, The ICFAI University Chattisgarh, India

Dr. M M Bagali
Director, Management Studies, MBA Program, East Point college of Higher Education; East Point Group of Institutions Karnataka, India

Dr. V. Gokula Krishnan
Professor, Computer Science Engineering, Saveetha School of Engineering Tamil Nadu, India

Dr. Bhadrappa Haralayya
Professor & Head, Master of Business Administration, Lingaraj Appa Engineering College Karnataka, India

Dr. Raffi Mohammed
Professor, Mechanical Engineering, Ramachandra College of Engineering Andhra Pradesh, India

Dr. S. Rajalakshmi
Professor, Artificial Intelligence & Data Science, Dr.NGP Institute of Technology Tamil Nadu, India

Dr. Chandrashekhar Shankar Shinde
Professor, Computer Science Engineering, Adarsh Institute of Technology & Research Centre Maharashtra, India

Scientific Committee Members

Abhishek Devidas Chaudhari
Assistant Professor, Civil Engineering, R. H. Sapat College of Engineering Maharashtra, India

Surbhi Saroha
Assistant Professor, Computer Science, Shobhit University Uttar Pradesh, India

Dr. Umesh Sehgal
IT Coordinator & AP, Computer Engineering, KVM School, Ludhiana Punjab, India

Dr. Ramesh Athe
Assistant Professor, Data Sceince & intelligent Systems, Indian Institute of Technology Karnataka, India

Dr. Basavaraj Patil
Assistant Professor, Computer Science and Business Systems, Dayananda Sagar College of Engineering Karnataka, India

Dr. Sudha Panda
Associate Professor, School of Architecture and Planning, KIIT University Odisha, India

Dr. Santhosh Kumar Allemki
Associate Professor, Electronics & Communication Engineering, Guru Nanak Institute of Technology Telangana, India

Saswat Khatai
Researcher, Mechanical Engineering, KIIT Deemed to be University Odisha, India

Jigneshkumar Brahmbhatt
Assistant Professor, Environmental Engineering, BVM Engineering College Gujarat, India

D. Arun Kumar
Assistant Professor, Electronics & Communication Engineering, Raghu Engineering College, Andhra Pradesh, India

Dr. Krishan Kumar
Researcher, Political Science, Self Haryana, India

Dr. M. Sujithra
Assistant Professor, Computing, Data Science, Coimbatore Institute of Technology Tamil Nadu, India

Dr. Ambika. N
Assistant Professor, Computer Science and Applications, St.Francis college Karnataka, India

Abstract's Index

ISBN: 978-93-92105-69-2

 ISBN: 978-93-92105-69-2

ISBN: 978-93-92105-69-2

 ISBN: 978-93-92105-69-2

ISBN: 978-93-92105-69-2

 ISBN: 978-93-92105-69-2

 ISBN: 978-93-92105-69-2

 ISBN: 978-93-92105-69-2

 ISBN: 978-93-92105-69-2

Empowering Vision - An Integrated AI Solution for Object Detection, Navigation, and Emergency Assistance

Diesha Singh
PES University, Karnataka, India

Divya K A
PES University, Karnataka, India

Gayatri Praharshita Prabhala
PES University, Karnataka, India

Harsh Hardikar
PES University, Karnataka, India

Geetha Dayalan
PES University, Karnataka, India

Abstract:

This paper introduces a budget-friendly solution for the navigation challenges faced by the blind or visually impaired. We leverage smartphones instead of costly specialized equipment, employing an AI assistant for functions like navigation, image detection, chat-bot interactions, and including an SOS emergency call feature to emergency contacts. Our aim is to enhance the independence and safety of visually impaired individuals through an accessible alternative, utilizing everyday smartphones and advanced AI. The system also acts as a portable substitute for traditional tools like guide dogs and walking sticks, providing a versatile aid for the visually impaired.

Index Terms:

Navigational Aids, Accessible, Image Detection, Chat-Bot, Inexpensive, Android, Emergency Contact, Emergency Call, SOS

ISBN: 978-93-92105-69-2

Optimizing Boiler Fuel Combustion through Oxygen Analysis for Improved Efficiency

Narendra Ashok Tayade
Ramrao Adik Institute of Technology, Nerul, Navi Mumbai, India

Sharad Jadhav
Ramrao Adik Institute of Technology, Nerul, Navi Mumbai, India

Bhawana Garg
Ramrao Adik Institute of Technology, Nerul, Navi Mumbai, India

Abstract:

This paper introduces a novel approach to enhance the combustion efficiency and reduce fuel losses in boilers by modifying the traditional design. There are many boiler manufacturers in the industry who can design the standard boilers and customize it based on application. The solution for increasing the combustion efficiency with the standard boiler design is to improve the fuel combustion system. In this system, oxygen detector is used for analysis of the combustion efficiency in the boiler. Earlier fuel combustion process was improper which leads to rise the production losses. An algorithm is developed to control the speed of ID, FD fans that helps to maintain the air inside the boiler and fuel ratio of combustion. The sugar industry is working for 4 to 6 months every year, and it is a cyclic process. This industry has very low running span to make a modification in the boiler successfully during maintenance period of the sugar industry. In this work, we have installed oxygen detector in the boiler to understand the production loss and increase the fuel combustion efficiency. We implemented some mechanical changes in the boiler and run a trial of boiler combustion process. During the process of boiler combustion, oxygen level inside the boiler has been measured and observed the combustion of boiler and it found 10% to 30% fuel loss.

Index Terms:

Oxygen Sensor, Boiler heat losses, Boiler combustion efficiency, Process control, Environment

 ISBN: 978-93-92105-69-2

Adoption of Different Agriculture Techniques/Technologies by Indian Agriculture System for Sustainable Farming System

Sonika Tyagi
Banasthali Vidyapith, Rajasthan, India

Dr. Yogesh Kumar Gupta
Banasthali Vidyapith, Rajasthan, India

Abstract:

India's agricultural system began around 9000 BC ago [2], and since then, techniques and technologies have been improved with the most recent inventions, as a result, India is now the world's second-largest producer of agricultural goods and had the second-highest agriculture output in 2020 ($403.5 billion) [1]. India is the world's largest producer of milk, jute and pulses (drybean, lentils and chickpeas) [1]. Additionally, India is also the world's second-largest producer of rice, wheat, sugarcane, fruit, vegetables, cotton and groundnuts [1]. All these credits of our Indian agriculture has a huge role to play of technologies used and also progressively adoption of the new and latest Agriculture techniques and technologies to stay updated. Indian agriculture has advanced considerably from the domestication of wheat to becoming the largest exporter of rice and one of the top producers of agricultural products [3]. India also advances its agricultural technology, moving from the use of tools like axes and stone sickles for cutting crop stalks to the adoption of Digital Farming, Smart Farming, and various Supply Chain Management techniques. This research paper includes the various methods and innovations that the Indian Agriculture System has adopted from time to time to upgrade itself and also to sustain.

Index Terms:

Indian Agriculture, Agriculture Technology, Farming, Agriculture History, Sustainable Farming, Smart Farming

Efficient Attendance Tracking with Facial Recognition

Rohit Talele*
Department of Computer Enginnering, Ramrao Adik Institute of Technology, Nerul, India

Shrinivasan Srivathsan Sudarsan
Department of Computer Enginnering, Ramrao Adik Institute of Technology, Nerul, India

Aditya Gupta
Department of Computer Enginnering, Ramrao Adik Institute of Technology, Nerul, India

Dhruv Tiwari
Department of Computer Enginnering, Ramrao Adik Institute of Technology, Nerul, India

Bhawana Garg
Department of Instrumentation Enginnering, Ramrao Adik Institute of Technology, Nerul, India

Abstract:

This paper presents a face recognition-based attendance monitoring system developed to automate attendance tracking. The objective is to enhance accuracy, efficiency, and security in attendance recording, addressing the limitations of traditional manual methods. The proposed system successfully achieved these goals by utilizing face recognition technology for precise attendance recording, real-time monitoring, and user-friendly interaction. The methodology involved implementing face detection and recognition using HaarCascades and Local Binary Pattern Histogram (LBPH) algorithms, integrating a graphical user interface for ease of use, and efficiently managing data. The results demonstrate an effective system for automated attendance tracking, showcasing the potential of facial recognition in improving traditional attendance methods.

Index Terms:

Face Recognition, Attendance Monitoring, Automation, HaarCascades, LBPH Algorithm, Graphical user interface

 ISBN: 978-93-92105-69-2

A Simulation Study on The Effect of Membrane Thickness on the Fuel Cell Performance

Nguyen Huu Phu
Faculty of Vehicle and Energy Engineering, Phenikaa University, Vietnam

Vo Binh Nguyen
Faculty of Vehicle and Energy Engineering, Phenikaa University, Vietnam

Pham Quoc Trung
Faculty of Vehicle and Energy Engineering, Phenikaa University, Vietnam

Vinh Nguyen Duy
Faculty of Vehicle and Energy Engineering, Phenikaa University, Vietnam

Abstract:

In this study, we investigate the influence of membrane thickness on the performance of proton exchange membrane fuel cells (PEMFCs). The performance of PEMFCs is crucial for their widespread adoption in clean energy applications. Using numerical simulations and experimental validation, we are modeling mathematically to explore the relationship between membrane thickness and various performance metrics, including power output, current density, and efficiency. Our findings reveal a complex interplay between membrane thickness, proton conductivity, and reactant transport, leading to benefits and limitations. Optimal membrane thickness is identified to balance proton transport and reduction of ohmic losses. The results provide valuable insights for designing and optimizing PEAMFCs, shedding light on strategies to enhance their overall efficiency and durability. This research contributes to a deeper understanding of membrane-based fuel cell systems and informs advancements in sustainable energy technologies.

Index Terms:

Proton Exchange Membrane, Membrane Thickness, Mathematical Modeling, Proton Transport, Ohmic Losses, Efficiency

Optimization of Process Parameters in CNC Turning of Nickel Aluminum Bronze Alloy Using ANOVA Analysis

Dr. Vara Prasad Vemu
JNT University Kakinada, India

Surya Karra
JNT University Kakinada, India

Abstract:

Production industries were striving hard to optimize the time and cost of production to sustain growth. Broad implementations of Nickel aluminium bronze alloys are discovered in automotive and marine industries. Assigning the optimum cutting constraints is essential for promoting the effectiveness of the component being turned. In this paper, machining parameters on CNC Turning of Nickel aluminium bronze alloy using Taguchi's ANOVA method and interactions between parameters were analyzed using Minitab 16. As feedback responses were utilized as the Material Removal Rate (MRR) and surface roughness. Variance analysis (ANOVA) is performed to test the impact of input parameters on the output responses that are being considered. Optimum parameters have been contrasted with confirmation tests and one has been projected to explain investigation.

Index Terms:

CNC Turning, Nickel Aluminum Bronze Alloy, ANOVA analysis, Production industries

 ISBN: 978-93-92105-69-2

Review on Greenhouse Monitoring Framework with 5G Narrowband Internet of Things

T. Satyendra Kumar
Research Scholar, Dept. of Computational Intelligence, School of Computing SRM Institute of Science & Technology, Kattankulathur, India

Dr. S. Vimal
Asst. Professor, Dept. of Computational Intelligence, School of Computing SRM Institute of Science & Technology, Kattankulathur, India

Abstract:

This paper outlines the studies on Smart Greenhouse structures based on the Narrowband Internet of Things (NIoT) in 5G generation. The information change is examined using descriptive, statistical techniques to perceive correlations between the Internet of Things (IoT) and precision agriculture. This review is part of a more extensive capability on the ability of IoT to mitigate the harmful impacts of climate exchange and international warming in agriculture with the aid of optimizing temperature and humidity tracking, smart records collection, and more. This paper gives a comparative analysis of smart greenhouse track- ing structures, analyses their evolution, summarizes modern technology, and forecasts its future development trends.

Index Terms:

Internet of things, Green house, Precision agriculture, Clever tracking

Boosted Random Forests Approach for Spectral-Based Supervised Land Cover Mapping in Remote Sense Data

Ujjwal Kumar Kamila
Asansol Engineering College, Asansol, India

Srinka Basu
Kalyani University, Kalyani, West Bengal, India

Debasis Chakraborty
Asansol Engineering College, Asansol, India

Abstract:

In recent decades, numerous supervised machine learning algorithms have emerged to address remote sensing (RS) imagery mapping challenges. Popular choices include Random Forest (RF) and Support Vector Machines (SVMs), which have proven effective in RS applications. This study introduces the Boosted Random Forests Approach for Spectral-Based Supervised Land Cover Mapping in RS Data (BRFA) algorithm for RS image classification, combining feature selection and boosting to enhance RF classifier generalization. Utilizing a Forward Greedy approach with Fuzzy Preference Rough Set (FPRS) for feature selection and integrating boosting into RF, BRFA employs an out-of-bag (OOB) error estimate to adjust sample weights and counter overfitting. Applied to two labeled RS datasets, BRFA demonstrates superior performance in mapping land cover types, surpassing RF, C4.5, SVMs, and k-NN. BRFA yields kappa indices of 0.89 and 0.93, with accuracy measurements of 92.27% and 94.94% for SPOT and IRS datasets, respectively. These results highlight BRFA's consistent superiority, showcasing its potential for accurate RS image identification.

Index Terms:

Land Cover Mapping, Remote Sensing (RS), Random Forest (RF)

 ISBN: 978-93-92105-69-2

E-Tendering System

P Sudarshan
Computer Science PES University Bangalore, India

Pathan Mohammad Arshad
Computer Science PES University Bangalore, India

Shruthi L
Professor, Computer Science PES University, Bangalore, India

Abstract:

This project will remove the limitations and inefficiency associated with the traditional manual tendering procedures. This is by way of using E-Tendering System that has maximized utilization of innovative technologies such as JavaScript, HTML, CSS, as well as Java to automate as well as digitize the entire tendering process. This web-based platform is aimed at reducing red tapes, increasing transparency, and reducing administrative burdens. Java powers the backend to the system, also handling automation and processing of the tender submission whereas JavaScript, HTML, and CSS in the frontend guarantees an intuitive user experience. The main aim is to create an accountable and transparent dynamic platform where the aim is to enable the view of the real-time status of the different tendering operations and assist in making the process become free from hassles. Apart from this, the E-Tendering System also provides answers regarding the problems of scalability and accessibility with traditional methods.

Index Terms:

E-Tendering System, JavaScript, HTML, CSS

Navigating the AI Fast Lane: A Comprehensive Analysis of Acceleration Architectures Across CPUs, GPUs, and Specialized Cores

Devanathan B
Department of Electrical and Electronics Engineering, Puducherry Technological University, India

Kharthikraj J
Department of Electrical and Electronics Engineering, Puducherry Technological University, India

Austin Gabriel C
Department of Electrical and Electronics Engineering, Puducherry Technological University, India

Abstract:

In the ever-accelerating realm of artificial intelligence, this study undertakes an exhaustive examination of acceleration architectures, transcending the boundaries between Tensor Cores, GPU Cores, and popular CPU architectures. Placed within the broader context of hardware acceleration, our research scrutinizes the architectural intricacies and computational efficiencies of these cores. Striving to address the pivotal question: "How do specialized cores, including Tensor Cores and GPU Cores, compare in optimizing AI workloads alongside popular CPU architectures?" The objectives encompass (a) uncovering distinct advantages, (b) evaluating potential drawbacks, and providing insights into optimal utilization scenarios across a spectrum of computing devices.

Index Terms:

AI acceleration, GPU Cores, Tensor Cores, deep learning performance

 ISBN: 978-93-92105-69-2

Robust Image Watermarking Using Deep Learning

Azmeera Deepika
ABV-IIITM, Gwalior, India

Saumya Bhadauria
ABV-IIITM, Gwalior, India

Abstract:

Recent researchers are more interested in image watermarking which is a copy right protection. The state of art work uses deep learning based algorithms for image watermarking. Image watermarking is the process of covertly adding a watermark onto an image.

In general image watermarking involves in the embedding and extracting a watermark in a watermarked image. Various traditional watermarking methods are used to extract the watermark from the original image. However, traditional methods have been proposed to enhance robustness and image quality. To achieve robustness, different noise layers are used for adversary training. In this paper, we propose an end-to-end training model that includes an encoder, a decoder, an adversary discriminator, and noise layers. Identity, salt and pepper, and Gaussian noise are randomly selected for different mini-batches to enhance the robustness. The proposed work also uses the SEnet-block (Squeeze-and-excitation blocks) to learn better features in the embedding and extracting stages. For training and validation, the ImageNet and MS COCO datasets have been used.

Index Terms:

Robust Image, Image watermarking, SEnet-block

Detection of DDoS Attacks using Deep Learning

Jeff Jiju Manathara
Dept. of CSE PES University Bengaluru, India

Kris Shibu
Dept. of CSE PES University Bengaluru, India

Satvik Shankar
Dept. of CSE PES University Bengaluru, India

Kamalesh Singaravelan
Dept. of CSE PES University Bengaluru, India

Gokul Kannan Sadasivam
Dept. of CSE PES University Bengaluru, India

Abstract:

Distributed Denial of Service (DDoS) attacks pose a significant threat to the availability and reliability of networked services. Traditional DDoS detection methods are often unable to keep up with the increasing sophistication of attackers, leading to the need for more advanced detection techniques. Deep Learning has emerged as a promising approach for detecting DDoS attacks due to its ability to learn complex patterns and features from data. This paper proposes a DDoS detection system using Deep Learning techniques. The system uses a deep learning model to analyze network traffic data and classify it as normal or malicious. The proposed system is evaluated on the CIC-DDoS2019 dataset and benign records from the CSE-CIC- IDS2018 and CIC-IDS2017 datasets. Overall, the proposed DDoS detection system using Deep Learning provides a promising approach for detecting DDoS attacks and can be integrated into existing network security infrastructure to enhance the overall security posture of networked services.

Index Terms:

DDoS, CIC-DDoS2019, CSE-CIC-IDS2018, CIC-IDS2017, Random Forest Regressor, Recurrent Neural Network, BiLSTM

 ISBN: 978-93-92105-69-2

Motorcycle Chassis Development using Topological Optimisation

Aji Andrews
M.Tech Scholar, Department of Mechanical Engineering Government College of Engineering, Kannur, India

Basil Benny
Systems Engineer, (Freelance) Engineer XYZ company, BIM Modeller, India

Ajith Ashokan
Systems Engineer, (Freelance) Engineer XYZ company, BIM Modeller, India

Abstract:

The surge in electric vehicle adoption, fueled by governmental incentives and global pollution mitigation efforts, has spurred a remarkable increase in overall vehicular demand. This paradigm shift from traditional internal combustion engines to electric vehicles has prompted a need for innovative solutions in vehicle design. This project focuses on the creation of a novel chassis for electric motorcycles through topological optimization using ANSYS 19.0. The objective is to leverage the advantages of the Integrated Product and Process Development (IPPD) and Simultaneous Submissions and Solutions (SSS) methodologies.

In the context of India, rapid population growth and urbanization have significantly amplified the demand for vehicles, particularly motorcycles. With reports indicating that 61.42 percent of the country's total petrol consumption is attributed to motorcycles, there is a compelling need for sustainable alternatives. The design process incorporates Finite Element Analysis (FEA) to ensure structural integrity, considering the material's market availability. A comprehensive analysis is conducted on four different materials, providing insights into their advantages. This holistic approach aims to deliver a robust and efficient electric motorcycle chassis design, aligning with the evolving automotive landscape and environmental concerns.

Index Terms:

IPPD, SSS, Chassis, Electric motorcycle

Computer Vision in the Sky: Ultralytics YOLOv8 and Deep SORT Synergy for Accurate Vehicle Speed Monitoring in Drone Video

Vishal Nagpal
Amity University, Mumbai, India

Manoj Devare
Amity University, Mumbai, India

Abstract:

The present study introduces a comprehensive methodology tailored for the detection and tracking of vehicles in aerial footage, with a focus on determining their speed. This approach harnesses the capabilities of the Ultralytics YOLOv8 model and the deep SORT algorithm, aiming to establish a robust correlation between the detected vehicles and the drone's height above ground level (AGL). To precisely calculate vehicle speed, the study integrates a combination of well-established techniques. This includes addressing radial distortion through a higher-order distortion coefficient (k3) in the lens distortion correction process. Additionally, the study employs an Image to Real-world coordinate mapping approach based on a hybrid method of Horn-Schunck and Lucas-Kanade. Finally, the speed of identified vehicles is calculated using the Centroid point based geo-referencing techniques.

To ensure the precision of the proposed approach, a field experiment was conducted, capturing 9000 frame images from a test vehicle equipped with high-precision GPS. The experiment involved twenty groups with varying heights (ranging from 70 m to 100 m) and operating speeds (ranging from 7 m/s to 20 m/s, equivalent to 25 km/h to 72 km/h) over a 5-minute period at 30 frames per second.

The results obtained underscore the robustness and reliability of the proposed approach, as evidenced by a 97.19% precision in tracking vehicles and a 93.59% accuracy in object detection. Furthermore, the absolute and relative errors of the extracted speed remain below 1.7%, showcasing the high accuracy of the approach in speed estimations. The overall precision of the extracted parameters achieves an impressive 98.6%. These findings emphasize the efficacy of the proposed system in advancing traffic monitoring capabilities through the utilization of UAV video technology.

Index Terms:

About f Computer Vision, Deep SORT, Drone Video, Ultralytics YOLO8, Vehicle Speed

 ISBN: 978-93-92105-69-2

Analysis of User Satisfaction with Music Streaming Applications

Evandy Sunjaya
Binus University, West Jakarta, Indonesia

Alessandro Bryan Wijaya
Binus University, West Jakarta, Indonesia

Sanjaya
Binus University, West Jakarta, Indonesia

Sudiana
Binus University, West Jakarta, Indonesia

Abstract:

The music industry's growth has increased the usage of music streaming applications. Based on this potential, streaming service providers will become increasingly competitive in marketing their products; therefore, knowing what factors users consider when choosing the music streaming applications is necessary. The dominant explanation for this trend is free access to many songs; they can be listened to anywhere and anytime, and there are no interruptions when listening to music. This study aims to analyze the determining factors that increase user satisfaction with music streaming applications using the Unified Theory of Acceptance and Use of Technology (UTAUT) model, which consists of six independent variables and two dependent variables. The data is obtained from distributing questionnaires online by establishing sources using music streaming applications. The hypotheses were tested with variance-based structural equation modeling (SEM) using the partial least squares (PLS) using the SmartPLS tools. The result shows that all 7 hypotheses have a significant effect and are acceptable.

Index Terms:

Music Streaming Application, User Satisfaction, UTAUT Model, SEM-PLS

Analysis of the Effect of Gamification Strategies on E-Wallet for Maintaining the Continuity of E-Wallet Users

Justin Hong
Information System Department, School of Information System, Bina Nusantara University, Jakarta, Indonesia

Hanny Juwitasary
Information System Department, School of Information System, Bina Nusantara University, Jakarta, Indonesia

Abstract:

E-wallets companies reach a peak of trend in Indonesia during the Covid19 pandemic. E-wallet provides users with the feature of being able to pay for things just with a smartphone, E-wallet even provides benefits in the form of discount vouchers and social distancing. Now after the endemic, e-wallet's payment method become a habit to all people especially students. However, Google Trends data indicates that e-wallet usage had a minor downturn following the outbreak and attempts to prolong the e-wallet user base. In this context, this research will analyze on how relationship between gamification, social impact, and customer value is connected and how gamification feature in e-wallet able to maintain the continuity of E-wallet users based on their Internalization, Identification, Compliance, User engagement, Satisfaction, and Loyalty. With this research we can make some hypothesis that will explain the continuity of E-wallet user in Indonesia if e-wallet companies using gamification as a feature on E-wallet apps.

Index Terms:

Compliance, Continuity, e-Wallet, Gamification, Identification, Indonesia, Internalization, Loyalty, Payment, Satisfaction, Students, Trends, User Engagement

 ISBN: 978-93-92105-69-2

Decentralizing the Future: Using Blockchain in Various Sectors

China Venkat Ajay Babu Bodapati
Department of Computer Science and Engineering, KL University, Vijayawada, India

Varshini Ganta
Department of Computer Science and Engineering, KL University, Vijayawada, India

Teresa Kasu
Department of Computer Science and Engineering, KL University, Vijayawada, India

Jyoshna Rayalacheruvu
Department of Computer Science and Engineering, KL University, Vijayawada, India

Ramaiah Challa
Department of Computer Science and Engineering, KL University, Vijayawada, India

Abstract:

This study explores the potential of blockchain technology to revolutionise a variety of industries, going beyond bitcoin. Blockchain is a revolutionary invention that is revolutionising various sectors across the globe. It is a decentralised and impenetrable ledger. The article uses real-world examples to show how blockchain technology, together with cryptocurrencies like Ethereum and Bitcoin, is revolutionising banking by guaranteeing safe and transparent transactions. It makes traceability easier in supply chain management, which lowers fraud and raises accountability. Electronic health records enabled by blockchain bring about a paradigm shift in the healthcare industry by guaranteeing data privacy and integrity.

Automating legal and corporate operations is the idea behind smart contracts, and blockchain-based voting systems improve election transparency. Through the avoidance of traditional banking institutions, cross-border payments are becoming more efficient and speedier. The study looks at how blockchain technology is accelerating the shift to a decentralised future, changing how many industries operate and offering previously unheard-of levels of efficiency, security, and transparency.

Index Terms:

Blockchain Technologies; Application of blockchain; Smart Contracts; Peer-to-peer transactions

An Optimized Hybrid Data Compression Approach and Data Transmission Reduction for IoT Applications and Mobile Cloud Computing

Ihab Nassra*
Institute of Information and Communication Technologies (ITACA), Universitat Politècnica de València, Valencia, Spain

Juan V. Capella
Institute of Information and Communication Technologies (ITACA), Universitat Politècnica de València, Valencia, Spain

Abstract:

The emergence of Internet-based and distributed systems and the rapid breakthroughs in technology and science have resulted in the explosive growth of data in every commercial and engineering domain. The Internet of Things (IoT) has revolutionized the way we interact with the world by enabling seamless connectivity between devices and the internet. The integration of Wireless Sensor Networks with IoT has revolutionized the way data is collected, processed, and shared in various domains. Efficiently managing data transmission and energy consumption is pivotal for many systems' sustained operation and performance in every commercial and engineering domain. However, the efficient management of data transmission and energy consumption in these interconnected systems remains a critical challenge. Most of the current energy saving mechanisms are not pertinent to IoT sensor nodes due to energy utilization, handling speed, limited scalability, and memory constraints. To address these challenges, an energy efficiency mechanism is proposed, combining lossy and lossless compression methods based on the Adaptive Huffman Encoding and RMSSD threshold to create a seamless architecture that maximizes data transmission efficiency, maximizes scalability, and attains a higher compression ratio with optimized energy consumption. The experimental results reveal that the proposed approach dramatically reduces data transmission and power consumption.

Index Terms:

Internet of Things, Wireless Sensor Networks, Mobile Cloud Computing, Edge computing

 ISBN: 978-93-92105-69-2

Understanding the Habitat Vulnerability of Slums to COVID 19 – Case of Two Megacities of India

Sudha Panda
Institute of Information and Communication Technologies (ITACA), Universitat Politècnica de València, Valencia, Spain

Abstract:

Urban slums are hotspots of infectious diseases like COVID-19 as was seen in the waves of 2020 and 2021. One of the primary reasons why slums are disproportionately affected is their location in inaccessible and uninhabitable zones, crowded and poorly ventilated living spaces, low hygiene standards and shared community facilities (water taps, common toilets, etc.). Staying at home during pandemics is hardly an option for slum dwellers as it often means giving up work and even basic necessities. This paper aims to understand the habitat vulnerabilities of slums in the two Indian megacities of Pune and Surat which were the worst hit during both waves. The study is done at a granular level of city i.e. wards, taking the habitat vulnerability (congestion and access to basic services). To identify the explanatory variables which increase the vulnerability of slums to infectious diseases, literature study is done on the triggering factors which affect habitat vulnerability derived from common characteristics and definitions of slum. The aim of the research is to categorize the slums into 3 levels of risk zones and map them subsequently. This study will help in formulating a model to prioritize the allocation of sparse resources in developing countries to tackle the habitat vulnerabilities of the slum dwellers especially during health emergencies of contagious diseases like COVID-19.

Index Terms:

Habitat vulnerability; COVID-19; urban slums; congestion; access to basic services; risk exposure

Habitat Vulnerability; COVID-19; Urban Slums; Congestion; Access to Basic Services; Risk Exposure

K Bavani
Dept.of Computer Science and Engineering Kalasalingam Academy of Research and Education, Krishnankovil,India

Avinash Konijeti
Dept.of Computer Science and Engineering Kalasalingam Academy of Research and Education, Krishnankovil, India

Maniteja Garlapati
Dept.of Computer Science and Engineering Kalasalingam Academy of Research and Education, Krishnankovil, India

Pranav Reddy Sandannagari
Dept.of Computer Science and Engineering Kalasalingam Academy of Research and Education, Krishnankovil, India

Reddykishore Reddy Nakkala
Dept.of Computer Science and Engineering Kalasalingam Academy of Research and Education, Krishnankovil, India

Abstract:

The future of networking is software defined networks, which separate the control and data planes of network devices to offer centralized network management. SDN enables us to program a network for optimal performance and usability, and it can offer better network administration and security. SDN is not impervious to attacks, though; distributed denial of service (DDOS) attacks pose the greatest threat to a network because they can overwhelm it with a huge number of packets, preventing access to the server network, and using network resources to prevent responses to new requests. It is recognized that DDOS attacks will only get worse in a cloud setting. The strategy that is being given combines machine learning and statistical techniques to effectively identify and counteract denial-of-service threats in SDN. The machine learning technique used in the implementation of this method—which makes use of the Ryu controller and Mini Net Network Simulator with Open ow SDN protocol—has achieved an accuracy of 99.26% and a detection rate of 100% in identifying and mitigating Distributed Denial of Service (DDOS) assaults in software defined networks.

Index Terms:

Component, Formatting, Style, Styling, Insert

 ISBN: 978-93-92105-69-2

A Cutting-Edge Method of Image Encryption and Decryption Using DNA Computing

Bincy Babu
Research Scholar, Hindustan Institute of Technology & Science, Chennai, India

Dr. A. Rama Prasad
Associate Professor, Hindustan Institute of Technology & Science, Chennai, India

Abstract:

In the modern era, various measures have been implemented to ensure the security of data transfers. Despite the efforts made, illicit actions persist among certain unauthorized individuals aiming to breach networks and decrypt encrypted data before it reaches its intended destination. Conversely, extensive research has been conducted on encrypting data during transmission and on efficient key generation for decryption purposes. The term "cryptographic methods" encompasses a variety of processes used for encrypting and decrypting data to safeguard it while in transit. User authentication and data confidentiality are the primary objectives of this research. The study introduces an innovative approach utilizing DNA cryptography. Specifically, an encoding algorithm was employed to convert picture pixels into DNA sequences during the encryption process. This study encompasses an evaluation of the security capabilities of the proposed DNA-based encryption method for pictures, including its resilience against common types of attacks such as statistical, differential, and brute-force attacks.

Index Terms:

Security, DNA Cryptography, AES Algorithm, Image Encryption, Image Decryption

End-to-End Gujarati Task-Oriented Dialogue Management using Reinforcement Learning

Rachana Parikh
Research Scholar, Computer Science, Gujarat University, India

Abstract:

Nowadays, there's an increased demand for dialogue systems in local languages due to the ongoing need for continuous support in specific service domains. Ra-ther than relying solely on human resources, dialogue systems offer a viable solu-tion. Dialogue management plays a pivotal role in determining the most effective actions for the system at each stage. In this study, we introduce a task-oriented dialogue system for Gujarati language, leveraging reinforcement learning. This system comprises three key components: natural language understanding (NLU), Dialogue Management (DM), and Natural Language Generation (NLG). Our model seamlessly interacts with databases, extracting valuable information. Rein-forcement learning is employed specifically for the DM, employing an enhanced Deep Q-learning Network (DQN) strategy to bolster the agent's resilience against environmental noise. Additionally, we propose a unified model for the NLU module, demonstrating its effectiveness through experiments conducted on Gujarati dialogue datasets. The results showcase the superior performance of our model over the conventional rule-based multi-turn dialogue system for Gujarati dialogues.

Index Terms:

Gujarati, Task-Oriented Dialogue, Reinforcement Learning

 ISBN: 978-93-92105-69-2

A Systematic Review of Digital Techniques for Controlling Fall Armyworm Infestation to Enhance Sustainability in Maize Crop Production

Monica Shinde
DSM's IITM, Parbhani, India

Dr. Kavita Suryawanshi
DSM's IITM, Parbhani, India

Abstract:

As Maize is widely used as the food, feed and fodder besides used as industrial raw material. This systematic review investigates the diverse digital techniques deployed worldwide to manage Fall Armyworm (FAW) infestations, aiming to bolster sustainability in maize crop production. FAW, a notorious pest, poses a significant threat to maize yields globally. Traditional methods have proven insufficient in curbing its impact, prompting the exploration of digital interventions. Through a systematic analysis of scholarly articles, this review synthesizes current knowledge on the efficacy and adoption of digital solutions in FAW management. It identifies key technological approaches such as remote sensing, predictive modeling, precision agriculture, and mobile applications, evaluating their effectiveness, limitations, and adoption barriers. Additionally, it examines the ecological and socioeconomic implications of digital interventions, shedding light on their potential to improve sustainability in maize cultivation. The findings contribute to a comprehensive understanding of digital tools in FAW control, offering insights for policymakers, researchers, and practitioners striving to enhance agricultural sustainability.

Index Terms:

Maize Crop Production, Maize, Fall Armyworm (FAW)

Transparency in Tumor Detection: A Survey of XAI Approaches in Breast Cancer Analysis

Shiva Kumar S
Computer Science and Engineering SRM Institute of Science & Technology Chennai, India

Dr. Muruganantham B
Computer Science and Engineering SRM Institute of Science & Technology Chennai, India

Abstract:

Breast cancer is the most prevalent type of cancer to be diagnosed. Predominantly ultrasound scans, MRI and mammography are being used for examination and detection of breast cancer. Trained personnel are required to diagnose the results of the scan. The advent of Digitalization and Ar- tificial Intelligence in healthcare has enabled Deep learning- based models to become effective companions in diagnosis. Deep learning models often operate as black boxes, concealing their internal decision-making processes from human comprehension. This opacity can hinder our understanding of how and why the model arrives at particular outcomes, posing challenges for interpretability and trustworthiness. In life-threatening scenarios like breast cancer, the opaque nature of deep learning models is a stumbling block to their adoption in real time. Explainable Artificial Intelligence (XAI) diminishes the obfuscatory nature of conventional deep learning models. An enormous amount of research has been done recently on XAI for breast cancer. Thus, the objective of this study is to analyse XAI for breast cancer diagnosis. We analysed the various XAI techniques for diagnosing breast cancer, the types of XAI employed, and the relationship between algorithmic explainability and accuracy.

Index Terms:

Breast Cancer, Explainable AI(XAI), Inter- pretable Deep Learning, Machine Learning, Computer Vision

 ISBN: 978-93-92105-69-2

Advancing Power Quality in Smart Grids Through Tailored UPQC Modifications

K. Vishnu
Assistant Professor, Department of Electrical and Electronics Engineering, Vignan Institute of Technology and Science, Hyderabad, India

V. Srikanth
Department of Electrical and Electronics Engineering, VITS, Hyderabad, India

M. Rakesh
Department of Electrical and Electronics Engineering, VITS, Hyderabad, India

G. Nishanth
Department of Electrical and Electronics Engineering, VITS, Hyderabad, India

P. Vinay
Department of Electrical and Electronics Engineering, VITS, Hyderabad, India

Abstract:

In the realm of fortifying security measures and enhancing Power Quality (PQ) within the intricate landscape of the Smart Grid (SG) infrastructure, this investigation delves into the intricate harmonic's conundrum induced by the pervasive utilization of power electronic devices. While (UPQC) Unified Power Quality Conditioners are conventionally employed to ameliorate voltage-related challenges in distribution systems, paradoxically, they introduce harmonics that impinge on system stability, especially concerning delicate loads. This research introduces an inventive methodology that fuses bio- geography-based optimization and harmonics elimination techniques into a tailored UPQC integrated within the SG framework. Lower- order harmonics are assuaged through judiciously calculated switching angles, whereas higher order harmonics are quelled by infusing harmonics of identical order, yet possessing equal magnitude and opposing phase, emanating from the alternate converter. The induction of Photo-Voltaic (PV) panels to energize the adapted UPQC converters ensures a sustainable power source, and real-time firing angles are extrapolated from pre-archived values stored in the microcontroller memory. This comprehensive approach not only confronts the intricacies of UPQC-associated harmonics but also seamlessly integrates renewable energy sources, ushering in a new era of efficiency and sustainability in Smart Grid operations.

Index Terms:

UPQC, PV Panel, Power Quality, Harmonics

AI based Anti-Drone System: A Model based on Image Classification using Deep Learning Network

Dr. R. Senthilkumar
Assistant Professor, Electronics and Communication Engineering, Government College of Engineering Erode, India

Abstract:

Presently there is important security issue related to drone system. Anti-Drone systems important on account of mitigate security concerns and maximize human safety across the international borders and no-fly zone areas. The significance of this system is, preventing unauthorized surveillance and preventing border intrusions. The main target users are government and military, critical infrastructure border security. The drone captured using optical sensors are fed to the AIDLTM (Artificial Intelligence Deep Learning Trained Model) and if it is detected, the AI model will deliver a voice alert and buzzer alarm. The AI model gives an accuracy rate of 86.76 percentage for the standard dataset available provided by Kaggle. The developed Anti-Drone AI model has the following advantages: 360-degree coverage, range of 1KM, reduce human effort and perform complex tasks with reduce human effort.

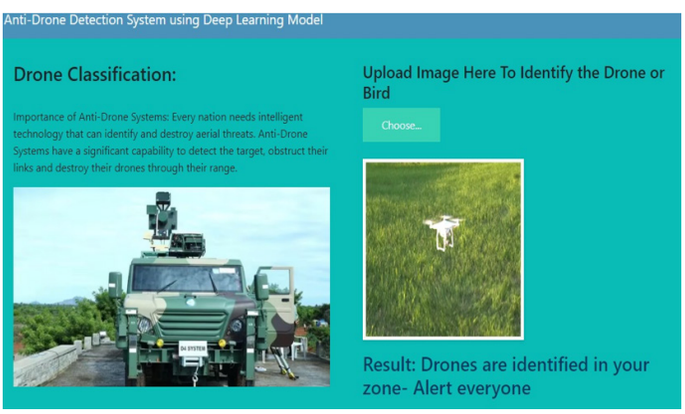


Figure: Anti-Drone AI model based on Image Classification using Deep Learning Algorithm

Index Terms:

Anti-Drone System, Deep Learning Network, AI model

 ISBN: 978-93-92105-69-2

AgriGenius: Multipurpose Agricultural Robot

Praveen Kumar Y G*
Department of Electronics and Communication Engineering, Sri Siddhartha Institute of Technology, Tumkur, India

Ashiya Khanum
Department of Electronics and Communication Engineering, Sri Siddhartha Institute of Technology, Tumkur, India

Mohammed Affaq
Department of Electronics and Communication Engineering, Sri Siddhartha Institute of Technology, Tumkur, India

Rudresha N M
Department of Electronics and Communication Engineering, Sri Siddhartha Institute of Technology, Tumkur, India

Siddesh J
Department of Electronics and Communication Engineering, Sri Siddhartha Institute of Technology, Tumkur, India

M N Eshwarappa
Department of Electronics and Communication Engineering, Sri Siddhartha Institute of Technology, Tumkur, India

Abstract:

In India, about 60% of people prefer to work in agriculture as their primary industry. Interest in developing autonomous robots for agriculture has increased recently due to the worsening labor availability. For agricultural use, an Agri-bot is suggested. In addition to boosting productivity and precision, it is suggested that farmers do less work. It does the basic tasks associated with farming, such as seeding crops and applying pesticides. In situations where there is a possibility of chemical injury to personnel, the application of pesticides is essential to maintaining their safety and well-being. A multifunctional, semi-autonomous agricultural robot that can be programmed to plant seeds and spray pesticides is the goal of the proposed system. By reducing the need for human intervention, this robot can ensure high production and effective resource usage. The primary goal of this paper is to do the through survey on agricultural robot which can be employed in place of human labours.

Index Terms:

Water and Pesticide Spraying, Ploughing, Seeding, Weed-cutting, Temperature and Humidity Monitoring, and Soil Moisture Monitoring

A Different Approach to Step-up Multi-Input DC-DC Converter for Hybrid Electric Vehicle Use

Bhanu Ganesh Lukka
Assistant Professor, Department of Electrical and Electronics Engineering, Vignan Institute of Technology and Science, Hyderabad, India

Ch. Manvitha
Department of Electrical and Electronics Engineering, VITS, Hyderabad, India

A. Jashwanth
Department of Electrical and Electronics Engineering, VITS, Hyderabad, India

K. Praveen
Department of Electrical and Electronics Engineering, VITS, Hyderabad, India

MD. Riyaz
Department of Electrical and Electronics Engineering, VITS, Hyderabad, India

Abstract:

This research proposes and studies a multi-input DC-DC converter for hybrid electric vehicles (HEVs). In contrast to traditional works, there is an increase in output gain. The suggested converter uses fuel cells (FC), solar (PV) panels, and energy storage systems (ESS) as its input sources. Rooftop PV is used to reduce fuel economy, increase efficiency, and charge the battery; the FC is considered the primary power source. In the event that one or both resources are unavailable, the converter can still supply the load with the required power. Furthermore, the control approach describes and uses the power management strategy. To confirm the findings, a converter prototype is also put into use and put through testing.

Index Terms:

Power Management, Hybrid Electric Vehicle (Hev), Multi-Input Converter

 ISBN: 978-93-92105-69-2

Power Regulation Features for Artificial Intelligence based Optimisation of EV Motor Operation

G. Srinivas
Assistant Professor, Department of Electrical and Electronics Engineering, Vignan Institute of Technology and Science, Hyderabad, India

U. Jyothi
Department of Electrical and Electronics Engineering, VITS, Hyderabad, India

T. Suryaprakash Reddy
Department of Electrical and Electronics Engineering, VITS, Hyderabad, India

M. Karthik
Department of Electrical and Electronics Engineering, VITS, Hyderabad, India

A. Vishal
Department of Electrical and Electronics Engineering, VITS, Hyderabad, India

Abstract:

When energy storage is limited, energy efficiency is crucial for hybrid and electric vehicles (EVs). The induction motor's high stability, low cost, and little loss structure boost its efficiency. Furthermore, even at moderate loads, it draws more current then is required for the work at hand. This study proposes an opaque logic control based control technique for EV (FLC) applications. With fewer energy consumption, the FLC controller improves the initial power distribution. The MATLAB/SIMULINK software package is used for simulation to verify the controller's performance. Simulation techniques outperform conventional proportional-integrated-derivative controllers in terms of time-domain reactivity and fast rejection of disruptions connected to the system. This significantly reduces the primary losses of the asynchronous motor, boosting the efficiency of the drive system. The simulation results are used to verify that the proposed control system is in great agreement with them.

Index Terms:

Power Regulation, Artificial Intelligence, EV Motor Operation

Battling Deepfakes: A Overview of Detection Methodologies

Deepanjan Sur
Bengal Institute of Technology, Hadia, India

Elisha Dutta
Bengal Institute of Technology, Hadia, India

Tripti Majumdar
Bengal Institute of Technology, Hadia, India

Abstract:

This work presents a novel deep-learning approach for distinguishing between AI-generated fake videos, commonly known as DeepFake videos, and real videos. The methods focus on identifying distinctive artifacts caused by the limitations of current DeepFake algorithms, particularly in generating images with limited resolutions and subsequently warping them to match the original faces in the source video. The authors introduce a novel convolutional neural network architecture called the "Residual Attention Network." This network utilizes an attention mechanism, which enables it to focus on relevant features while processing input data. The architecture is designed to be seamlessly integrated with existing feedforward network structures, allowing for end-to-end training. The Residual Attention Network consists of multiple Attention Modules, each responsible for generating attention-aware features. This paper also introduces a novel approach called DeepVision for detecting Deepfakes generated using generative adversarial network (GAN) models. The method focuses on analyzing changes in the pattern of eye blinking, which is a natural and involuntary action. DeepVision works by verifying the integrity of videos based on characteristics such as the frequency, duration, and timing of eye blinks. The study compares the performance of this model with traditional methods like InceptionResNetV2 and VGG19, showing higher accuracy in detecting Deepfakes.

Index Terms:

Detection Methodology, DeepFake, Generative Adversarial Network (GAN)

 ISBN: 978-93-92105-69-2

Authenticated and Optimized News Classification using MERN Stack

Harsh Malik
School of Computing Science & Engineering, Galgotias University, Greater Noida, India

Nayan Singhal
School of Computing Science & Engineering, Galgotias University, Greater Noida, India

Dr. Raju Ranjan
School of Computing Science & Engineering, Galgotias University, Greater Noida, India

Abstract:

The "News Classification Using MERN Stack" project demonstrates how modern technologies can be harnessed to streamline the categorization and management of news content, making it easier for users to access relevant articles while maintaining an organized and user-friendly news platform. This project may also serve as a valuable tool for researchers, journalists, and content creators seeking to enhance their content organization and delivery processes.

This study is based on primary research, with a qualitative methodology and a review of the literature. The goal of this research is to learn more about the behaviour of news website readers and to improve the quality of news websites for readers. The findings of this study show that individuals prefer website interfaces and news content. The website that they visit the most frequently is in fact a distinct website that provides additional qualities such as pleasure and variety. The full publication contains the entire investigation and results.

Index Terms:

News Classification, MERN Stack

Stock Market Prediction using Machine Learning

Mohd Shubair Zaidi
School of Computing Science and Engineering, Galgotias University, NCR, India

Zaid Khan
School of Computing Science and Engineering, Galgotias University, NCR, India

Sanjeev Kumar Prasad
School of Computing Science and Engineering, Galgotias University, NCR, India

Abstract:

Recent research in the current situation used machine learning methods to forecast the future in every field. One of these is the stock market, which requires forecasts about future prices to be able to invest in new businesses or to sell shares at a profit. This calls for an effective prediction method that looks at past stock market transactions and makes predictions about the future based on those findings. The method for predicting stock market prices based on the exchange that occurs in the previous scenario was proposed in this article. The system examines the product's market price's diversifying influence over a specific time period and predicts any future trends, including gains or losses. In the process of considering various methods and variables, we saw that strategies such as regression algorithms, support vector machines, and random forests were used. Retaining support vectors is a useful and efficient machine learning technique for understanding a sample of time collecting datasets. The four years of data collection that was gathered to determine the anticipated prices for the company's shares. If the cost of the crucial parameters is chosen wisely, it can yield accurate prediction results. It has been discovered that the version of the guide vector regression.

Index Terms:

Stock market, Support Vector Machine (SVM), Random forest, KNN, ANN, LSTM

 ISBN: 978-93-92105-69-2

Computer Vision based Attendance System

Nishant Singh
Department of Information Technology, Ajay Kumar Garg Engineering College, Ghaziabad, India

Krish Singh
Department of Information Technology, Ajay Kumar Garg Engineering College, Ghaziabad, India

Janhvi Rajpoot
Department of Information Technology, Ajay Kumar Garg Engineering College, Ghaziabad, India

Abstract:

This project endeavors to establish an advanced attendance management system founded on facial recognition technology. Conventional methodologies for attendance tracking within educational institutions presently involve manual record-keeping using physical sheets, a practice fraught with inefficiencies and vulnerable to issues like proxy attendance. The primary objective of this initiative is to optimize the attendance monitoring process, alleviate the time-intensive nature of manual efforts, and address challenges associated with proxy attendance by minimizing reliance on traditional paper-based methods.

Manual attendance recording is characterized by inherent vulnerabilities, including susceptibility to tampering and manipulation, thereby complicating subsequent verification processes. To overcome these challenges, our proposed methodology integrates continuous facial recognition for meticulous and precise attendance estimation. The student enrollment protocol is a one-time registration process, incorporating unique identifiers such as roll numbers or phone numbers. Student images are systematically stored in a secure database, and the system autonomously tracks attendance on an hourly basis.

This state-of-the-art automated system not only represents a more sophisticated and precise alternative to conventional attendance management but also effectively mitigates the inherent shortcomings associated with manual record-keeping processes.

Index Terms:

Local Binary Pattern Histogram (LBPH), Convolution Neural Network (CNN), Face Detection, Computer Vision (CV), Face Recognition, Support Vector Machine

Analysis of Genetic Algorithms in Natural Language Processing

Ekagrata Bahadur
AIIT, Amity University, Noida, India

Amrit Nath Thulal
AIIT, Amity University, Noida, India

Abstract:

Natural language processing (NLP) has increased the interest in genetic algorithm (GA) due to their skills in solving complex optimization problems with extensive research on the use of genetic algorithms in NLP projects has been presented in this paper. First, we present the basic concepts behind genetic algorithms and their relevance to natural language processing. Then, we explore various applications of natural language processing (NLP) that use genetic algorithms, including text classification, sentiment analysis, machine translation, summarization, and question-answering systems. We examine the advantages and disadvantages of genetic algorithm applications in natural language processing by comparing their performance with traditional and modern approaches and discuss the factors influencing their effectiveness. Furthermore, we explore recent advancements, modifications, and hybridizations of Genetic Algorithms tailored to NLP tasks. Finally, we discuss the challenges and future directions in leveraging Genetic Algorithms for enhancing NLP technologies.

Index Terms:

Genetic Algorithms, Natural Language Processing, Optimization, Text Classification, Sentiment Analysis, Machine Translation, Summarization, Question-Answering Systems

 ISBN: 978-93-92105-69-2

Real-time Monitoring of Aquarium Conditions to Ensure Optimal Fish Health

Dr. Rajlakshmi Ghatkamble
Information Science and Engineering, New Horizon College of Engineering, Bengaluru, India

Shreya Acharya
Information Science and Engineering, New Horizon College of Engineering, Bengaluru, India

Abstract:

This research introduces a state-of-the-art real-time monitoring system designed for aquariums, ensuring the continual assessment of vital parameters such as water temperature, pH, ammonia concentration, and oxygen levels. The system employs advanced encryption techniques and blockchain technology to create a plagiarism-proof environment, safeguarding the authenticity and integrity of the monitoring data.

Index Terms:

Real-Time Monitoring, Aquarium Conditions, Optimal Health, Water Parameters, Encryption, Blockchain, Plagiarism-Proof, Aquatic Life, Security Measures

Sentiment Analysis For Hindi Language

Madhuri Thorat
Reaearch Scholar, Smt. Kashibai Navale College of Engineering, Pune, India &
Assistant Professor, AISSMS IOIT, Pune, India

Dr. Nuzhat F. Shaikh
Modern Education Society's College of Engineering, Pune, India

Abstract:

Sentiment Analysis (SA) is unavoidable. Every day, the Internet expands. Everything nowadays is done online. We can purchase, sell, and shop online. On the internet, people can provide feedback and opinions. Customers can compare and contrast different products by reading product reviews. We need it in regional languages as more people from various age groups and languages become new internet users. The majority of SA research has been conducted in English to date. However, with the exception of a few languages, little research has been done on Indian languages. This study focuses on doing SA in Hindi, which is one of the Indian languages. Neural network system will next process the information and generate output in the form of sad, happy, or angry sentences. We're using CNN classifier to predict sentiment analysis."

Index Terms:

Sentiment Analysis (SA), Natural Language Processing (NLP), CNN, Neural Network (NN)

 ISBN: 978-93-92105-69-2

Non Breachable Home Security System With Ultrasonic Sensor

Rajlakshmi Ghatkamble
Information Science and Engineering, New Horizon College of Engineering, Banglore, India

Madhushree P M
Information Science and Engineering, New Horizon College of Engineering, Banglore, India

Poovizhi. R
Information Science and Engineering, New Horizon College of Engineering, Banglore, India

Preethi K M
Information Science and Engineering, New Horizon college of Engineering Banglore, India

Bhoomika B
Information Science and Engineering, New Horizon College of Engineering, Banglore, India

Abstract:

The non breach able home security system uses a dual sensor input to trigger the alarm. The presence of an Active Infrared Sensor and an ultrasonic sensor increases the security offered, when compared to conventional systems that only have passive Infrared Sensors. Normal security systems and advanced security system too mostly use a conventional Passive Infrared sensor. It detects Infrared Rays from a moving body and gives the analog signal to the control system. The control system takes the input and triggers the alarm. Normal low budget home security systems use time-delay based system which will trigger the alarm if the movement is detected for too long. Some slightly advanced ones also use magnetic support while larger advanced systems use sensors modules connecting to large central system.

Index Terms:

Home Security, IoT, Arduino, Buzzer, Ultrasonic Sensor, Active Infrared Sensor

Automated Machine Learning Algorithm recommender for Predictive Analytics

Sai Hemanth Kilaru
SRM Institute of Science and Technology, Chennai, India

Santhana Lakshmi
SRM Institute of Science and Technology, Chennai, India

Omisha Singal
SRM Institute of Science and Technology, Chennai, India

Abstract:

This study presents a novel framework for the automated recommendation of machine learning algorithms tailored for specific data analysis needs and model training. The framework accepts input in multiple data formats (CSV, Excel, JSON), standardizing it into a uniform CSV format for seamless processing. It implements preprocessing steps such as imputation of missing values, normalization of numerical data, and encoding of categorical variables to ensure data integrity. The core of the system utilizes a comprehensive array of machine learning techniques – RandomForest, LogisticRegression, SVM, KNeighbors, DecisionTree, and GaussianNB – to ascertain the optimal model based on the nature of the dataset and the analytical objective, be it classification or regression. Rigorous tests across a variety of datasets underscore the framework's capability to streamline the model selection process, thereby bolstering analytical precision and supporting informed decision-making in multiple sectors.

Index Terms:

Machine Learning, CSV, Excel, JSON, RandomForest, LogisticRegression, SVM, KNeighbors, DecisionTree, GaussianNB

 ISBN: 978-93-92105-69-2

Sustainability and Green Marketing in the Digital Landscape

Dr. Anuradha Reddy
Freelance Researcher & Visiting Faculty

Dr. M. Shankar Lingam
Professor, Management, Shushruti Institute of Management Studies (SIMS), Bangalore, India

Abstract:

The digital landscape is rapidly evolving, becoming a pivotal arena for the promotion of sustainability and green marketing initiatives. This transformation is driven by the increasing awareness among consumers and businesses about the environmental impacts of their choices and operations. The integration of green marketing strategies within the digital realm offers a unique opportunity to engage with a broad audience, disseminate information efficiently, and foster sustainable consumer behavior. This paper explores the convergence of sustainability and green marketing in the digital landscape, highlighting the significance of leveraging digital platforms to advocate for environmental stewardship and sustainable practices.

Through a comprehensive review of recent studies, reports, and empirical data, we examine the effectiveness of digital channels in promoting green marketing messages, the consumer response to such initiatives, and the impact of digital technology on reducing the carbon footprint of marketing activities. Furthermore, the paper delves into the challenges and opportunities presented by digital green marketing, including issues related to digital divide, greenwashing, and the need for transparent and credible sustainability claims.

The analysis reveals that while digital green marketing presents an effective tool for promoting sustainability, its success is contingent upon authenticity, engagement strategies, and the integration of sustainable practices throughout the value chain. The paper concludes with recommendations for businesses and policymakers to enhance the impact of green marketing in the digital age, emphasizing the importance of innovation, collaboration, and regulatory support to advance the sustainability agenda.

Index Terms:

Sustainability, Green Marketing, Digital Marketing Strategies, Environmental Impact and Technological Innovations

Knowledge Based Personality Analysis for Automated Role Assignment: A Workplace Dynamics Aide

Dr. Anitha C
Assoc. Prof., Department of Artificial Intelligence and Machine Learning, BNM Institute of Technology, Bangalore, India

Poorvy G Chandra
Department of Artificial Intelligence and Machine Learning, BNM Institute of Technology, Bangalore, India

Swathi Bhat
Department of Artificial Intelligence and Machine Learning, BNM Institute of Technology, Bangalore, India

Yojith S
Department of Artificial Intelligence and Machine Learning, BNM Institute of Technology, Bangalore, India

Sathvik M
Department of Artificial Intelligence and Machine Learning, BNM Institute of Technology, Bangalore, India

Abstract:

This paper introduces an innovative system designed to revolutionize workplace dynamics by automating role assignment and user ranking. The system integrates advanced authentication mechanisms for administrators and users, ensuring a secure environment for personalized information. Through a thoughtfully designed set of questions and scoring criteria, the system assesses users' behavioural responses, allowing for personalized role assignments based on individual strengths using a novel role-matching algorithm and predictive modelling. The dual-interface accommodates both administrators and users, providing a holistic view of ranked individuals and their designated roles. This system not only streamlines recruitment but also enhances team formation and collaboration within the workplace with the help of informed decision-making.

Index Terms:

Role-Matching Algorithm, Recruitment, Knowledge-Based, Personality Analysis, Predictive Modelling, Automation

 ISBN: 978-93-92105-69-2

Smart Jacket for Bad Posture Detection and Alert system

Smita Agrawal
Jyothy Institute of Technology, Bangalore, India

Hemanth S
Jyothy Institute of Technology, Bangalore, India

Punyashree B M
Jyothy Institute of Technology, Bangalore, India

Rakshita V
Jyothy Institute of Technology, Bangalore, India

Shreesha S
Jyothy Institute of Technology, Bangalore, India

Abstract:

In today's digital age, many people suffer from musculoskeletal problems due to prolonged sitting and poor posture. Seated for long hours with bad posture can cause upper and lower back pain and cervical pain. It's crucial to maintain good posture for a healthy life. Office workers and students typically spend more than 8 to 9 hours a day seated, and the situation has only worsened due to many people working from home. Research shows that spending more than six hours a day in a chair with poor posture can lead to physical harm and increased health risks. Posture refers to the relative position of an individual's body parts. Good posture occurs when all body parts are symmetrically and evenly positioned around the line of gravity, while bad posture occurs when asymmetric relationships are adopted. A person's spine is aligned with minimum internal muscular stress and maximum efficiency of external strain when maintaining good posture. However, when a person maintains bad posture, the stress on the curvature of the spine increases, leading to muscle fatigue. This paper presents the Bad Posture Alert System, which leverages sensors and image processing techniques to recognize sitting postures accurately. The Bad Posture Alert System is designed to monitor and alert users about improper posture. By promoting correct posture and lowering the risk of associated health issues, the system improves the health and well-being of people spending long hours sitting.

Index Terms:

Smart Jacket, Bad Posture Detection, Digital age, Musculoskeletal problems

A Deepfake Image Classifier System for Real and Doctored Image Differentiation

Juanith Mathew Thomas
Computer Science and Engineering, Karunya Institute of Technology and Sciences, India

Abstract:

The sudden proliferation of deepfake technology has raised concerns about the authenticity and integrity of digital media. In response to these concers, this paper presents a Deepfake image classifier system designed to differentiate between real and doctored images using "MesoNet" architecture which utilizes convolutional layers and builds a suitable neural network for classification. Making efficient use of Deep Learning strategies, this system aims to detect subtle manipulations indicative of deepfake alterations. The proposed model is trained on two distinct datasets: Dataset I comprises authentic images while Dataset II consists of images subjected to various levels of manipulation, making them deepfakes. Through extensive training using these images and their labels, we'll train the neural network to adequately predict the authenticity of an image. The model has been trained on exactly 7104 images and judging from the results, the predictions made by the model are mostly accurate. Results yield an accuracy of 88.81% and a precision of 87.93%.

Index Terms:

Classification, Deepfakes, Deep Learning, MesoNet Neural Network

 ISBN: 978-93-92105-69-2

An Ensembled Hybrid Learning Approach for Female Depression Detection

Dr. Anjan Kumar K N
Associate Professor, Computer Science and Engineering, RNS Institute of Technology, Bangalore, India

Bhumika Vellore
Computer Science and Engineering, RNS Institute of Technology, Bangalore, India

Adithi H P
Computer Science and Engineering, RNS Institute of Technology Bangalore, India

Sharath J D
Computer Science and Engineering, RNS Institute of Technology, Bangalore, India

Girish Subramani
Computer Science and Engineering, RNS Institute of Technology Bangalore, India

Abstract:

Over the past century, significant changes in lifestyle have occurred, contributing to an increased prevalence of depression. Factors such as urbanization, technological advancements, changes in work patterns, and social dynamics have all played a role in this trend. Despite advancements in the detection and treatment of depression, a considerable number of cases still go undetected, leading to untreated suffering and potential long-term consequences.

To address this challenge, automated systems have emerged as promising tools in aiding the detection and management of depression. Among these systems, language analysis stands out as a crucial component. By analyzing written or spoken language, these systems can detect patterns indicative of depressive symptoms, offering a non-invasive and accessible means of screening individuals for further evaluation.

Text classifiers, a type of automated system, are specifically trained to identify linguistic markers associated with depression. These classifiers use machine learning algorithms to analyze linguistic features and predict the likelihood of depression based on textual input.

This article delves into the comparison between two approaches in text classification: hybrid and ensemble methods. Hybrid models combine different types of features, such as linguistic, semantic, and syntactic, to enhance the accuracy of depression detection. By leveraging a diverse set of features, hybrid models aim to capture a broader range of indicators associated with depression.

On the other hand, ensemble models take a different approach by combining multiple individual classifiers to make predictions. Each classifier may use different algorithms or feature representations, and the ensemble aggregates their outputs to arrive at a final prediction. This technique often results in improved performance compared to individual classifiers, as it leverages the diversity of the constituent models to mitigate errors and enhance overall accuracy.

The comparison conducted in the article reveals that ensemble models generally outperform hybrid models in terms of depression detection accuracy. This superiority can be attributed to the ability of ensemble models to leverage the strengths of multiple classifiers, effectively capturing a more comprehensive range of linguistic patterns associated with depression.

Overall, the findings highlight the effectiveness of automated systems, particularly ensemble models, in aiding the detection of depression through language analysis. By harnessing the power of machine learning and natural language processing, these systems offer a promising avenue for improving the identification and management of depression on a large scale.

Index Terms:

Deep Neural Networks, Depression Detection, Ensemble Methods, Sentiment Lexicon

Infant Mortality Prediction using Machine Learning

Anushka Sharma
School of computer Science and Engineering, Galgotias University, Greater Noida, India

Nandini Maheshwari
School of computer Science and Engineering, Galgotias University, Greater Noida, India

Akshat Goel
School of computer Science and Engineering, Galgotias University, Greater Noida, India

Abstract:

Approximately 26.619 new-born deaths per 1000 live births will occur in India in 2023, which would account for nearly half of all child fatalities under the age of five. Determining which new-borns are more likely to die can have a significant worldwide impact. In order to find the early and possibly changeable predictors of new-born mortality, sophisticated computational technologies (such as artificial intelligence [AI]) may be integrated. This study's goal was to compile, evaluate critically, and assess new-born prediction research that used AI.

The databases PubMed, Cochrane, OVID, and Google Scholar were used to conduct a literature search. We considered papers that developed prediction models for new-born death using AI, such as machine learning (ML) and deep learning. Studies with a small sample size (n 500) and those that exclusively used prenatal variables to predict death were excluded. All articles were evaluated for inclusion by two separate researchers. The study's design, the number of models employed, the characteristics used per model, the relevance of the features, internal and/or external validation, and calibration analysis made up the data collection. Our primary finding was the average area under the receiving characteristic curve (AUC), commonly referred to as sensitivity and specificity, for all models included in each Study.

There were 11 studies total among 434 publications. 1.26 million People participated in the study overall, with gestational ages ranging from 22 weeks to term. There were between 3 and 66 features, and the date of the prediction ranged from as early as 5 minutes of life to as late as 7 days of age. The average number of models per study was 4, with the most often employed models (58.3%) being neural networks, random forests, and logistic regression. Two research (18.2%) completed external validation, and five studies (45.5%) reported calibration plots.

Five studies reported the sensitivity and specificity, and eight studies presented results by AUC. The AUC ranged between 58.3% and 97.0%. The mean specificities ranged from 78% to 99%, whereas the mean sensitivities ranged from 63% to 80%.

Neonatal deaths can be accurately predicted using ML models. This analysis shows the measures and predictors for new-born mortality that are most frequently utilized in AI prediction models. Future research should concentrate on external validation, calibration, and application deployment that is easily accessible to healthcare professionals.

Index Terms:

Infant Mortality Prediction, Machine Learning, Artificial Intelligence

 ISBN: 978-93-92105-69-2

A Survey on IOT protocols for Resource-Constrained Devices in Hand-Held (IOT) Environment

Radhika Patel
Department of Information Technology, Devang Patel Institute of Advance Technology and Research (DEPSTAR), Charotar University of Science and Technology (CHARUSAT), Changa, India

Dr. Amit Nayak
Department of Information Technology, Devang Patel Institute of Advance Technology and Research (DEPSTAR), Charotar University of Science and Technology (CHARUSAT), Changa, India

Abstract:

The Internet of Things i.e. IoT system or application succeeds considerably depending on the communication standards and choice and implementation of the protocols. The selection of proper communication standards and an efficient protocol used for communication and for establishing connectivity in IOT is difficult because of the heterogeneity and resource restrictions of IOT devices. There are protocols designed and adopted as well for the purpose of messaging in the field of IoT. There is no categorical communication protocol designed that is able to cooperate all communication (messaging) use cases and justify the complete necessities of IoT (Internet Of Things) systems. Hence, it becomes difficult to apprehend the protocols of the application layer specifically utilized for messaging and/or communication purpose in IoT systems. This paper delivers a relative study of the Constrained Application Protocol COAP), Hypertext Transfer Protocol (HTTP), and Message Queuing Telemetry Transport (MQTT) messaging protocols including their security.

Index Terms:

Internet of Things (IoT), Protocols, COAP (Constrained Application Protocol), HTTP (Hypertext Transfer Protocol) and MQTT (Message Queuing Telemetry Transport), Message, Communication, Security, Performance, efficiency

Enhancing Cab Service Efficiency: Using Clustering Techniques to Predict Optimal Locations for Cab Service Stations

Laya Vemulapalli
CSE, Karunya Institute of technology and Sciences, Coimbatore, India

Laasya Vemulapalli
CSE, Karunya Institute of technology and Sciences, Coimbatore, India

Lathangi Vemulapalli
Data Analyst, Ford Motor Company, Chennai, India

Joyce Beryl Princess
CSE, Karunya Institute of technology and Sciences, Coimbatore, India

Abstract:

In recent times, cab service has become a very essential service industry all over the world. All walks of people depend on cabs to travel around in the city and also between cities. Machine Learning Clustering techniques can be used to analyse the geolocation data which helps hugely in assisting the citizens of the given area or location. These techniques include K-means, DBSCAN and HDBSCAN which optimize cab service station locations when applied to their geolocation data. The overarching goal is to enhance the efficiency of cab services within urban areas by strategically placing service stations, thereby minimizing passenger wait times and improving overall accessibility. This problem encompasses the challenge of identifying optimal locations for cab service stations to maximize coverage, respond promptly to service requests, and contribute to an overall improvement in the effectiveness of urban transportation systems. The dataset contains parameters like the longitude, latitude and the taxi rank data which are locations of cabs when they are on a standby. In order to determine the best locations for service station using clustering, we must analyze their geolocation data. One easy solution is to construct a service station in the middle of each cluster, big enough to service all the cabs in that cluster. To verify and compare accuracy, we will first cluster using a K-Means approach and then use a more complex density based algorithm called DBSCAN. Additionally, we will assess these models and deploy HDBSCAN, as an improvement to DBSCAN.

Index Terms:

Data analysis; HDBSCAN; DBSCAN; K-Means; Cab Service; Clustering Techniques; Cab Service Stations; Geolocation

 ISBN: 978-93-92105-69-2

Drishti-Obstacle Avoidance Assistance System for Visually Impaired People

Gaurav Singh
Computer Science and Engineering (AI) Department, G.L. Bajaj Institute of Technology and Management, Greater Noida, india

Ayush Singh
Computer Science and Engineering (AI) Department, G.L. Bajaj Institute of Technology and Management, Greater Noida, india

Mohit Raj
Computer Science and Engineering (AI) Department, G.L. Bajaj Institute of Technology and Management, Greater Noida, india

Mohit Kumar
Computer Science and Engineering (AI) Department, G.L. Bajaj Institute of Technology and Management, Greater Noida, india

Abstract:

The "Drishti-Obstacle Avoidance Assistance System for Visually Impaired People" presents a novel technological solution aimed at enhancing the autonomy and safety of individuals with visual impairments. Leveraging the advancements in computer vision, sensor technology, and machine learning, this project addresses the pressing need for efficient and intuitive navigation assistance for the visually impaired.

The system employs a combination of software components to detect and analyze environmental elements in real-time. Utilizing a camera and sensors, the system captures and processes the surroundings, identifying obstacles and hazards in the user's path. Advanced algorithms interpret this information, providing auditory or haptic feedback to the user, enabling them to navigate their surroundings more independently.

The design and development of the Drishti system prioritize user-friendliness, reliability, and real-time responsiveness. The interface aims for simplicity, ensuring ease of use for individuals with varying degrees of visual impairment. The system's adaptability to different environments and lighting conditions is a key focus, enhancing its practicality in diverse real-world scenarios.

Index Terms:

Computer vision, SSD (Single Shot Detection), YOLO v3, Mobilenet

Healthsphere: Transforming Patient Care through AI-Integrated Disease Detection and Communication

Vara Samuel Prabhakar
Department of Computing Technologies, SRM Institute of Science and Technology, Chennai, India

Dr. Aruna M
Assistant Professor, Department of Computing Technologies, College of Engineering and Technology, SRM Institute of Science and Technology, Kattankulanthur, Chennai, India

Advita Raj
Department of Computing Technologies, SRM Institute of Science and Technology, Chennai, India

Abstract:

This research paper is the development of an AI Sentinel bot which could detect multiple diseases by using several neural networks which are tailor made for a set of specific diseases namely Tuberculosis, Pneumonia, Oral Cancer, Lung Cancer, Brain Cancer, Heart Stroke prediction, Heart Failure and Malaria. Along with this this research further enhances the need and development of NLP based voice communication for easier interface between the users and the model.

Index Terms:

AI – Artificial Intelligence, NLP- Natural Language Processing

 ISBN: 978-93-92105-69-2

A Pedestrian Detection and Accident Prevention Deep Learning Model in Low Light Conditions

P. Sunanda
Department of CSE, G. Pulla Reddy Engineering College (Autonomous), Kurnool, India

Abstract:

The purpose of this study is to propose a method for the implementation of a precise pedestrian detection system based on deep learning techniques specially designed for preventing accidents. In low light conditions, pedestrians become more vulnerable due to the lack of visibility. Therefore, they are more likely to be involved in an accident. The proposed method seeks to overcome this problem by using deep learning algorithms. Deep learning algorithms have proven to be very effective in a variety of computer vision challenges. The model of the system will be trained based on a large data set of pedestrian images taken in low-light conditions. The goal of this project is to develop a reliable pedestrian detection system that uses deep learning techniques that are specially designed for low-light environments. The goal of this system is to improve the accuracy of pedestrian recognition by using high-level neural network architectures with optimized data augmentation techniques.

In the implementation, we will train the model on various low light datasets, and fine-tune it to perform well in difficult visibility situations, ultimately contributing to safer road conditions. Pedestrian detection is an essential element in many automatic surveillance applications. While there are several state of- threat systems for pedestrian detection on the market, most of them do not perform well in low light conditions. Systems specially designed for low light conditions require specialized equipment. For example, depth-sensing cameras are required to detect pedestrians in low light. In this regard, we suggest a pre-processing pipeline, which allows any standard-level pedestrian detection system that operates in normal-light conditions to work in low light.

Index Terms:

Deep Learning, Low Light, Pedestrian detection, Accident prevention, CNN

DL based Heart Disease Prediction System using CT Scan Images

Tamilselvi P
Rajalakshmi Engineering College, Chennai, India

Abirami R
Rajalakshmi Engineering College, Chennai, India

Abstract:

Deep learning (DL) holds a crucial role in medical imaging, with rapid integration into AI for diagnostics. Despite widespread use in medical research, DL encounters limitations in practical clinical diagnosis, particularly in efficient medical image analysis. Focusing on the diagnosis of cardiovascular disease (CVD) using AI and DL for predictive analysis from CT scan images, this article emphasizes the need for methodological development. It highlights the existing gap between DL's potential and its practical implementation in clinical settings. In the context of CVD diagnostics, the study addresses modular elements of DL, encompassing image classification, segmentation, and detection. The research identifies challenges arising from this paradigm shift and proposes solutions, paving the way for pre-operative computerized simulation planning and the application of suitable surgical intervention technologies.

Index Terms:

Convolutional Neural Network (CNN) - Disease Prediction Using CT Scan Images - Prescription Generator - Medical Data Integration - CT Scan Analysis - AI in Healthcare

 ISBN: 978-93-92105-69-2

Advancements in Automated Retinal Disease Diagnosis: A Deep Learning Perspective

Dishita Sibal
SRM Institute of Science and Technology, Chennai, India

Charvee Rathod
SRM Institute of Science and Technology, Chennai, India

Abstract:

This research paper presents a novel approach to improving the diagnosis of conditions such as Diabetic Retinopathy, Macular Edema, and Drusen through the utilization of Retinal Optical Coherence Tomography (OCT) images. With diabetes posing a significant global health concern, early and accurate detection is paramount to mitigating potential complications. Retinal OCT imaging, known for its high-resolution capabilities, emerges as a powerful tool for capturing subtle changes indicative of both diabetes-related and age-related conditions. Leveraging state-of-the-art deep learning methodologies, particularly convolutional neural networks (CNNs), our study focuses on analyzing intricate patterns within Retinal OCT images. These patterns, often imperceptible to the human eye, harbor crucial information for identifying early signs of conditions such as Diabetic Retinopathy, Macular Edema, Drusen, and assessing normal retinal health. By automating the analysis of these images, our research aims to significantly contribute to early intervention and personalized treatment strategies. The integration of medical expertise with technological advancements holds the promise of improving patient outcomes in diabetes care and the detection of eye problems. This paper discusses the methodology, results, and implications of our research in advancing the field of ophthalmology and enhancing patient care.

Index Terms:

Retinal Optical Coherence Tomography (OCT), Convolutional Neural Networks (CNNs)

Personality Profiling Using CV Analysis

R Gopika Krishnan
Sree Buddha College of Engineering, Pattoor, Alappuzha, India

Jocelyn Ann Joseph
Sree Buddha College of Engineering, Pattoor, Alappuzha, India

Rohith R
Sree Buddha College of Engineering, Pattoor, Alappuzha, India

Drishya Das
Sree Buddha College of Engineering, Pattoor, Alappuzha, India

Arya Raj S
Sree Buddha College of Engineering, Pattoor, Alappuzha, India

Abstract:

Human personality has been crucial to the growth of both organizations and individuals. Standard questionnaires and Curriculum Vitae (CV) analysis are two methods used to assess human personality. So, a personality prediction system that combines CV analysis and MBTI model questionnaires to accurately predict an individual's personality traits based on their uploaded CV is introduced. The system utilizes advanced Natural Language Processing (NLP) techniques to extract relevant information from the CV, including work experience, education, skills, and achievements. By analysing the textual content, the system identifies keywords and phrases associated with different personality traits, laying the foundation for precise predictions. MBTI model questionnaires are integrated to further enhance the accuracy of personality prediction. User responses to the questionnaires are carefully analysed and mapped to the corresponding personality traits using established psychological theories and models. A machine learning algorithm is then employed to create a predictive model, learning from a pre-labelled dataset of CVs and their associated personality traits. The system's performance is evaluated using metrics such as accuracy and precision, ensuring its effectiveness in capturing the nuances of individual personality traits. The developed system has significant applications in recruitment and team composition, aiding employers in making informed hiring decisions by evaluating candidates whose personalities align with specific job requirements. Additionally, individuals can benefit from gaining insights into their own personality traits, enabling them to make informed career choices and pursue tailored personal development opportunities. Overall, the proposed system provides an efficient and accurate approach for personality prediction based solely on CV analysis and questionnaire responses.

Index Terms:

Curriculum Vitae (CV), Natural Language Processing (NLP)

 ISBN: 978-93-92105-69-2

Personality Profiling Using CV Analysis

R Gopika Krishnan
Sree Buddha College of Engineering, Pattoor, Alappuzha, India

Jocelyn Ann Joseph
Sree Buddha College of Engineering, Pattoor, Alappuzha, India

Rohith R
Sree Buddha College of Engineering, Pattoor, Alappuzha, India

Drishya Das
Sree Buddha College of Engineering, Pattoor, Alappuzha, India

Arya Raj S
Sree Buddha College of Engineering, Pattoor, Alappuzha, India

Abstract:

Human personality has been crucial to the growth of both organizations and individuals. Standard questionnaires and Curriculum Vitae (CV) analysis are two methods used to assess human personality. So, a personality prediction system that combines CV analysis and MBTI model questionnaires to accurately predict an individual's personality traits based on their uploaded CV is introduced. The system utilizes advanced Natural Language Processing (NLP) techniques to extract relevant information from the CV, including work experience, education, skills, and achievements. By analysing the textual content, the system identifies keywords and phrases associated with different personality traits, laying the foundation for precise predictions. MBTI model questionnaires are integrated to further enhance the accuracy of personality prediction. User responses to the questionnaires are carefully analysed and mapped to the corresponding personality traits using established psychological theories and models. A machine learning algorithm is then employed to create a predictive model, learning from a pre-labelled dataset of CVs and their associated personality traits. The system's performance is evaluated using metrics such as accuracy and precision, ensuring its effectiveness in capturing the nuances of individual personality traits. The developed system has significant applications in recruitment and team composition, aiding employers in making informed hiring decisions by evaluating candidates whose personalities align with specific job requirements. Additionally, individuals can benefit from gaining insights into their own personality traits, enabling them to make informed career choices and pursue tailored personal development opportunities. Overall, the proposed system provides an efficient and accurate approach for personality prediction based solely on CV analysis and questionnaire responses.

Index Terms:

Curriculum Vitae (CV), Natural Language Processing (NLP)

Microfluidic Paper Technology for Analytical Applications and Device Design

Aravind Thangavel
Department of Electronics and Communication Engineering, Saveetha Engineering College, Chennai, India

Anitha Kathavarayan
Department of Electronics and Communication Engineering, Saveetha Engineering College, Chennai, India

Komari Daniel
Department of Electronics and Communication Engineering, Saveetha Engineering College, Chennai, India

Komari Thirupathamma
Department of Electronics and Communication Engineering, Saveetha Engineering College, Chennai, India

Kopppli Yallareddy
Department of Electronics and Communication Engineering, Saveetha Engineering College, Chennai, India

Abstract:

Paper-based analytical devices are inexpensive, simple to manufacture and use, and don't need any specialized equipment, making them useful in a wide variety of contexts. paper-based microfluidics provides the design of tiny POC devices. Accordingly, there is a lot of activity in this area of study and its growth is rapid. Here, we take a look back at what we know about how to make and detect counterfeit currency. Medical diagnosis, energy generating, environmental monitoring, and food quality management are just some of the other areas where this technology has found a home that are highlighted in this article. To facilitate effective management and regulation of fluids, this paper also provides a theoretical analysis of fluid flow in porous media. In this article, we'll take a look at the state of paper-based microfluidic devices, covering fabrication processes, uses, constraints, and potential future developments.

Index Terms:

Point-of-Care Devices, Lab-on-Chip, Chemiluminescence, Wax Printing, Photolithography, Plasma Oxidation, Colorimetry

 ISBN: 978-93-92105-69-2

Image Captioning Using Deep Learning

Ram Prasad Reddy
UG Student, Division of CSE, Karunya Institute of Technology and Science, Coimbatore, India

Dr. A. Kethsy Prabavathy
Assistant Professor, Division of CSE, Karunya Institute of Technology and Science, Coimbatore, India

Jyothi Swaroop Reddy
UG Student, Division of CSE, Karunya Institute of Technology and Science, Coimbatore, India

Abstract:

In recent times, there has been a growing demand for video subtitles, making them essential tools for enhancing accessibility and comprehension of multimedia content. Additionally, there are now integrated applications equipped with deep neural network models that can generate labels for specific images, a process known as image captioning. Image captioning involves creating grammatically and semantically correct sentences describing the primary objects in the image, their attributes, and the relationships between them. In this paper, we propose a deep-learning model that combines computer vision and machine translation techniques to generate descriptive text from images. The model aims to identify various objects within the image, discern their relationships, and produce coherent textual descriptions. We utilize the Flickr8k dataset for training and evaluation, implementing the solution in Python3. The model leverages transfer learning, specifically utilizing the Inception model, to enhance performance in image understanding tasks. Our proposed model has significant potential applications beyond image captioning, including image segmentation, as utilized by platforms like Facebook and Google Photos. Moreover, its utility can extend to video frames, facilitating automated image interpretation and providing assistance to visually impaired individuals.

Index Terms:

Image Captions, Computer Vision, Exception Model, Neural Networks, Deep Neural Networks

Advancements in Real-Time Voice Conversion Technologies: A Comprehensive Analysis of Techniques

Pratham Singh Rana
Department of Computer Science and Engineering, Chandigarh University, Punjab, India

Kalpana Anup
Department of Computer Science and Engineering, Chandigarh University, Punjab, India

Lal Yadav
Department of Computer Science and Engineering, Chandigarh University, Punjab, India

Chahat
Department of Computer Science and Engineering, Chandigarh University, Punjab, India

Soham Kr Modi
Department of Computer Science and Engineering, Chandigarh University, Punjab, India

Abstract:

Real-time speech conversion technology rapidly transforms voices for diverse applications such as entertainment, human-computer interaction, and telecommunications. It enhances communication in telecoms by facilitating dynamic voice alterations and language translations during calls and conferences. Entertainment industries leverage its adaptability for creating character voices and modulating speech during live performances to heighten audience engagement. Moreover, in human-computer interaction, it fosters personalized interactions by allowing users to customize virtual assistant voices. This research proposes a multi-speaker voice synthesis model that utilizes three components: a neural vocoder, a sequence-to-sequence synthesizer, and a speaker encoder. While the synthesiser expands Tacotron 2 by adding speaker embeddings for multispeaker synthesis without explicitly optimising fixed embeddings, the speaker encoder optimises log-mel spectrogram frames for speaker verification. Leveraging transfer learning, the synthesizer effectively trains on text transcripts and target audio pairs. The neural vocoder, based on WaveNet architecture, generates realistic time-domain waveforms from synthesized mel spectrograms, enhancing synthesis quality across various speakers. This integrated model offers a comprehensive solution for real-time voice conversion applications, showcasing the practical deployment of speech synthesis technology.

Index Terms:

Real-time Voice Conversion, Speech Synthesis, Neural Vocoder, Speaker Encoder, Multispeaker Synthesis, Transfer Learning, WaveNet Architecture, Human-Computer Interaction

 ISBN: 978-93-92105-69-2

Embedded Finance: The Present and Infinite Future of Financial Ecosystem

Anjana Rajagopal
Amrita School of Business, Coimbatore, India

Dr. Nimmi P. M.
Amrita School of Business, Coimbatore, India

Abstract:

Booking your cab to reach your destination, having food from favourite restaurant delivered to your home, attending the entertainment activities, travelling to your destinations, buying goods etc... from little to all the things we can do without the worry of physical cash in our hands or waiting to reroute to our banking platform, all thanks to the embedding of finance to the non-financial platforms and services for making our daily life easy. In 2022 a study was conducted by Hensen and Kotting and they found out that desires and expectations of corporates and consumers have significantly transformed in current era. Authors also revealed that the major buying of products or services of customers are through digital apps which are also integrated into everyday situations. (Hensen, J. and Kötting, B. (2022). Thus, the authors come up with the definition of embedded finance. Embedded finance (EF) is defined as the incorporation of a financial service or product into the platform of a non-finance company, organization or institution (Hensen and Kotting, 2022). Banks can implement this method by embedding financial services into the products of non-financial companies, thus contributing unified processes and thus can create an easy and convenient experience to clients.

This makes embedded finance a great idea for the cost reduction and convenience to its customers as they can save their time and costs which might need to visit their nearest bank and do the financial transaction. (Nagle et al., 2020; Ozili, 2018). The usage of digital technology in finance with reference to emerging nations has assisted the rise of payment inflows and become a major player to high levels of digital financial inclusion (Podolski, 2020; Emara and Zhang, 2021). The main advantage of embedded finance is it predicts exactly on the varying requirements of end users. This is the reason why platform tactic specialists like Simon Torrance foresee an overall market demand for embedded finance of approximately more than seven trillion dollars in 2030.

Even though the concept of embedded finance is a revolutionary idea for corporates, very few have shown interest in researching the concept and analysing its effect on the industry. Thus, the embedded finance creates openings for academic researchers, policy makers and corporates to discover on how EmFi and traditional finance can exist in the same financial system. The role of Embedded Finance in the wellbeing of stake holders, The effect of Embedded finance in traditional banking system and how it adversely affect the same, The relationship between Embedded finance and systematic risk, The embedded finance as a tool for financial consistency and thereby achieving targets, regulatory mandates that needs to be included which will allow the embedded financial services to flourish in licensing procedure and supervisory guidelines and propositions on how officials can sync up with developments in Embedded Finance. Extensive academic and policy research is needed in these areas in order to develop the academic and policy literature on EmFi (Ozili, 2022). The security concerns, frauds related to Embedded finance is also raising a concern among the stake holders and customers. Ozili (2022) called for more studies that could explain the relevance of EmFi in specific country contexts as well as among diverse players. With this study, we are trying to find out the basics of embedded finance, its importance and growth, applications of embedded finance in real life, the status of embedded finance in India, cases and related frauds of embedded finance happening in India and the scope of future studies or research shall be discussed in this paper.

Index Terms:

Embedded Finance, Digital Finance, Technology, India

SkinNet: Precise and Low-Cost Dermatological Lesion Detection Model using Different DL Techniques with Fairness Evaluation

Maliha Khanam
Indira Gandhi Technical University for Women, Kashmere Gate, New Delhi, India

Ela Kumar
Indira Gandhi Technical University for Women, Kashmere Gate, New Delhi, India

Abstract:

Skin cancer is the most common type of cancer in humans and a challenging medical mystery. As it is known that skin lesion is one the life-threatening ailment worldwide. s. Also due to the complexity of human skin complexion and the visual proximity effect on the illnesses, it can be quite difficult to pinpoint the exact type of diseases. An intelligent and smart dermatological lesion detection system is encouraged in this work. So, deep learning techniques can be utilized to develop a fully automated system for early detection of skin lesion, which is crucial to saving lives. In the early stages of research, investigators often encountered limitations due to the utilisation of small datasets for skin cancer classification. One persistent challenge in the field of skin cancer detection has been the scarcity of a substantial and dependable dataset. This challenge however has been effectively addresses by the introduction of the HAM10000 dataset, encompassing a total of 10,015 images distributed across 7 distinct classes. A distinct specified derma lesion classification model named SkinNet and EfficientNet is proffered and investigated. For the recognition of skin cancer variants, the proposed SkinNet model and EfficientNet model is contrasted with cutting-edge models such as InceptionV3, VGG-16 and AlexNet and many more. The Confusion matrix for each model aforementioned is came upon after they are all trained using the same dataset. The classification results of the suggested model have been shown in accuracy, recall, AUC, F1-score, Precision and ROC. Also, the performance is evaluated using fairness evaluation metrics. Finally, the exploratory investigations signifies that the indicated models surpasses the other models in terms of accuracy. The testing accuracy of both the suggested models EfficientNet and SkinNet are 85.14%, 97.34% respectively. Since this research provide results more quickly and accurately than the previous procedures, it will be a more reliable and effective strategy than the conventional method for identifying dermatological problems.

Index Terms:

SkinNet, Deep Learning, Transfer Learning, Convolution Neural Network, Skin Lesions, Skin Cancer Detection, EfficientNet

 ISBN: 978-93-92105-69-2

Image Forgery Detection by VGG19 and CNN

Saurbh Kumar
University Intitute of Engineering, Chandigarh University, Mohali, India

Amrit Raj
University Intitute of Engineering, Chandigarh University, Mohali, India

Ayush Kumar
University Intitute of Engineering, Chandigarh University, Mohali, India

Sourabh Budhiraja
University Intitute of Engineering, Chandigarh University, Mohali, India

Abstract:

Several applications, including surface categorization, steganalysis, and bowing zone, have successfully used dense local descriptors and artificial intelligence. We construct a novel picture forgery flag by generating clear descriptors that have been previously suggested in the steganalysis domain, rationally combining a few of these descriptors, and reworking an SVM classifier using the accessible training set. The issue facing today's youth is that a lot of them pick up on certain details in photos that have been manipulated (such as movement duplicates, evolving, and so on). This suggests that the structure may not always function consistently across various changing frameworks. Image structure is the use of no less than two images to create an entirely false picture. Because of the proximity of many very dynamic programming initiatives, it becomes difficult to distinguish between authentic and fraudulent content. In order to handle supervise direct learn characteristics in referring to see modified images in different image formats, we provide a two-phase essential changing method in this work.

Index Terms:

Support Vector Machine, Artificial Intelligence, Convolutional Neural Network, Visual Geometry Group

Cloud Cryptography based on CASB – API Security Algorithm (Tokenization)

Daka BalaKrishna Reddy
Department of Computer Science and Engineering, Koneru Lakshmaiah Education Foundation, Vaddeswaram, India

Kayala Vivek
Department of Computer Science and Engineering, Koneru Lakshmaiah Education Foundation, Vaddeswaram, India

Poreddy Sainath Reddy
Department of Computer Science and Engineering, Koneru Lakshmaiah Education Foundation, Vaddeswaram, India

Samineni Saipriya
Department of Computer Science and Engineering, Koneru Lakshmaiah Education Foundation, Vaddeswaram, India

Vijay Kumar Burugari
Department of Computer Science and Engineering, Koneru Lakshmaiah Education Foundation, Vaddeswaram, India

Abstract:

The security of sensitive data becomes increasingly important as enterprises move their data and apps more and more to the cloud. The role of Cloud Access Security Brokers (CASBs) in improving the security posture of cloud systems is critical. The -development and implementation of a strong cloud cryptography framework are the main topics of this abstract. It makes use of CASB features to secure Application Programming Interfaces (APIs) using a sophisticated security process called tokenization.

Data in the cloud must be separated based on the type of information they contain when it is used for data storage. Usually Public Data or Sensitive Information. End users must follow the ACL policies if they want to retrieve sensitive information.

Index Terms:

Application Programming Interface (API), Data, security, Cloud, Cryptography, Data breaches, Platforms, CASB, Algorithm, Tokenization

 ISBN: 978-93-92105-69-2

Crop Pest Prediction in Paddy Fields using Deep Learning Techniques

Ragulapadu Jyothiswaroop Reddy
UG Student, Division of CSE, Karunya Institute of Technology and Sciences, Coimbatore, India

A Kethsy Prabavathy
Assistant Professor, Division of CSE, Karunya Institute of Technology and Sciences, Coimbatore, India

P Ram Prasad Reddy
UG Student, Division of CSE, Karunya Institute of Technology and Sciences, Coimbatore, India

Abstract:

India has been always top global producers of paddy. The pest attack can reduce the quality of crop, which leads to decrease in productivity. We provide a deep learning-based method in this work for predicting crop pests in paddy fields. Traditional techniques that depend on manual examination take a lot of time and are prone to mistakes. The proposed model utilizes deep neural networks to forecast crop pests by automatically extracting information from photos of the pests. Trained on a large dataset encompassing various pests, the model achieves high accuracy. Data augmentation techniques are employed to enhance performance and mitigate overfitting. Experimental results demonstrate the superiority of the proposed approach over traditional methods. This framework can be deployed in automated pest monitoring systems, reducing reliance on manual inspection, and enabling timely intervention to mitigate crop losses. Overall, the study highlights how effective deep learning methods are for predicting agricultural pests in paddy fields, highlighting their significance in sustainable agriculture.

Index Terms:

Crop Pest Prediction, Paddy Fields, Deep Learning

Human Activity Recognition using GRU Algorithm

Dr. S. Prasanna Bharathi
School of Electronics Engineering, Vellore Institute of Technology, Chennai, India

Dr. G. Chamundeeswari
School of Electronics Engineering, Vellore Institute of Technology, Chennai, India

Dr. Patri Upender
School of Electronics Engineering, Vellore Institute of Technology, Chennai, India

Abstract:

The recognition of human activity is a challenging task nowadays where we employ surveillance cameras for security purposes and monitoring. It is highly appreciated to use the best deep learning techniques to achieve high accuracy than the existing ones. In this research, Gated Recurrent Unit (GRU) technique is used to identify the activities performed by humans. The Human Activity Recognition Trondheim (HARTH) dataset is used which consists of the data collected from the individuals. The dataset consists of six different classes of daily activities performed by humans like climbing downstairs, upstairs, walking, sitting, running and standing. The algorithm is implemented against HARTH dataset to achieve higher accuracy by using tensor flow and python framework and the accuracy was calculated. Confusion matrix is also obtained from the conducted research. This research concludes that GRU algorithm yields higher accuracy of around 95 % in identifying the human activities than the machine learning algorithms implemented earlier.

Index Terms:

Human Activity, Gated Recurrent Unit (GRU), Human Activity Recognition Trondheim (HARTH)

 ISBN: 978-93-92105-69-2

IOT Based Heart Rate Monitoring and Heart Attack Detection

Tanmeet Kaur
Department of Electronics & Communication Engineering, Greater Noida Institute of Technology, Greater Noida, India

Abhishek Singh
Department of Electronics & Communication Engineering, Greater Noida Institute of Technology, Greater Noida, India

Ankit Verma
Department of Electronics & Communication Engineering, Greater Noida Institute of Technology, Greater Noida, India

Shanu Kumar
Department of Electronics & Communication Engineering, Greater Noida Institute of Technology, Greater Noida, India

Abstract:

Heart illness is a serious concern, which highlights how urgently accessible and quick health monitoring solutions are needed. This project suggests an Internet of Everything (IoT)-based system for real-time monitoring of heart rates and potentially heart attack detection in order to address this demand. The electronic device records and analyzes pulse readings via connection between a microcontroller and a sensor. The results of these readings are subsequently sent via the internet, enabling remote monitoring and tracking. The user has the capacity of choosing both the maximal and lowest heart rate limitations. The device immediately sounds a notification if the patient's heartbeat increases beyond the upper limit or decreases under the lower limit. The information is sent out to the patient and their selected contacts, who may include health care providers, allowing for prompt action and possibly saving lives.

Index Terms:

Pulse oximetry sensors, Data transmission protocols (e.g., Bluetooth, Wi-Fi), Buzzer

Integrated Women's Security System with Safe Route Navigation and Instant Law Enforcement Reporting

Dr. A Tamizhselvi
Associate Professor, Department of Information Technology, St. Joseph's College of Engineering, Chennai,India

S. Akshaya
Department of Information Technology, St. Joseph's College of Engineering, Chennai, India

M. Brintha Rethna
Department of Information Technology, St. Joseph's College of Engineering, Chennai, India

Abstract:

Designed to empower women in many daily situations, the integrated women's safety app is a comprehensive smartphone software that tackles safety concerns. This program offers a complete safety solution by combining various features and technologies. Users may quickly notify approved emergency contacts of their whereabouts by using the app's built-in emergency response system. Furthermore, it integrates with the city government's emergency services, facilitating seamless collaboration during critical circumstances. Users can stay safer when doing things like late-night commuting or traveling alone thanks to the app's real-time GPS tracking, which they can then share with trusted friends. Additionally, there is a panic button on the app that, when pressed, instantly contacts emergency services. Effective crisis prevention and management is possible with the aid of the software's self-defense classes, safety guidance, information on nearby safe zones, and hotlines. In addition, the app's real-time event reporting feature allows women to document and discuss incidents of harassment or assault, which promotes responsibility and provides politicians with valuable data. Improving women's safety, decreasing reaction times to emergencies, and providing a solid support system are all goals of the integrated women's safety app. This application integrates several safety features and emergency response systems, making it a powerful tool to safeguard women's interests and welfare in modern society.

Index Terms:

Mobile Application, Machine Learning, Logistic Regression, Neural Network, Decision Tree Classifiers, GPS tracking, panic button, self-defense, heatmap

 ISBN: 978-93-92105-69-2

An Efficient Analysis of Crop Yield Prediction using A Data Analysis Technique

Kambhampati Shyam Jewel
UG Student, Division of CSE, Karunya Institute of Technology and Sciences, Coimbatore, India

Salaja Silas
Professor, Division of CSE, Karunya Institute of Technology and Sciences, Coimbatore, India

G. Jasper W. Kathrine
Associative Professor, Divison of CSE, Karunya Institute of Technology and Sciences, Coimbatore, India

Abstract:

This research uses a data analysis approach to give an effective examination of agricultural production prediction. With the global population growing and food security being a constant concern, precise crop yield forecasts are essential for efficient planning and decision-making in the agricultural industry. The suggested approach makes use of cutting-edge data analysis techniques to examine a number of variables that influence crop yields, including soil quality, climatic conditions, fertilizer techniques, and planting schedules.

The first step in the research is to gather a large dataset that contains past crop production data and pertinent environmental variables. The accuracy of the forecasts is then guaranteed by pre-processing the data to eliminate noise and outliers. After that, a range of methods for analyzing data are used to find patterns and correlations in the dataset, such as statistical models and machine learning algorithms. These methods aid in identifying critical elements that have a major impact on crop yields.

To verify the correctness and dependability of the created model, it is evaluated against real-time data and trained on previous data. Farmers and policymakers may then utilize the prediction model to anticipate crop yields for next seasons, enabling them to make well-informed choices about market planning, crop selection, and resource allocation.

The study's findings show that the suggested data analysis method is efficient in precisely projecting crop production. Advanced data analysis techniques allow for a thorough investigation of the interdependencies and intrinsic complexity seen in agricultural systems. By offering a dependable and effective method for predicting crop production, this study advances the science of agriculture and eventually promotes sustainable farming methods and global food security.

Index Terms:

Crop Yield Prediction, Data Analysis, Machine Learning, Statistical Models, Agriculture, Sustainable Agriculture, Food Security

Facial Emotion Recognition, Gender Detection and Text to Speech Conversion

Kambhampati Shyam Jewel
UG Student, Division of CSE, Karunya Institute of Technology and Sciences, Coimbatore, India

Salaja Silas
Professor, Division of CSE, Karunya Institute of Technology and Sciences, Coimbatore, India

G. Jasper W. Kathrine
Associative Professor, Divison of CSE, Karunya Institute of Technology and Sciences, Coimbatore, India

Abstract:

The abstract discusses three pivotal domains within artificial intelligence: facial emotion recognition, gender detection, and text-to-speech conversion. Facial emotion recognition involves deciphering facial expressions to discern underlying emotions, crucial for applications such as human-computer interaction and mental health assessment. Conversely, gender detection aims to determine an individual's gender based on facial features, with applications like surveillance systems, and social behavior analysis. Text-to-speech conversion, meanwhile, transforms written text into spoken words, catering to the needs of visually impaired individuals. These domains interconnected rely on deep learning, in facial emotion recognition and gender detection, researchers often use deep learning models trained on datasets like FER2013 and CK+ to recognize patterns in facial expressions and features associated with different emotions and genders. The process typically starts with data acquisition and preprocessing, including tasks such as image resizing, data augmentation, and splitting datasets into training, testing, and validation sets. Then build and train deep learning models such as Efficient Net with 94% accuracy, Mobilenet, ResNet, and VGG16 for facial emotion recognition, and SVM and CNN for gender detection. These models are validated and compared using performance metrics. In the context of text-to-speech conversion, it incorporates natural language understanding (NLU) techniques to interpret text input and select appropriate linguistic features. This information is then used in conjunction with end-to-end speech synthesis systems like Tacotron and vocoders such as Wavenet to generate high-quality speech output. Additionally, these technologies possess the potential to improve human-computer interaction, enhance user experience, and provide more inclusive solutions in various domains.

Index Terms:

Efficientnet, Mobilenet, VGG16, SVM, CNN

 ISBN: 978-93-92105-69-2

Prioritising Hospital Admissions According to Emergency using Machine Learning

Bandarupalli Deva Nithin Sai
UG Student, Division of CSE, Karunya Institute of Technology and Sciences, Coimbatore, India

A Kethsy Prabavathy
Assistant Professor, Division of CSE, Karunya Institute of Technology and Sciences, Coimbatore, India

Mamilla Deepak Sai
UG Student, Division of CSE, Karunya Institute of Technology and Sciences, Coimbatore, India

Abstract:

This research paper proposes a machine learning-based approach for prioritising hospital admissions according to the level of emergency. Effective prioritisation of hospital admissions is crucial in ensuring that promptly, can assist automating this process providing support to healthcare professionals in their decision-making. The proposed approach includes various patient attributes such as symptoms, vital signs, medical history, and previous diagnoses. The model will learn patterns and relationships between these attributes and the level of emergency. Once trained, the level of emergency patients, allowing hospital staff to prioritise admissions accordingly. The aim is to identify high-risk cases that require immediate attention, thus potentially reducing waiting times for patients in critical condition, offering the efficiency and accuracy of the admission process, leading to better patient outcomes.

Index Terms:

Hospital Admissions, Prioritisation, Emergency, Machine Learning, Medical Condition, Decision-Making, Healthcare Professionals, Training, Dataset, Symptoms, Vital Signs, Medical History, Diagnoses, Predict, High-Risk Cases, Waiting Times, Critical Condition, Efficiency, Accuracy, Patient Outcomes

Optimizing Lithium-Ion Battery Pack Configuration for Enhanced Performance in Hoverboard Applications

Dr. Girish Kotwal
Department of Mechanical Engineering, Vishwakarma Institute of Technology, Pune, India

Rugved Chavan
Department of Mechanical Engineering, Vishwakarma Institute of Technology, Pune, India

Sarthak Chavan
Department of Mechanical Engineering, Vishwakarma Institute of Technology, Pune, India

Ashutosh Chitale
Department of Mechanical Engineering, Vishwakarma Institute of Technology, Pune, India

Dhruv Chavan
Department of Mechanical Engineering, Vishwakarma Institute of Technology, Pune, India

Chinmay Patil
Department of Mechanical Engineering, Vishwakarma Institute of Technology, Pune, India

Abstract:

This study delves into the design of an electric hoverboard, emphasizing factors like rolling resistance, aerodynamic drag, and motor selection to enhance operational range. Hoverboards, known for their convenience and eco-friendliness, can benefit from a specially crafted lithium-ion battery pack to extend range while ensuring safety and efficient energy management. The study focuses on component selection to boost efficiency and minimize energy consumption. To enhance performance in challenging terrains, two planetary geared motors of 12V, 72 watt with substantial torque of 2 Nm are utilized. The goal is to create an environmentally friendly hoverboard suitable for leisure and urban commuting. A customized lithium hoverboard battery pack of 3S8P is engineered to prolong range and maintain constant voltage, featuring a 17.6 ampere-hour capacity, 211.2 watt hours, and compatibility with a 12V 10A motor driver. Supported by 12mm plywood and caster wheels, this pack optimizes hoverboard performance, durability, and energy efficiency. A steady state thermal analysis is conducted to ensure and monitor the maximum temperature is within the safety limits and was found to be 29°C.

Index Terms:

Lithium-Ion Battery, Hoverboard Applications

 ISBN: 978-93-92105-69-2

Efficient Cooling Solutions: Condenser Valuation through and Computational Fluid Dynamic Analysis

Pramod Kale
Department of Mechanical Engineering, Vishwakarma Institute of Technology, Pune, India

Sarthak Chavan
Department of Mechanical Engineering, Vishwakarma Institute of Technology, Pune, India

Rugved Chavan
Department of Mechanical Engineering, Vishwakarma Institute of Technology, Pune, India

Ashutosh Chitale
Department of Mechanical Engineering, Vishwakarma Institute of Technology, Pune, India

Abstract:

In this research paper, a comparative analysis was conducted between R134a and R22 refrigerants with aluminum 6061 fins. The study aimed to evaluate heat transfer efficiency and overall effectiveness to optimize cooling system performance. R134a and R22 were chosen based on improved heat transfer, energy efficiency, compatibility with existing systems, and industry standards. The research contributes to enhancing HVAC systems' energy efficiency and sustainability. The findings from this study provide valuable data for decision-making in selecting the most suitable refrigerant-fins combination to improve system performance and mitigate environmental impact. CFD simulations show R22 outperforms R134a in heat transfer capabilities, offering superior cooling performance, reduced energy consumption, cost savings, and ecological sustainability, while ensuring seamless transitions and environmental impact mitigation. Moreover, the results indicated that the temperature for R134a was approximately 335K, while for R22 it was around 300K. This difference underscores the superior performance of R22 in terms of cooling efficiency and effectiveness compared to R134a in the context of this study. The inlet condition of the pipe domain at 373 K influenced the thermal behavior and performance outcomes observed during the CFD simulations for both refrigerants.

Index Terms:

Lithium-Ion Battery, Hoverboard Applications

Revolutionizing Supply Chain Management: Real-time Data Processing and Concurrency Management using Kafka and Akka

Suwarna Shukla
Computer Science Engineering Chandigarh University, Chandigarh, India

Er. Prabhneet Singh
Computer Science Engineering Chandigarh University, Chandigarh, India

Abstract:

In the contemporary business landscape, effective supply chain management (SCM) is paramount for organizations seeking to thrive amidst evolving market dynamics and height- ened customer expectations. This research paper presents a pio- neering approach to SCM that harnesses cutting-edge technolo- gies, namely Kafka and Akka, to revolutionize data integration and decision-making processes. By leveraging Kafka as a robust distributed event streaming platform and Akka as a versatile toolkit for developing concurrent and distributed applications, our system facilitates seamless communication and coordination across diverse nodes within the supply chain network. This paper elucidates the intricacies of the proposed architecture, detailing the implementation methodology and performance evaluation metrics. Through a comprehensive examination, we demonstrate how our solution enhances supply chain visibility, fosters op- erational agility, and enables real-time responsiveness to market fluctuations and customer demands. Moreover, practical use cases exemplify the transformative impact of our approach on inven- tory management optimization, order fulfillment efficiency, and logistics optimization. Furthermore, we delve into the challenges encountered during implementation and deployment, offering insights into potential mitigative strategies. Finally, we outline avenues for future research, exploring emerging trends and opportunities in the realm of SCM empowered by Kafka and Akka technologies.

Index Terms:

Supply Chain Management (SCM), Event-Driven Architecture, Distributed Systems, Real-Time Data Processing, Akka Framework, Kafka Messaging, Data Integration, Decision Support Systems, Inventory Optimization, Logistics Management, Scalability, Fault Tolerance, Performance Evaluation, Operational Efficiency, Stream Processing

 ISBN: 978-93-92105-69-2

DeepScan: Building An Advanced Deep Fake Detector using Python

Aditya Kumar Choudhary
Computer Science Engineering, Chandigarh University, Mohali, India

Rubal Sharma
Computer Science Engineering, Chandigarh University Mohali, Punjab, India

Prisha Das
Computer Science Engineering, Chandigarh University, Mohali, Punjab, India

Payal Thakur
Computer Science Engineering, Chandigarh University, Mohali, Punjab, India

Abstract:

With the increasing processing power, deep learning algorithms have become so strong that it is now relatively easy to produce a human-like synthetic movie, or "deep fake." It is easy to imagine scenarios in which these lifelike faces swapping deep fakes are used to incite political unrest, stage terrorist acts, produce revenge porn, or blackmail individuals. We present a novel deep learning approach in this study that can reliably discriminate between real videos and fake ones produced by artificial intelligence (AI). Deep fakes that are replacement and reenactment can be automatically identified by our technology. The goal of our endeavor is to combat artificial intelligence (AI) by means of AI. Our approach uses a Res-Next Convolution neural network to extract the video's frame-level data. After that, an LSTM- based Recurrent Neural Network (RNN) is trained with these attributes to ascertain whether or not the video has been edited, or if it is a deep fake or authentic movie. In order to enhance the model's functionality with real-time data and replicate real-world circumstances, we test our approach on a sizable, well-balanced, and diverse data set that we created by combining different publicly accessible data sets, such as Celeb- DF, Face-Forensic++, and the Deep Fake Detection Challenge. We also show how, using an extremely simple and dependable manner, our technology may yield competitive outcomes.

Index Terms:

Res-Next neural network with convolution, Neural Network with Recurrence (RNN), Extended Short-Term Retention (LSTM), Computer Vision

Social Networks on WEB 3.0 Using Blockchain Technology

G Suryanarayana
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

M. Ashareddy
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Anirudh Cidiri
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Abstract:

Introducing the "Decentralized Social Network on Blockchain," a transformative endeavor set to reshape the landscape of online social interactions.[1] This innovative project leverages blockchain technology to establish a decentralized, secure, and user-centric platform, addressing the inherent limitations of current Web 2.0 social networks. Through a shift from traditional client-server architecture, users gain unparalleled control over their data and privacy, with blockchain ensuring the irreversibility of transactions. Core objectives encompass user empowerment, heightened data security, decentralization, participation incentives, and unwavering adherence to legal and privacy standards. The project implements a token-based reward system to actively encourage user engagement, content creation, and collaborative efforts, fostering the development of a dynamic online community. Ethereum and Metamask are employed to facilitate transactions and smart contracts, showcasing the project's adaptability and scalability.[2] A commitment to continuous improvement is evident, with the project remaining open to refinement based on user feedback and advancements in technology. In essence, the "Decentralized Social Network on Blockchain" project marks a significant paradigm shift towards a digital era characterized by user-centricity, heightened security, and privacy consciousness. It holds the potential to grant individuals unprecedented control over their online identities and interactions, setting the stage for a more empowered and secure digital future.

Index Terms:

Decentralized Social Network, Blockchain Technology, Web 2.0, User Empowerment, Data Security, Privacy Protection, Smart Contracts, Ethereum, Metamask

 ISBN: 978-93-92105-69-2

Ticket Analytics : A Key to Effective IT Service Management

Devyani Chakravarty
ITM Business School, Kharghar, India

Abstract:

In the realm of Information Technology Service Management, the IT ticketing tool lies at the heart of efficient service management and delivery as it is the central repository for all issues popularly termed as 'tickets' raised by users of enterprise portal or applications. The data dump from the ITSM ticketing tool is vital for gaining insights into the current 'as-is' service management landscape as well as for evaluating the effectiveness of the Service Management Model. One such important key performance indicator (KPI) to monitor is the ticket inflow trends within a certain service window say 9AM- 5PM IST while another KPI of interest is monitoring the period experiencing significantly high volumes or spikes in 'Critical' or 'High' priority tickets which typically require quicker turnaround time for both-response as well as resolution. This paper aims to demonstrate the value of ticket analytics in facilitating due diligence and achieving productivity in the ongoing application maintenance operations generally undertaken by the inhouse or vendor-managed IT Service Management team. The approach described in this paper is aimed at replacing redundant manual intervention required in ITSM monitoring, baselining and fine-tuning Service Level Agreement parameters with insightful "data-driven" analytics for designing an efficient "to-be" Service Management model.

Index Terms:

Service Management, Incident management, Service Delivery, Ticketing tool, Analytics

Infrared Small Target Enhancement using Image Inpainting

Paidipala Venkata Naveen
UG Student, Division of CSE, Karunya Institute of Technology and Science, Coimbatore, India

Dr. A. Kethsy Prabavathy
Assistant Professor, Division of CSE, Karunya Institute of Technology and Science, Coimbatore, India

Pallem Sumanth Sai
UG Student, Division of CSE, Karunya Institute of Technology and Science, Coimbatore, India

Abstract:

Infrared imaging performs a vital part in numerous aspects of applications such as surveillance, reconnaissance, and small target enhancement. Nevertheless, noise, clutter, and other variables can frequently make it difficult to see small targets in infrared photographs. In this study, we present a novel method based on image inpainting techniques to improve the visibility of small targets in infrared data. We fill in areas surrounding small targets while maintaining significant characteristics and eliminating extraneous noise or clutter by utilizing inpainting algorithms. We investigate various inpainting algorithms, ranging from deep learning-based techniques to traditional methods, and assess how well they improve visibility of small targets. Experiments show notable gains in target detection and overall image quality, confirming the effective use of the suggested method.

Index Terms:

Small Target Enhancement, Image Inpainting, Target Detection, Infrared Imaging

 ISBN: 978-93-92105-69-2

Adaptive Non Maximum Suppression with Refined Harmony Search Algorithm

Keegan Fernandes
Dept. of Data Science Christ (Deemed of be) University, Pune, India

Dr. Lekha J
Dept. of Data Science Christ (Deemed of be) University, Pune, India

Dr. Sweety K
Dept. of Data Science Christ (Deemed of be) University, Pune, India

Abstract:

The proposed Refined Harmony - NMS (RH-NMS) introduces a novel approach to non-maximum suppression in object detection, building upon the Harmony Search Algorithm. Through enhancements to the harmony scoring and object counting algorithms, RH-NMS achieves notable improvements. Specifically, it demonstrates a 1.0 % enhancement and a 1.7 % increase over Greedy-NMS when evaluated on the Pascal VOC dataset. Furthermore, on the Common Objects in Context dataset, RH-NMS outperforms Harmony Search NMS (HS-NMS) and Greedy-NMS with a 0.6% and 1.0% increase, respectively.

Index Terms:

Object Detection, Non-Maximum Suppression, NMS, Computer Vision, Object Localization

Early Warning System For Natural Disasters using Deep Learning

Kreeti
Chandigarh University, Punjab, India

Rishabh Hans
Chandigarh University, Punjab, India

Sarmohit Singh
Chandigarh University, Punjab, India

Payal Thakur
Chandigarh University, Punjab, India

Abstract:

In recent years, diseases and disasters have become inevitable. The development of technology has not only made our lives easier, but also increased our dependence on technology. However, natural disasters affect the lives of many people and cause great damage. Additionally, disasters have affected and affected many businesses and services, directly or indirectly. Therefore, it is necessary to examine and observe the data structure of natural disasters and the ability to instantly solve early warning signs, possible risks and management strategies, and try to reduce the loss of money in society. Natural disaster prediction is the process of using science and technology to predict serious events such as earthquakes, hurricanes and floods. It involves the analysis of various environmental, geological and meteorological factors in order to create an early warning system that alerts people and communities in affected areas so that they can implement the necessary preventive measures to reduce the impact of the disaster. We face natural disasters regularly, so we try to predict them using machine learning. Machine learning algorithms can process a lot of information about disasters and are particularly suitable for important tasks such as prediction and classification. We will train the model using existing data. The model will process the input data and predict the output based on the available data.

Index Terms:

Deep Learning, Machine Learning, Natural Disaster

 ISBN: 978-93-92105-69-2

Enhancing Electric Meter Reading: A Comparative Study of YOLO Architectures for Digit Recognition

Ritankar Das
National Institute of Electronics and Information Technology, Kolkata, India

Rudraneel Dey
National Institute of Electronics and Information Technology, Kolkata, India

Cassandra Chang
National Institute of Electronics and Information Technology, Kolkata, India

Bhaskar Banerjee
National Institute of Electronics and Information Technology, Kolkata, India

V. Krishnamurthy
National Institute of Electronics and Information Technology, Kolkata, India

Abstract:

Accurate electric meter reading is crucial for efficient energy management and billing processes. This paper introduces a comprehensive approach to automatic meter reading, leveraging the YOLOv8 model for meter display extraction and evaluating various YOLO architectures for digit recognition. Through extensive experimentation, we demonstrate that YOLOv9 achieves the highest accuracy and efficiency, with a precision of 0.917, recall of 0.899, and mean Average Precision (mAP) of 0.919. Our comparative analysis explores the strengths and weaknesses of each YOLO variant, considering factors such as detection speed, accuracy, and robustness. The results indicate that YOLOv9 outperforms other variants, offering promising potential for applications in electric meter reading systems. These results contribute significantly to the advancement of automatic meter reading technologies, providing valuable insights for researchers in computer vision and energy management fields. The research not only improves the accuracy and efficiency of electric meter reading processes but also lays the groundwork for the development of more effective systems. With implications for smart city infrastructure and energy conservation initiatives, this study marks a significant step toward a more sustainable and technologically advanced energy ecosystem.

Index Terms:

Yolo, Meter Reading, Digit Recognition, Object Detection

Advancing Integrity in Digital Media: Innovations in Machine Learning for Detecting Fake News

Shanvi Kayal
SRM Institute of Science and Technology, Chennai, India

Samarth Pandey
SRM Institute of Science and Technology, Chennai, India

Dr. Anitha.K
SRM Institute of Science and Technology, Chennai, India

Abstract:

This study devises a novel framework that integrates machine learning and natural language processing to detect fake news effectively. By leveraging algorithms such as Random Forest, SVM, and deep learning techniques, the research evaluates their performance on accuracy, precision, and other metrics. The outcomes highlight the model's enhanced capability in distinguishing fake news, showcasing a significant improvement over existing models. The work advocates for the amalgamation of diverse computational methods to bolster the veracity of information online, suggesting avenues for future enhancements in real-time detection and adaptability to new media forms.

Index Terms:

Machine Learning, Natural Language Processing (NLP), Fake News Detection, Ensemble Methods, Random Forest, Svm (Support Vector Machine), Deep Learning, Accuracy, Precision, Digital Media, Information Integrity, Real-Time Detection, Computational Techniques

 ISBN: 978-93-92105-69-2

Sharing Techniques and Secure Data Storage for Data Protection in Cloud Environments

Vishvjeet Kumar
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, India

Suvrat Prakash
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, India

M. Madhavi
Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, India

Abstract:

Concerns concerning data security and protection in cloud environments have grown significantly with the growing use of cloud computing. An extensive overview of methods for safely sharing and storing data in the cloud is provided in this study. It covers a number of data sharing strategies that guarantee that only authorized users may access sensitive data, such as proxy re-encryption, secure multi-party computing, and attribute-based access control. The study also examines various secure data storage techniques that safeguard data integrity and confidentiality in cloud contexts, including homomorphic encryption, searchable encryption, and distributed storage systems. The study also looks at the difficulties and restrictions that come with using these methods, highlighting the necessity of strong security measures to guard against data breaches and illegal access. The trade-offs between security and performance are also covered, since putting robust security measures in place frequently increases latency and processing overhead. The article concludes by outlining important factors to take into account when choosing the best sharing and storage strategies depending on particular needs, like data sensitivity, access control guidelines, and legal compliance. All things considered, this paper offers insightful information about the many methods and best practices for guaranteeing data security and protection in cloud settings, empowering businesses to take well-informed decisions to protect their sensitive data.

Index Terms:

Cloud Computing, Data Protection, Data Security, Data Sharing, Secure Data Storage, Attribute-Based Access Control, Secure Multi-Party Computation, Proxy Re-Encryption, Homomorphic Encryption, Searchable Encryption, Distributed Storage, Security Measures, Computational Overhead, Regulatory Compliance

Fusion of Cryptography and Steganography for Enhanced Security

Nabaa Adil Farah
Marwadi University, Rajkot, India

Manisha
Marwadi University, Rajkot, India

Abstract:

Information security is a key component of ensuring the security of data, and it is a pivotal factor for ensuring the shield of the data from outlawed access. The fusion of Cryptography and Steganography techniques is an attempt to hide the secret message or information. In this proposed work, the affine cipher algorithm is used for encoding and the XOR Least Significant Bit method is used for employing Steganography. For hiding of secret message into cover image five major steps have been followed for generating the stego image. The performance of the proposed methods is measured as well as compared with state-of-the art methods in terms of various performance measures i.e. Peak Signal to Noise Ratio, Mean Square Error, Root Mean Square Error, Mean Absolute Error, Structural Similarity, Number of Pixel Change Rate, Unified Average Changing Intensity and structural Content. The security analysis is also presented using histogram and adjacent pixel correlation methods. Extensive experiments have been performed which shows the primacy of the proposed methods over others.

Index Terms:

Cover Image, Cryptography, Performance Measures, Qualitative Analysis, Quantitative Analysis, Steganography, Stego Image

 ISBN: 978-93-92105-69-2

Deep Interval Vector Quantization for Efficient Image Compression

Krishitaa Balamurali
SRM Institute of Science and Technology, Chennai, India

Putta Sri Naga Sanjana
SRM Institute of Science and Technology, Chennai, India

Abstract:

In order to overcome quantization issues in picture compression, the "Deep Interval Vector Quantization for Efficient Image Compression" method creatively mixes convolutional neural networks (CNNs) and interval arithmetic. This method uses interval arithmetic to describe quantization intervals as ranges, minimizing mistakes and enhancing reconstruction accuracy. Traditional vector quantization methods frequently result in information loss and poor image quality. CNNs are used in both the training and compression phases of the process, and their ability to capture spatial dependencies is utilized to facilitate efficient quantization. Comparing experimental evaluations against standard approaches, benchmark datasets show decreased artifacts, better compression ratios, and preserved image quality. Interval arithmetic is included into compression to improve its amplification and translation capabilities. This concurrently advances the efficiency and quality of picture compression. As indicated by the PSNR (Peak Signal-to-Noise Ratio) and SSIM (Structural Similarity Index), this procedure greatly lessens the effects of quantization errors on the reconstructed images. Better compression ratios are obtained with the suggested approach, which also reduces quantization artifacts and maintains image quality.

Index Terms:

Convolutional Neural Networks (CNNs), PSNR (Peak Signal-to-Noise Ratio), SSIM (Structural Similarity Index)

Rumour Propagation and Need for Rumour Detection on Twitter

Osheen Sharma
Goswami Ganesh Dutta Sanatan Dharma College, Chandigarh, India

Monika Sethi
Chitkara University Institute of Engineering & Technology, Chitkara University, Punjab, India

Sachin Ahuja
Chandigarh University, Punjab, India

Abstract:

Over the time rumours have proved to be a big problem generated through social media. Various incidents have been quoted till now which shows the negative impact of the rumour on the society. Therefore, rumours need to be detected and should be stopped from spreading. Rumour detection at an early stage is very important. The studies referred showed that various detection models have been developed but most of them detect the rumours after they get spread and the consequences have been witnessed by the society. Rumours have been a consistent element in human communication over time. However, with the introduction of social media platforms like Twitter, the propagation of rumours has reached unprecedented scales. Rumours can swiftly attain viral status on Twitter, giving rise to widespread panic, dissemination of misinformation, and, in extreme cases, even triggering social unrest. Detecting and addressing rumours on Twitter has consequently become a crucial challenge in the present era of information technology. This research paper aims to delve into the realm of rumour detection on Twitter, focusing on the rumour propagation and need for detection of rumours on Twitter. By understanding the role and impact of social networks in rumour dissemination, we can develop effective strategies to combat this issue and ensure the veracity of information shared on Twitter.

Index Terms:

Rumour Propagation, Rumour detection, Twitters

 ISBN: 978-93-92105-69-2

A Comparative Analysis of Progressive Web Apps (PWAs) and Native Mobile Apps in Development

Tanish Garg
Galgotias University, India

Abhinav Jha
Galgotias University, India

Abstract:

This paper evaluates the benefits and challenges of developing Progressive Web Applications (PWAs) compared to native mobile apps, with a focus on aspects such as offline functionality and performance optimization. The implementation of PWAs enables offline functionality through caching mechanisms and reduced data consumption, ensuring users can access content even in low-connectivity environments. Additionally, PWAs employ performance optimization techniques like lazy loading and code splitting to enhance load times and user interactions. However, challenges exist, such as limited access to device features and platform-specific considerations. Through case studies and examples from platforms like Twitter, Instagram, Facebook, and Stack Blitz, this research provides insights into the technical aspects and implications of PWAs and native mobile apps.

Index Terms:

PWA (Progressive Web Applications), Native Mobile Apps, Offline Functionality, Performance Optimization, Comparative Analysis, User Experience, Cross-Platform Compatibility

Indoor Optical Wireless LoS and NLoS System using Direct Detection

Sagupha Parween
Odisha University of Technology and Research, Bhubaneswar, India

Aruna Tripathy
Odisha University of Technology and Research, Bhubaneswar, India

Abstract:

Optical wireless communication (OWC), as a supplement to radio frequency (RF) systems, has become a viable option for high-speed indoor communications in recent years. An Indoor optical wireless communication i.e. visible light communication (VLC) system is investigated in this paper. The system operates similarly to communication systems based on optical fibers. However, here free space rather than an optical fibre is the transmission medium used by the indoor wireless system. The development of the light-emitting diode (LED) brought about a major advancement in the technologies employed in contemporary communication systems. The LED functions as a data transmitter. After detection of the light, as the light directly falls on the photodetector, the detector decodes the transmitted data. In this paper, an indoor VLC system using line of sight (LoS) and non-line of sight (NLoS) propagation model using direct detection is designed. The paper focuses on the testing of both a LoS and NLoS based system with multiple reflections with a single receiver. The effect of incident and irradiance angles in propagation model is investigated in order to identify the signal distortion.The field of view (FoV) is tested for both type of photodetector PIN and APD. The channel impulse response and time taken by the signal to reach the receiver for LoS and NLoS scenarios are also determined.

Index Terms:

LoS and NLoS System, Direct Detection, Optical wireless communication (OWC), radio frequency (RF), Visible Light Communication (VLC)

 ISBN: 978-93-92105-69-2

Smart Agriculture System: Enhance Crop Management and Monitoring with IoT Technology

Aaditya Sharma
Department of Computer Science, Chandigarh University, Mohali, Punjab, India

Rohit Kumar
Department of Computer Science, Chandigarh University, Mohali, Punjab, India

Amanpreet Kaur
Department of Computer Science, Chandigarh University, Mohali, Punjab, India

Aakash Yadav
Department of Computer Science, Chandigarh University, Mohali, Punjab, India

Kritik Sharma
Department of Computer Science, Chandigarh University, Mohali, Punjab, India

Vedansh Tiwari
Department of Computer Science, Chandigarh University, Mohali, Punjab, India

Abstract:

Smart Agriculture Systems (SAS), which is a product of smart farming, have been employed over the last few decades to internally modify the practice of farmers tradition, by the use of the Internet of Things (IoT) technology. Through this writing, a thorough exposition of the essential components and attributed advantages to the realization of Smart Farming System shall be presented. The system takes advantage of a range of sensors, aerial drones, automated irrigation systems, data analytics, mobile programs, RFID, GPS technology and machine learning thinking to improve the quality of crop management and monitoring. The location of soil moisture sensors, temperature and humidity sensors, light sensors, and weather stations being employed leads to the real-time monitoring situation. The use of drones and UAVs lead to aerial imaging and crop surveillance as well as precision agriculture, while automated irrigation systems, contribute to irrigation in a mode of the most efficient way possible. Bridge clouds and data analysis are vital in harnessing data, enhancing predictive analytics and in turn, enabling more informed decision-making. Mobile apps are the tools that farmers use for remote monitoring and control. They allow farmers to access alerts such as for interventions in cases when they are required. RFID and GPS technologies are helping asset management on farm by tracking asset in the future and mapping geospaces which are contributing to overall farm efficiency. Machine learning algorithms developed by this system of Smart Farming provide crop prediction systems and disease detection. The benefits of introducing an agricultural system which would make the most of resources, improve productivity, reduce costs and have positive impact on the environment, data analysis for decision making, remote monitoring, facilitation for market access, improved crop quality and long term sustainability are also the other advantages.

Index Terms:

Smart agriculture, Internet of things, Global Positioning System, Modern technology, Farm management

Develop an App Link to Convert Written Text into Editable Text into a Different Language

S. Shalini
Assistant Professor, IFET College of Engineering, Villupuram, India

P. Praveen
UG Scholar, IFET College of Engineering, Villupuram, India

Abstract:

Many of us continue to find it calming to put our ideas down on paper throughout the digital age. What occurs, however, if you need to turn your handwritten notes into editable digital text? If you have a brief note, writing it down by hand is acceptable. However, if you find yourself writing it down regularly, it's time to employ a handwriting to text converter. OCR, or optical character recognition, is used by handwriting to text applications to quickly transform handwritten materials into editable text. Consequently, sharing and organizing your ideas will be simpler. You can collaborate on ideas with greater efficiency and save your energy and time about handwriting to text technologies.. Optical character recognition, also referred to as OCR, is an algorithm that can identify text in document captures and extract it into digitally modifiable text. In addition, an OCR has extra applications in document image processing, including writer identity and verification and computerized document sorting. Currently, there are a number of commercially accessible OCR systems, mostly for Roman script. Creating an unrestricted offline system for handwritten character recognition is one of the most difficult issues facing the academic community. When we take into account Indian scripts like Bangla, which have more than 280 modified and compound characters in addition to isolated characters, things become even more problematic. The best technique for handwritten document recognition is to divide the text into individual characters or character parts. Hence, character, word, and line level The emergence of such a system depends heavily on segmentation. This study presents a tri-level segmentation approach (line, word, and character).

Index Terms:

App, Written Text, Editable Text

 ISBN: 978-93-92105-69-2

Comparing the Predictive Accuracy of Traditional Time Series Models and Generative Models in Stock Price Forecasting

Md Tabish Faridi
Department of Computer Science and Engineering, Chandigarh University, Mohali, India

Sarthak Negi
Department of Computer Science and Engineering, Chandigarh University, Mohali, India

Aniket Jaswal
Department of Computer Science and Engineering, Chandigarh University, Mohali, India

Payal Thakur
Department of Computer Science and Engineering, Chandigarh University, Mohali, India

Abstract:

Stock price forecasting is crucial for investment decision-making, necessitating the integration of traditional methods with generative artificial intelligence (AI) models. This research explores the fusion of Autoregressive Integrated Moving Average (ARIMA) and Long Short-Term Memory (LSTM) networks for predicting stock market trends. Historical data from Yahoo Finance forms the basis for model development, with preprocessing and feature engineering enhancing data quality. The ARIMA model, renowned for its time-series analysis capabilities, and the LSTM model, adept at capturing sequential dependencies, are implemented and evaluated using Mean Absolute Error (MAE) and Root Mean Squared Error (RMSE) metrics. The study compares their performance over a 30-day prediction horizon, emphasizing accuracy and stability in forecasting. This research contributes to advancing predictive techniques by leveraging both traditional and generative AI approaches for enhanced stock market analysis.

Index Terms:

Stock Price Forecasting, ARIMA, LSTM, Generative Models, Time-Series Analysis, Financial Market

The Economic Value of Bio-waste into Biogas Feedstock using Two-Phase Anaerobic Digestion System

Janani. P
Vel Tech Rangarajan Dr Sagunthala R & D Institute of Science and Technology, Chennai, India

E. D. Kanmani Ruby
Vel Tech Rangarajan Dr Sagunthala R & D Institute of Science and Technology, Chennai, India

Abstract:

In the upcoming era Anaerobic digestion (AD) would be a key phase in waste recovery. Recently, the Bio-waste has a considerable environmental impact due to Biogas production (Methane). In 2023, the garbage produced especially food waste, Bio solids and other agricultural wastes was around 725,456 tons per year. Wastes produce soluble constituents and greenhouse gases (GHGs) when they degrade, which have a detrimental impact on water supplies and other factors. The proposed method shows how to build a two-phase bio-digestion system for organic matter decomposition and biogas (Methane) generation. The chamber generates biogas from food waste/agricultural waste/ Biosolids, which emits no pollutants. The bio-digestion process starts with the equilibrium of the Hydrolysis chamber in which the process is said to take around 30 days cycle. The produced biogas calculates 60% of methane by volume . The overall anaerobic chamber then functions for 7 days, during which time Bacillus bacteria degrade the Food waste, producing and accumulating volatile fatty acids. The last phase of reaction includes cycle of 10 days which results in the biogas production of about 500 to 1560 ml. The final variant contains 69.90% methane (CH4). This proposed method of production of biogas depicts mainly the degradable waste in which the pH value of the soluble constituents are said to be enhancing its biodegradability. As a result, this technique reduces sediments in the anaerobic digestive system by a significant of 25.00%. This two-phase anaerobic bio-digestion system proposed counteracts with the possible ways that reduces the environmental effects that are caused by the Bio-waste which in turns out be creating sustainable energy.

Index Terms:

Methane; Biogas; Food waste; GHG; Bio-Digestion, Anaerobic Digestion

 ISBN: 978-93-92105-69-2

Stitching Together the Future: How Generative AI is Revolutionizing the Fashion Industry

Uma Maheswari B
Associate Professor, PSG Institute of Management, Coimbatore, India

Painguzhali G
Student, PSG Institute of Management, Coimbatore, India

Kavitha D
Associate Professor, PSG Institute of Management, Coimbatore, India

Sujatha R
Associate Professor, PSG Institute of Management, Coimbatore, India

Abstract:

In line with the current generation of technology, this article addresses how fashion businesses are benefiting from technological advancements such as Artificial Intelligence (AI) or Machine Learning that make it more satisfying for customers and expanding the industries. Generative AI is one such advancement that learns from big datasets, captures patterns, and generates new content with similar qualities. This article explains what is generative AI and how it has revolutionized fashion. The paper focuses on the benefits and applications of Generative AI in fashion design and product development, using Generative Adversarial Networks (GANs) and other AI models for creating outfits and generating images related to fashion. These technologies aim to enhance creative processes, offering solutions to multiple challenges in the industry, such as compatibility and lack of personalized design. Therefore, this article explores various approaches to designing clothing in order to understand digital transformations underway within fashion domain as well as the future possibilities of generative AI integration into the sector.

Index Terms:

Artificial Intelligence, Machine Learning, Generative AI, Fashion Industry, Generative Adversarial Networks (GANs)

Comparison of Various Techniques for Wireless Charging of Electric Vehicles

Mukesh Bhardwaj
Electronics & Communication Engineering Department, Amity University, Gwalior, India

Dr. Narender Kumar Garg
Electronics & Communication Engineering Department, Amity University, Gwalior, India

Dr. Ashutosh Barua
Research & Development, Insolare Energy, Bangalore, India

Dr. Ajay Dadoria
Electronics & Communication Engineering Department, Amity University, Gwalior, India

Dr. Lokesh Varshney
Electronics & Communication Engineering Department, Galgotias University, Greater Noida, India

Abstract:

This paper presents various methods of dynamic charging of electric vehicles like inductive charging, magnetic-resonant inductive charging, and capacitive charging as near-field charging. Medium-field charging methods i.e., magnetic gear-based charging technique, and Far-field charging technologies like Laser charging, microwave charging, and Radio wave charging are also included.

Index Terms:

Wireless Power Transfer (WPT), Electric Vehicles (EVs), Inductive Charging, Capacitive Charging, Laser Charging, Microwave Charging, Radio-wave Charging

 ISBN: 978-93-92105-69-2

Building An Automated Extract, Transform, Load (ETL) Pipeline using Modern Architectures of Aws, Deepnotes for Automated Data Extraction and Data Visualization

Uma Maheswari B
Associate Professor, PSG Institute of Management, Coimbatore, India

Naveen Saktivel K S
Associate Professor, PSG Institute of Management, Coimbatore, India

Kavitha D
Associate Professor, PSG Institute of Management, Coimbatore, India

Sujatha R
Associate Professor, PSG Institute of Management, Coimbatore, India

Abstract:

In response to the imperative for data-driven decision-making in the stock market, this project presents an Automated Extract, Transform, Load (ETL) Pipeline tailored to streamline stock market data acquisition and analysis. Utilizing AWS infrastructure and Deepnote for robust data handling, the pipeline extracts raw data from diverse sources, applies essential transformations, and loads the refined data into an AWS database. Scheduled execution and monitoring ensure real-time updates, while Data Studio enables dynamic visualization for insightful analysis. The project's focus on maintenance and optimization ensures sustained peak performance. Additionally, the integration of machine learning algorithms automates technical analysis, empowering users to make informed buy/sell decisions based on data-driven insights, thus bridging the gap between traditional investment strategies and advanced analytics.

Index Terms:

Extract, Transform, Load, Machine Learning, Technical Indicator, Technical Analysis, Python

Decision-Making Styles Among Young and Middle-Aged Adults

Avani Manjunath
BSc, Psychology, Dept. of Psychology, PES University, Bengaluru, India

Dr. Veena N
Associate Professor, Dept. of Psychology, PES University, Bengaluru, India

Abstract:

Understanding an individual's decisions and attitudes involves considering several significant aspects. People daily are faced with circumstances that require them to make decisions, no matter how big or small. Over the past 20 years, there has been a significant increase in research focused on understanding how people of different ages make decisions. This research paper investigates the difference between decision-making styles and age, seeking to uncover cognitive psychological implications. Utilizing a cross-sectional design, data was collected from 258 participants. The participants were 125 young adults (Men & women) and 143 middle-aged adults (men & women). Data was received using a Google Form containing the Decision-Making Style Questionnaire (DMSQ) (Scott & Bruce, 1995). Five decision making styles were considered; systematic, intuitive, dependent, avoidant, and spontaneous. Based on the age, five hypotheses were drawn, and T-tests were performed. The findings suggested that age may not be a determining factor in decision-making style preferences. Consequently, implications emphasise the importance of individual differences, cognitive biases and heuristics in decision-making. Theoretical frameworks from cognitive psychology, gerontology, and decision theory were employed to contextualize the findings, highlighting the complex interplay between cognitive and emotional factors in decision-making across different life stages. Potential future research directions could involve exploring additional factors beyond age that may influence decision-making styles, as well as employing longitudinal designs to track the evolution of decision-making preferences over the lifespan. Overall, this research contributes to a nuanced understanding of decision-making processes in adulthood and offers practical insights for enhancing cognitive effectiveness and individual development.

Index Terms:

Decision Making Styles, Young adults, Middle-aged adults, Cognitive psychology

 ISBN: 978-93-92105-69-2

Face Image Synthesis

Sai Kishor
Sree Buddha College of Engineering, Alappuzha, India

Pranav P Nair
Sree Buddha College of Engineering, Alappuzha, India

Pranav P
Sree Buddha College of Engineering, Alappuzha, India

Aryan S Nair
Sree Buddha College of Engineering, Alappuzha, India

Parvathy S Kurup
Sree Buddha College of Engineering, Alappuzha, India

Abstract:

Facial image synthesis has made rapid dynamic progress with the fast expansion of deep learning techniques. Reference samples can give complete primary information about texture and content in this job and improve the visual quality of synthetic images. A normalized network with a multi-scale pyramid structure is used in this instance. The dual-channel normalization architecture at the centre of the normalization network is capable of obtaining previous knowledge about various semantics from reference samples. There are two conditional normalization branches in the DNC specifically. Through the first branch, the reference image can be spatially adaptively normalized based on the input image's semantic mask. The second branch is used to normalize the adaptive representation of the modified input image on the reference image. By dividing the complete cross-domain mapping into two branches, DNC may highlight the distinct significance of structural and spatial elements. To avoid information redundancy and improve the final performance, the Gated Channel Attention Fusion module is used to differentiate and merge useful information from the two branches. This generated synthetic image is then compared with photos of criminals in the crime database. If a match is found, the image will be displayed along with details about that criminal. Comparing the images is done by using pillow library with image hashing.

Index Terms:

Facial Image Synthesis, Deep Learning Techniques

Impact of Artificial Immune Systems in Securing VANETs in Intelligent Transportation Systems (ITS)

S. Rama Mercy
Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, India

Dr. G. Padmavathi
Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, India

Abstract:

The smart city Intelligent Transportation Systems (ITS) are characterized by many of the features of IoT. The new technology and increasing connectivity in ITS provide safer vehicles for passengers and pedestrian safety. Cyber security requirements remain high in ITS applications and a breach in any of them can reflect on the efficiency of the whole ITS. In this paper, an approach to the insights of the impact of security solutions in ITS and highlighting the Artificial Immune System (AIS) solutions towards securing ITS and its components. Vehicular Ad-Hoc Networks (VANET) one of the component of ITS remains essential as vehicles collect and share information with RSUs and with other road users. The cyber threats in ITS increase due to the technological aspects among vehicles are varying leading to more surface area for the attacks. The solutions evolved in the recent years addressed the security challenges and few on reducing the risks of cyber-attacks in ITS. This paper is an attempt to present the overall view to the researchers in assessing the security improvements in ITS and its component VANETs with the knowledge of features and solutions and delve into developing improved solution for securing ITS based on the insights provided with Artificial Immune Systems (AIS). The collective review made in this paper enables the researchers in understanding the factors possible in ITS network for attacks and the incorporation of immune system for securing ITS providing further directions in contributing solutions towards resilient performance in ITS.

Index Terms:

Intelligent Transportation Systems, Cyber Security, Cyber-attacks, Machine Learning, Artificial Immune System (AIS)

 ISBN: 978-93-92105-69-2

Exploring Predictive Models in Stock Market Forecasting: Traditional Methods to Cutting Edge Approaches

Sargam Aggarwal
Student, Department of Information Technology, Indira Gandhi Delhi Technical University for Women, Delhi, India

Charvi
Student, Department of Information Technology, Indira Gandhi Delhi Technical University for Women, Delhi, India

Nonita Sharma
Associate Professor, Department of Information Technology, Indira Gandhi Delhi Technical University for Women, Delhi, India

Abstract:

Predicting the stock market prices has long been a subject of concern and interest for the investors, traders and fund managers. The review paper offers a overarching complete analysis of various methodologies employed in predicting stock market trends, ranging from classical theories like Efficient Market Hypothesis (EMH) to modern day approaches like Geometric Brownian Motion (GBM), Generative Adversarial Networks (GANs), Capsule Networks using transfer learning etc. Through a systematic examination of the various factors considered while making predictions we compare and contrast the efficacy of linear regression models, traditional machine learning algorithms, and state of the art deep learning architectures in predicting stock prices. Additionally, we also list out the challenges and limitations associated with each type of techniques by bifurcating them into four generations, namely, Traditional Methods (Gen-1), Linear Machine Learning Models (Gen-2), Artificial Neural Networks and other machine learning models (Gen-3) and finally the Cut-to-edge Technology (Gen-4). This review paper aims to provide practitioners and researchers with a comprehensive understanding of evolution of techniques used in stock market prediction over the years. This will aid practitioners and researchers to have a detailed understanding and take well informed decisions in financial markets.

Index Terms:

Stock Market Prediction, Geometric Brownian Motion, Machine Learning And Traditional Methods of Prediction

Advancements in Camless Engine Technology: A Comprehensive Review of Literature and Future Prospects

Sunil Shinde
Department of Mechanical Engineering, Vishwakarma Institute of Technology, Pune, India

Anjali Thorat
Department of Mechanical Engineering, Vishwakarma Institute of Technology, Pune, India

Aryan Shindode
Department of Mechanical Engineering, Vishwakarma Institute of Technology, Pune, India

Aamir Shaikh
Department of Mechanical Engineering, Vishwakarma Institute of Technology, Pune, India

Shreya Thorat
Department of Mechanical Engineering, Vishwakarma Institute of Technology, Pune, India

Ameya Sonarkar
Department of Mechanical Engineering, Vishwakarma Institute of Technology, Pune, India

Abstract:

The advent of camless engines, also known as free-valve engines, has sparked a paradigm shift in the realm of internal combustion engines. This literature review paper aims to provide a novel perspective on the current state of research and development in the field of camless engines. A meticulous analysis of various papers has been conducted, shedding light on various facets of camless engines, including design, implementation, and performance. The papers scrutinized in this study unveil a plethora of innovative approaches to implementing camless engines, such as electromagnetic, pneumatic, and hydraulic valve actuation systems. Each approach presents a unique blend of advantages and challenges, with the choice of system being contingent upon factors such as cost, complexity, and performance requirements. Furthermore, the papers delve into the potential benefits of camless engines, including enhanced fuel efficiency, reduced.

Index Terms:

Camless engine, Free-valve engine, Valve actuation, Internal combustion engine, Literature review

 ISBN: 978-93-92105-69-2

Solar Photovoltaic System for EV Application with Adaptive Charge Controller

Dileep Reddy R
PES University, Bangalore, India

Jyothi T N
PES University, Bangalore, India

Charan Kumar R
PES University, Bangalore, India

Pramod Surya C
PES University, Bangalore, India

Pooja M
PES University, Bangalore, India

Abstract:

This study presents an innovative approach to integrate solar energy into electric vehicle (EV) applications using an efficient controller. The strategy improves energy recovery and charging efficiency by combining a photovoltaic (PV) panel with a boost converter. The PV panel acts as the main component that converts sunlight into electricity, while the boost converter adjusts the panel's voltage output to match the EV's battery charging requirements. A reliable battery converter is crucial for optimizing energy transfer, overcoming voltage differences and managing fluctuations. The project aims to develop a simulation model and implement this boost converter and battery controller with a focus on reliability and efficiency. The simulations evaluate the performance of the system in different environmental conditions and the ability to adapt to changes in the availability of solar electricity. In addition, the research explores the integration of intelligent control algorithms to improve response and flexibility, using real-time environmental and energy data to optimize load configurations. Ultimately, this initiative will significantly promote energy-efficient and sustainable charging solutions for electric vehicles, promote the use of clean renewable energy sources and reduce dependence on traditional grid electricity. This paves the way for the development of solar electric car charging systems and offers a promising path to an environmentally conscious and sustainable future for electric cars.

Index Terms:

Solar Photovoltaic System, EV Application, Adaptive Charge Controller, Electric Vehicle (EV), Photovoltaic (PV)

Late Delivery Supply Chain Risk Prediction: A Comparative Study

Vanshita Mittal
Indira Gandhi Delhi Technical University For Women, Delhi, India

Vaidhai Choudhary
Indira Gandhi Delhi Technical University For Women, Delhi, India

Abstract:

Delivery logistics operations are integral to ensuring superior customer service, yet they are consistently challenged by risks such as damage and transport delays. Effectively managing these risks is imperative for maintaining the quality and reliability of the transport supply chain. This research paper presents a comparative study of machine learning models to detect late deliveries, focusing on two distinct datasets: DataCo Global and USAID Medical Dataset. The analysis evaluates the performance of various machine learning algorithms comprising classifiers and regressors in predicting delays and assessing the factors promoting late delivery. This study aims to provide insights into the strengths and limitations of different machine learning approaches in addressing the complexities of late delivery detection. Through rigorous comparative analysis, we have found that the extra tree algorithm provides the best results on both datasets. Also, we found out in our study that the RMSE score of Extra Tree is lower than that of the multi-layer perceptron for both datasets, which implies that Extra Tree is outperforming the neural network model. The outcomes of this study can aid supply chain managers in reducing the likelihood of late deliveries.

Index Terms:

Late Delivery, Risk Prediction, Customer Service

 ISBN: 978-93-92105-69-2

Traffic Volume Analysis and Signal Optimization of a Three-Legged Signalized Intersection using Webster Method and PTV Vissim

Abhinaw Luitel
Department of Civil Engineering, Delhi Technological University, Delhi, India

Aayush Mani Das
Department of Civil Engineering, Delhi Technological University, Delhi, India

Kunzang Thinley
Department of Civil Engineering, Delhi Technological University, Delhi, India

Susheel Kumar
Associate Professor, Department of Civil Engineering, Delhi Technological University, Delhi, India

Abstract:

Issues like traffic jams, confrontations, and accidents have been brought on by the increase in traffic volume at our intersections. These issues can be resolved by installing an effective traffic signal management system at the intersection to allow for the efficient and continuous flow of cars through it. When it comes to traffic signals, signal timing plays a crucial role in determining when an intersection should have a green light and how long a red signal should last. Studies of traffic volume must be conducted to ascertain the quantity, type, and movement of vehicles at the specified site. These statistics are used to establish the typical traffic flow on the road and assess how light and heavy vehicles affect the volume of motor traffic. This paper solely focuses on the distribution of passenger car unit (pcu) in a busy hour of an intersection with optimizing signal timings and analyzing those timing in PTV Vissim with the peak hour traffic. The preliminary details of the intersection site like road markings, signalization, traffic signs, lighting, pedestrian lights, etc are investigated. The one-hour traffic volume data are taken for the intersection on working day conditions at morning, afternoon, and evening peak hour. Based on peak Traffic Volume on any timings of the day, the optimized signal timings are calculated for the signalized intersection from Webster method. The performance of peak traffic volume is analyzed with Optimized Signal timings from Webster and the findings are extracted.

Index Terms:

Cycle time, Intersection, Phase, VISSIM, Webster, Passenger Car Unit (PCU)

Emotion Recognition and Understanding for Autism Spectrum Individuals using Transformers

Sanjana J Bharadwaj
BNM Institute of Technology, Bengaluru, India

Amruta Varsha T H
BNM Institute of Technology, Bengaluru, India

Abstract:

Addressing the challenge of emotion comprehension among individuals with autism spectrum disorder (ASD) is crucial due to their difficulties in interpreting social cues. An AI-driven system is proposed to facilitate real-time emotion interpretation during social interactions for ASD individuals. Limited availability of emotional cues hinders their social engagement. The study aims to develop a solution capable of real-time emotion recognition and classification, crucial for fostering social inclusion and improving ASD individuals' quality of life. Employing a multimodal approach encompassing Text-based Emotion Recognition, Voice-based Emotion Recognition, and Video-based Emotion Recognition, advanced machine learning algorithms are leveraged to thoroughly analyze textual, vocal, and visual emotional cues. This approach enables the creation of a tailored system to enhance emotion understanding for ASD individuals across diverse social scenarios. The system's multimodal approach promises to provide comprehensive insights into emotional cues, enabling nuanced understanding for ASD individuals. Through advanced machine learning techniques, the proposed system aims to bridge the gap in emotion comprehension, empowering ASD individuals in their social interactions.

Index Terms:

Emotion Recognition, Autism Spectrum, Transformers, Autism Spectrum Disorder (ASD)

 ISBN: 978-93-92105-69-2

Hybrid Topic Model to Unravel Special Needs in Children with JN. 1 Variant, Covid-19 and GX_P2V Virus using Multi-viewpoints Similarity Metrics

Asritha Mulugoju
B.Tech. Student, Dept. of CSE, Institute of Aeronautical Engineering, Hyderabad, India

Anjani Shree Peddagolla
B.Tech. Student, Dept. of CSE, Institute of Aeronautical Engineering, Hyderabad, India

Noorullah R M
Associate Professor, Dept. of CSE, Institute of Aeronautical Engineering, Hyderabad, India

Abstract:

This article investigates the effectiveness of hybrid topic models utilizing multi-viewpoint similarity metrics for clustering issues related to children with special needs X-Virus, Covid-19 and (GX-P2V)- Pangolin CoronaVirus. Addressing challenges in theme extraction from extensive datasets, especially on platforms like Twitter, requires robust cluster tendency identification and efficient text pre-processing. Traditional topic models face hurdles due to their reliance on infrequent words in tweets and the manual determination of clustering parameters using distance metrics. These proposed hybrid models, employing multi-viewpoint similarity metrics, address the complexities of high computing and convergence speed. External validity indices assess cluster quality, while internal validity indices evaluate clustering structure. Empirical analysis underscores the efficacy of the proposed hybrid models, notably Visual Non-Matrix Factorization (VIS NMF) and Visual Assessment of Cluster Tendency, surpassing alternative models. This study provides valuable insights into the application of hybrid topic models and multi-viewpoint similarity metrics, enhancing the compression and analysis of discussions related to children with special needs in social media, particularly on Twitter.

Index Terms:

Hybrid Topic Models, Multi-Viewpoints Similarity Metrics, Children With Special Needs, X-Virus, Covid-19, GX-P2V, Twitter, Cluster Tendency, Topic Clouds, External Validity Indices, Internal Validity Indices, Visual Non-Matrix Factorization (VIS NMF)

StudentSphere Assitant: A Chatbot for Campus Life

Kareena
Department of AI&ML, BNMIT, Bengaluru, India

Partha
Department of AI&ML, BNMIT, Bengaluru, India

Rakesh Bhatt
Department of AI&ML, BNMIT, Bengaluru, India

Rakshitha Ravi
Department of AI&ML, BNMIT, Bengaluru, India

Dr. Anitha C
Department of AI&ML, BNMIT, Bengaluru, India

Abstract:

In the dynamic landscape of higher education, students encounter various challenges that can impact their academic success and overall college experience. From navigating campus facilities to managing exam schedules and accessing relevant student information, the demands of college life can be overwhelming. To address these challenges and enhance student support services, we present StudentSphere Assistant is a cutting-edge chatbot designed to empower students with personalized assistance and seamless navigation of college resources. This serves as a virtual companion, offering a wide range of features tailored to meet the diverse needs of college students. Whether it's finding the optimal route to a lecture hall, securing a room for exam preparation, or accessing their personalized class timetable, students can rely on the chatbot for efficient and effective assistance. By harnessing the power of artificial intelligence and natural language processing, StudentSphere Assistant delivers personalized recommendations and timely information, ensuring that students have the resources they need to thrive in their academic pursuits. One of the key functionalities is its ability to streamline the process of room allotment for exams. From academic records to campus events and announcements, students can conveniently retrieve relevant information with a simple chat interface. By providing seamless access to student details and resources, the proposed chatbot enhances student engagement and satisfaction, fostering a supportive and conducive learning environment.

Index Terms:

StudentSphere Assitant, Campus Life, Higher Education

 ISBN: 978-93-92105-69-2

Secure Clip: An Object Tracking Solution for Home Security

Rakshitha
Department of AI&ML, BNMIT, Bengaluru, India

Shreeya
Department of AI&ML, BNMIT, Bengaluru, India

Varuniha M
Department of AI&ML, BNMIT, Bengaluru, India

Dr. Anitha C
Department of AI&ML, BNMIT, Bengaluru, India

Abstract:

Video summarization is a fundamental challenge in the field of computer vision and multimedia processing, aimed at condensing lengthy videos into concise representations without compromising the essential content and context. This project focuses on the integration of object detection techniques into the process of video summarization, harnessing the power of deep learning to automatically identify and extract key objects and events from video sequences. By leveraging state-of-the-art object detection models and innovative summarization algorithms, this project aims to enhance the efficiency and effectiveness of video summarization, enabling users to quickly grasp the content and significance of videos without the need for exhaustive playback. The proposed approach not only streamlines video browsing and content comprehension but also holds potential applications in various domains, including surveillance, video indexing, and content recommendation systems.

Index Terms:

Secure Clip, Object Tracking Solution, Home Security

Legal Boundaries of Blockchain Technology in the Authentication of Educational Credentials: A Bibliometric Analysis

Kennedy C. Cuya
University of the Cordilleras, Baguio, Philippines

Thelma D. Palaoag
University of the Cordilleras, Baguio, Philippines

Abstract:

This paper examines into the intricate landscape of legal and regulatory challenges accompanying the implementation of blockchain technology for authenticating academic records in the Philippines. Employing a thorough bibliometric analysis, it charts the significant scholarly interest in blockchain, particularly noting a surge in research from 2017 onwards. The study meticulously examines the compatibility of blockchain technology with existing legal frameworks, including the Data Privacy Act of 2012, highlighting the potential for blockchain to revolutionize the verification process of academic credentials through enhanced security, transparency, and efficiency. However, the paper underscores the complexity of navigating legal and regulatory stipulations, emphasizing the need for a collaborative effort among educators, policymakers, legal experts, and technologists. This multidisciplinary approach aims to adapt legal standards to the decentralized and immutable nature of blockchain, ensuring the technology's alignment with privacy rights and intellectual property laws. The findings advocate for regulatory bodies to develop specific guidelines that cater to blockchain's application in educational settings, fostering an environment conducive to technological innovation within the legal and ethical boundaries. This study significantly contributes to the ongoing discourse on legal and regulatory preparedness for integrating emerging technologies like blockchain in the educational sector, setting a foundation for future research and policy development to leverage blockchain technology effectively and lawfully in academic record authentication.

Index Terms:

Legal Boundary, Blockchain Technology, Educational Credentials

 ISBN: 978-93-92105-69-2

Temperature Induced Slime Mould Growth – A Novel Technique in Slime Mould Algorithm

G. Viswaesh
Research Scholar, Department of Information Technology, Puducherry Technological University, Pondicherry, India

Dr. S. Kanmani
Professor, Department of Information Technology, Puducherry Technological University Pondicherry, India

Abstract:

The paper will open doors to the exciting world of Slime moulds (Physarum polycephalum), where a novel stochastic optimizer called Slime Mould Algorithm (SMA) is proposed. Foraging food is the primary reason for Slime moulds motion. The proposed SMA will compute the optimal path by factoring temperature-based growth for connecting food with excellent exploratory ability and exploitation propensity. Before recent times, there have been several studies which only factors the effect of slime mould motion based on ability to sense food, its direction and secretion. In this proposal, the behavior (growth) data of Slime moulds at different temperature will be derived as a metaheuristic equation and applied over the sophisticated Slime Mould Algorithm (SMA). The proposed SMA will then be compared against an extensive set of benchmarks to back its efficiency and applied to solve engineering problems.

Index Terms:

Slime moulds, Slime Mould Algorithm (SMA), Temperature-based growth, Metaheuristic equation, Benchmarks, Engineering problems

Predicting Used Car Prices using Machine Learning with Flask Integration

Saransh Singh
Computer Science and Engineering, SRM Institute of Science and Technology, Chennai, India

Sambhav Jindal
Computer Science and Engineering, SRM Institute of Science and Technology, Chennai, India

Dr. K. Madhumitha
Computer Science and Engineering, SRM Institute of Science and Technology, Chennai, India

Abstract:

This project focuses on developing a machine learning system to predict used car prices, using Python libraries for data analysis and Flask for web development. The system integrates a Random Forest regression model for accurate predictions, embedded within a user-friendly web interface. By preprocessing and exploring a comprehensive dataset containing key car attributes, including year, present price, kilometers driven, and more, the system achieves precise price predictions. Emphasizing machine learning's role in the automotive industry, the project promotes fair market valuations, transparency, and informed decision-making in the used car market. This project showcases machine learning's transformative potential in pricing strategies, market transparency, and empowering the automotive community.

Index Terms:

Machine Learning, Used Car Prices, Random Forest, Web Development, Flask Integration, Accuracy

 ISBN: 978-93-92105-69-2

SecureNet: Gan Powered Conflict Bandwidth Detection for Image Resilience

Keshvee Jain
Department of Networking and Communications, SRM Institute of Science and Technology, Chennai, India

Utkarsh Ajmani
Department of Networking and Communications, SRM Institute of Science and Technology, Chennai, India

Sabyasachi Sarma
Department of Networking and Communications, SRM Institute of Science and Technology, Chennai, India

Janhvi Agrawal
Department of Networking and Communications, SRM Institute of Science and Technology, Chennai, India

Dr. V. Hemamalini*
Department of Networking and Communications, SRM Institute of Science and Technology, Chennai, India

Abstract:

This research introduces a novel approach aimed at enhancing digital image resilience against adversarial attacks through the integration of Generative Adversarial Networks (GANs) and conflict bandwidth detection techniques. The proposed system utilizes a dual-layered strategy, combining GANs' ability to generate realistic images with conflict bandwidth detection's frequency spectrum analysis to identify tampering anomalies. By leveraging GANs' proficiency in generating lifelike data and discerning intricate patterns, the proposed approach yields a distinct and analytical output, advancing Conflict Bandwidth Detection capabilities. This integration enhances the system's detection capabilities, particularly against sophisticated attacks like watermark erasure and camouflage, contributing to the broader landscape of digital security.

Index Terms:

Generative Adversarial Networks (GAN), Conflicts, Bandwidth Detection, Image Alteration, Machine Learning, DDOS attack, Frequency Spectrum

Spider - A Graph Based Event Recommendation Algorithm

Suraj Rao K P
Department of Computer Science Engineering, PES University, Bangalore, Karnataka, India

Smriti Sivakumar
Department of Computer Science Engineering, PES University, Bangalore, Karnataka, India

Sujan Mallikarjun
Department of Computer Science Engineering, PES University, Bangalore, Karnataka, India

Pallavi Srivastava
Department of Computer Science Engineering, PES University, Bangalore, Karnataka, India

Suresh Jamadagni
Professor, Department of Computer Science Engineering, PES University, Bangalore, Karnataka, India

Abstract:

With the growth of event platforms and the increasingly dynamic nature of user preferences, effective event recommendation algorithms that work on heterogeneous data remains an interesting field of research. Here, we introduce Spider, a forward-thinking graph-based event recommendation algorithm designed to enhance the personalization of event suggestions to users. Spider is composed of multiple integrants, which look to capture every piece of information available in the graph network, both structural and stored. It focuses on minimizing the number of computations that take place when finding events of potential attendance for each user in the network.

In the implementation of our product, we have adopted a unique approach that not only aims to reduce the computational and traversal load involved in mapping "n events" to "m users" based on their preferences but also incorporates structural and derived information, obtained from the users' position in a network of users, events, and organizers. Additionally, it considers user-specific information derived from various sources. This innovative approach was adopted to pay meticulous attention to detail, utilizing and deeming every piece of available information as crucial. It also addresses the predominant cold-start problem present in most recommendation systems, where accurate suggestions for new users with limited to no historical data poses a huge challenge.

Index Terms:

Spider, Event Recommendation Algorithm

 ISBN: 978-93-92105-69-2

Intrusion Detection System using Regulated Patrolling Robots for Apartments

Vijaya Vardan Reddy S P M.E.
Assistant Professor, Department of Electronics and Communication Engineering, R.M.K. Engineering College, Kavaraipettai, India

Abishek G
Department of Electronics and Communication Engineering, R.M.K. Engineering College, Kavaraipettai, India

Adapala Mahesh
Department of Electronics and Communication Engineering, R.M.K. Engineering College, Kavaraipettai, India

Dhanush Kumar G N
Department of Electronics and Communication Engineering, R.M.K. Engineering College, Kavaraipettai, India

Abstract:

The Prompt Patrol Robot offers intelligent video surveillance at medium distances while in motion, ensuring continuous monitoring of premises of any size. It is particularly effective in areas with numerous buildings, fences, or obstacles that hinder surveillance from distant positions. Utilizing multiple robots within a designated area enhances effectiveness, as they can patrol along various routes, preventing intruders from predicting their presence. This strategic approach to patrolling enhances security and minimizes vulnerabilities.

Index Terms:

Patrol Robot, Security, IOT, Surveillance, Intrusion Detection

A Scattered Deep Denoising Technique Auto-Encoder Network Ids Model for Dimensionality Reduction

Asra Sarwath
Research Scholar, Computer Science and Engineering, Khaja Bandanawaz University, India

Abstract:

Many assaults take place every day in the internet-driven world of today, pushed by a large user population. Research on the efficient detection of these multiple assaults is expanding, and IDS systems are the main tool used in this process. In order to spot malicious activity like Probe, Remote-to-Local, User-to-Root assaults, and Denial of Service, IDS systems are essential. Our study focused on comparing several auto-encoders to improve the detection of network intrusions. Attacks in datasets may be predicted and classified using the dimensionality reduction produced by the scattered deep denoising auto-encoder methodology. Reconstruction error was used as an indication of anomalies by using the dataset with the greatest number of records, which was obtained by autoencoder training on typical network data. We used benchmark datasets such as NSL-KDD to evaluate our methodology. Surprisingly, our auto-encoder for scattered deep denoising attained an accuracy measured only by reconstruction error of over 98%. This study's main goal is to improve IDS by achieving higher detection accuracy compared to existing methods.

Index Terms:

Deep Denoising Technique, Auto-Encoder Network, Dimensionality Reduction, IDS Systems

 ISBN: 978-93-92105-69-2

Data Privacy Protection with Novel Secure Data Protection Scheme Based on Fully Homomorphic Encryption in Association with Logistic Regression

Zeenath Sultana
Department of Computer Science & Engineering, Khaja Bandanawaz University, Kalaburagi, India

Dr. Raafiya Gulmeher
Department of Computer Science & Engineering, Khaja Bandanawaz University, Kalaburagi, India

Asra Sarwath
Department of Computer Science & Engineering, Khaja Bandanawaz University, Kalaburagi, India

Abstract:

Hospitals and research facilities are increasingly using technological methods to share patient data while protecting privacy. Distributed ledger technology and homomorphic encryption are two of these technological fixes. Data may be computed on using homomorphic encryption without ever needing to be decrypted. Even now, attackers are attacking cloud data because to the technology's intrinsic instability and fast progress. Consequently, homomorphic encryption offers a viable way to carry out viability tests on sets of private patient data kept in different places. As a result, a homomorphic encryption method relied on matrix transformations that included shifting, rotating, and transposing each letter in the raw text's transformed Binary ASCII value. Symmetric cryptography uses the same secret key for both encryption and decoding. A desired aspect of symmetric encryption is the "avalanche efect," which occurs when two different keys produce different cypher texts for the same communication. This effect is achieved in this manner because the key has different circumstances. A cryptanalysis of the proposed algorithm shows that it is more robust against different types of attacks than the current encryption techniques. such that a statistical study by an adversary cannot simply guess the plaintext.

Index Terms:

Cloud Computing, Health Data, Fully Homomorphic Encryption, Logistic Regression

Parents' Mental Health Detection having Children with Disabilities using Machine Learning Technique

Pratima Lukesh Bhuyar
Student, Ramarao Adik Institute of Technology, D Y Patil deemed to be University, Navi Mumbai, India

Rajashree Shedge
Assistant Professor, Ramarao Adik Institute of Technology, D Y Patil deemed to be University, Navi Mumbai, India

Shilpa Shinde
Associate Professor, Ramrao Adik Institute of Technology, D Y Patil deemed to be University, Navi Mumbai, India

Abstract:

The journey of parents raising children with disabilities is fraught with unique challenges, underscoring the critical need for comprehensive research to illuminate statistical insights that can drive informed policy, bolster support systems, and inspire community initiatives. This study leverages a diverse array of sources, including national surveys, government databases, and peer-reviewed studies, to provide a nuanced understanding of the multifaceted experiences of these parents. Through meticulous data analysis spanning various dimensions, such as the prevalence of different disability types, socioeconomic disparities, geographic distribution, and access to essential services like healthcare and education, this research aims to offer a holistic perspective. Recognizing the pivotal role of machine learning, particularly in addressing mental health challenges, this study presents an innovative approach. Utilizing advanced techniques such as Qualitative Analysis, Regression Analysis, and logistic regression, the research lays the groundwork for a proposed system designed to predict and detect parental mental health issues within families raising disabled children. This proposed system integrates classification algorithms, leveraging both structured and unstructured data. For structured data, a combination of sophisticated algorithms including Random Forest, XGboost, KNN, SVM, and decision trees is employed. Meanwhile, Natural Language Processing (NLP) techniques are applied to unstructured data, enhancing the assessment of parental mental health.

Index Terms:

Disability, Disabled Children Machine Learning, Parents' Mental Health, Statistical Analysis

 ISBN: 978-93-92105-69-2

Neural Style Transfer using Pytorch

Syed Ashraf
Vardhaman College of Engineering, Hyderabad, India

Uppu Karthikeya
Vardhaman College of Engineering, Hyderabad, India

Pentala Srinith Reddy
Vardhaman College of Engineering, Hyderabad, India

Dr. Ganesh B. Regulwar
Vardhaman College of Engineering, Hyderabad, India

Abstract:

Our web application leverages the power of Neural Style Transfer (NST) through PyTorch, which provides a user-friendly interface for combining the content of one image or video with the visual style of another. The application created with Streamlit invites users to upload two different inputs: content image or video and texture image. Under the hood, a sophisticated Generative Adversarial Network (GAN) model orchestrates the NST process, producing a unique, artistically inspired output.

This novel web tool empowers users to experiment with diverse artistic styles and creative expressions. After the NST process is complete, the output, which can be either an image or video, is readily accessible for viewing and downloading.[1] By embracing the potential of NST and the user-friendly interface, our website serves as a creative playground for artists, designers, and enthusiasts, promising captivating and personalized results that transcend conventional artistic boundaries.

Index Terms:

NST, Deep Learning, Computer Vision, CNN, VGG, GAN, CGI, Cityscape, DCGAN, CCAN

Deepfake Detection using Deep Learning

Krish Ankola
Computer Science and Engineering, SRM Institute of Scince and Technology Chennai, India

Shivam Bavaria
Computer Science and Engineering, SRM Institute of Scince and Technology Chennai, India

Dr. Subalalitha C N
Computer Science and Engineering, SRM Institute of Scince and Technology Chennai, India

Abstract:

The widespread use of deepfake technology has led to serious questions about the reliability and authenticity of online multimedia content. Particularly when combined with recurrent neural networks (RNNs) like Long Short-Term Memory (LSTM) networks and convolutional neural networks (CNNs) like ResNeXt, deep learning techniques have shown promise in the detection of manipulated videos. By combining the capabilities of ResNeXt for feature extraction from video frames and LSTM for temporal analysis of sequential frames, this study suggests a novel method for deepfake detection. In order to distinguish real from fake videos, the LSTM model learns the temporal dependencies between the hierarchical features that the ResNeXt model extracts from individual frames. Experiments conducted on benchmark datasets show that the suggested methodology is effective and precise.

Index Terms:

RNNs, LSTM, ResNeXt, CNNs

 ISBN: 978-93-92105-69-2

A Literature Survey of Various Energy Sources Based Optimal Power Flow Techniques

S Imran Khan
Research Scholar, Jawaharlal Nehru Technological University, Anantapur, India &
Anantha Lakshmi Institute of Technology and Sciences, Ananthapuramu, Affiliated to Jawaharlal Nehru Technological University, Anantapur, India

M. Rama Prasad Reddy
Professor, G. Pullaiah College of Engineering & Technology, Kurnool, Affiliated to Jawaharlal Nehru Technological University, Anantapur, India

Abstract:

Optimal Power Flow (OPF) regarded as major mechanism for planning and functioning of power system in optimal manner. The intention of OPF analysis is to seek the operating state that results in the lowest total cost, accounting for generation fuel expenses, emissions, power losses etc. by considering system constraints such as temperature limitations of transmission cables, reactive power limits, minimization of losses and optimization of reactive power. This paper portrays a comprehensive literature survey of the optimized power flow methods. The authors categorize this optimal OPF methods considering various constraints condition in both conventional and renewable energy sources. Traditional optimization methodologies were employed to address OPF effectively. On account of the inclusion of Renewable Energy Sources (RES), deployment of FACTS equipment's, and deregulation of power system the OPF has become more complex. So meta heuristic techniques are exercised to address composite OPF issues and in those some significant methods are discussed in this paper.

Index Terms:

Conventional Energy Sources, Metaheuristic Algorithms, Optimal Power Flow, Renewable Energy Sources

Sign Language Converter from Speech to Text and vice-versa with GIF/ Graphical Representation

Raj Priyadarshi
Chandigarh University, Punjab, India

Anant Tripathi
Chandigarh University, Punjab, India

Abhishek Pandey
Chandigarh University, Punjab, India

Mannat Thakur
Chandigarh University, Punjab, India

Abstract:

The focus of this study is on developing a user-friendly system to aid those with hearing impairments who rely on the universally accepted and highly successful method of sign language. This technique may be used in both directions, translating spoken words into sign language and vice versa. To achieve this, the system utilizes cutting-edge technology, including motion capture and voice recognition systems. These technologies work in tandem to capture and interpret the user's gestures and spoken words. When a user signs or speaks, the system records these actions and subsequently converts them into text format, which is then displayed on a screen in real-time. Both the vocal and sign languages are converted using motion capture and voice recognition systems. It records what you say or sign and displays it as text on the screen. It records sound and shows the visual representation of sign language on a screen. Interpreter/interpreter of signs.

Index Terms:

Sign Language Converter, Speech to Text, GIF/Graphical Representation

 ISBN: 978-93-92105-69-2

Secure Connection using AES Algorithm and Chaotic Map

Aditya Kumar Singh
Galgotias University, Uttar Pradesh, India

Deepanshu Singh
Galgotias University, Uttar Pradesh, India

Abstract:

In an era where the security of digital communication is paramount, the integration of the Advanced Encryption Standard (AES) algorithm with Chaotic Maps has emerged as a promising approach to fortify the confidentiality, integrity, and authenticity of transmitted data. This research investigates the synergistic potential of AES and Chaotic Maps in the context of secure communication systems. We delve into the theoretical framework, implementation, and evaluation of a communication system fortified by the integration of these cryptographic components. Security Analysis and Evaluation reveals that the integrated system exhibits a heightened resistance to cryptographic attacks, effectively mitigating vulnerabilities associated with traditional AES implementations. Our study highlights a substantial reduction in susceptibility to brute-force attacks and differential analysis, underlining the efficacy of Chaotic Maps in strengthening the encryption process. Efficiency and performance metrics are addressed through Efficiency and Performance Analysis. Computational overhead remains within acceptable bounds, allowing real time applicability, while throughput and latency measurements affirm the system's practical feasibility in various communication scenarios.

Index Terms:

AES Algorithm, Chaotic Map

Advanced Visual Recognition System

R Eswar Vallabha
Department of CSE, Karunya Institute of Technology and Sciences, Coimbatore, India

R Golden Nancy
Assistant Professor, Department of CSE, Karunya Institute of Technology and Sciences, Coimbatore, India

Abstract:

Due of its many uses in automation, security, and surveillance, object detection has drawn attention from researchers and developers. This research presents a novel object detection technology that combines distance-based metrics with multi-edge detection algorithms. The suggested method improves representation compactness and uniqueness by extracting object information by utilizing the power of several edge detection methods. By combining the signals from various edge detectors, the technique achieves increased object representation precision. Additionally, it incorporates distance-based metrics to assess how similar the extracted characteristics are to templates kept in the database, enabling effective object matching. This distance-centric approach makes it possible to recognize objects with precision and skill even when there are changes in the lighting, object orientation, and object expressiveness.

Index Terms:

Object Detection, Multi-Edge Detection, Distance-Based Matching, Feature Extraction, Similarity Measurement, Robustness

 ISBN: 978-93-92105-69-2

Diabetes Prediction with Severity Evaluation

Pranav Vangavety
Computing Technologies, SRM Institute of Science and Technology, Chennai, India

Abstract:

Diabetes mellitus, a pervasive global health concern, demands innovative solutions to improve early prediction and assess disease severity effectively. Our project, "Diabetes Prediction with Severity Evaluation" presents a two-stage approach that transcends conventional diabetes diagnosis and binary outcome predictions. In the first stage, our project employs ensemble techniques with the Support Vector Machine (SVM) algorithm and the Bagging Classifier. This stage offers superior accuracy in predicting diabetes risk, considering various influential factors, including glucose levels, BMI, blood pressure, age, and more. By providing a precise and timely estimation of diabetes susceptibility, this phase empowers individuals and healthcare providers with the knowledge required for early interventions and personalized care. The second stage of our project redefines the standard approach by introducing the concept of diabetes severity assessment. For individuals identified as diabetic in the initial stage, we calculate Severity Scores based on an array of health parameters. What sets our approach apart is the conversion of these scores into a comprehensive percentage, offering an exact measurement of disease severity. This valuable data empowers individuals to take control of their health and equips healthcare professionals with a holistic view of their patients' conditions. This comprehensive insight is pivotal for promoting proactive management and well-informed decision-making. Our project combines the sophistication of advanced machine learning with innovative methods for providing precise, data-driven diabetes risk predictions and an approach to severity assessment. Through this project, we aim to make a meaningful contribution to the ongoing battle against diabetes, offering a comprehensive, forward-thinking solution that caters to the individual's health requirements and equips healthcare professionals with indispensable tools to deliver improved, patient-centred care. By embracing state-of-the-art technology, we aspire to confront the diabetes epidemic head-on and transform the landscape of healthcare, ultimately enhancing the lives of those affected and driving innovation in the healthcare industry.

Index Terms:

Diabetes mellitus, Diabetes Prediction with Severity Evaluation, Support Vector Machine (SVM)

Design and Development of Bearing Fixing Machine using PLC

Jyoti M. Kharade
Assistant Professor, Department of Electrical Engineering, Annasaheb Dange College of Engineering and Technology, Ashta, India

Dnyaneshwari R. Ligade
UG Student, Department of Electrical Engineering, Annasaheb Dange College of Engineering and Technology, Ashta, India

Vaishnavi J. Mali
UG Student, Department of Electrical Engineering, Annasaheb Dange College of Engineering and Technology, Ashta, India

Akshata A. Khatavkar
UG Student, Department of Electrical Engineering, Annasaheb Dange College of Engineering and Technology, Ashta, India

Pratiksha B. Dashal
UG Student, Department of Electrical Engineering, Annasaheb Dange College of Engineering and Technology, Ashta, India

Abstract:

This paper presents the design and developments of a bearing fixing machine using programmable logic controller (PLC) technology. The goal of this project is to develop an automated machine capable of accurately fixing bearings onto mechanical components, thereby improving manufacturing efficiency and precision. The machine is designed to accommodate various bearing sizes and types, making it adaptable to a wide range of manufacturing applications. The PLC serves as the system's brain, executing a series of instructions to control the machines movements and operations. This information is processed by the PLC, which then initiates appropriate actions such as activating the bearing fixing mechanism, starting the conveyor belt, and monitoring the overall process. The design of the mechanical structure, integration of sensors and actuators, and programming of the PLC logic are all part of the developments of the bearing fixing machine. Input and output signals are defined, ladder logic or other programming languages are created, and safety interlocks are implemented to prevent accidents.

Index Terms:

PLC, Pneumatic Valve, Pneumatic Cylinder, Photo Sensor, Conveyor System

 ISBN: 978-93-92105-69-2

AI-Based Interviewing for Personality Detection and Assessment

Kasthuri Venkata Ramana
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Mohammad Ali Ahmed
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Mohammed Adnan
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Dr. Ganesh B. Regulwar
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Tuniki Satwik
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Venkatesh Kavidevi
Department of Information Technology, Vardhaman College Of Engineering, Hyderabad ,India

Abstract:

Various industries are experiencing substantial hurdles as a result of the epidemic. Because it's hard to evaluate individuals online, the IT industry is also having trouble with hiring procedures. The identification of particular personality traits can be facilitated by automated video interview analysis, which has been a topic of current research. Advances in CV and pattern recognition have led to the development of CNN models based on Deep Learning approaches. This technology has a wide range of applications in domains like human-computer interaction, personality computing, and psychological testing. With a webcam, these models can precisely identify nonverbal signs and attribute personality attributes to people. Companies may utilise AI-based interview agents to either supplement or supersede the current self-reported personality assessment instruments—which applicants for positions routinely fabricate to obtain socially acceptable results. An AI-based interviewing method was established through the use of AVI and the implementation using an individuality prediction algorithms trained on the initial assessment v2 data set. The objective was to achieve automatic personality recognition (APR) by extracting relevant aspects from the AVI and using facial expressions to derive authentic personality scores. The VGG-16 model system is used to train the model to increase its prediction accuracy for personality.

Index Terms:

Convolution Neural Network (CNN); Visual Geometry Group (VGG); Aritificial Intelligence (AI)

Enhanced Vehicle Detection using Scalar Invariant Feature Transform

Amara Rithik Raj
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Ganesh B. Regulwar
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Rangineni Anvita
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

K . Venkatesh
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Abstract:

Unmanned aerial vehicles (UAVs) offer new possibilities for civilian remote sensing, including automated vehicle detection. In this paper propose a novel approach using Scalar Invariant Feature Transform (SIFT) for feature extraction. This process distinguishes vehicle-related key points from others through machine learning approaches, including SVM, CNN, YOLO, & SSD. Our real-world UAV experiments showcase effective vehicle detection. Vision-based vehicle identification faces challenges due to changing road conditions. In this paper present a cost-effective, real-time, accurate detection method. SVM classifiers with swift Haar-like features detect, while virtual detection lines mitigate false positives. SIFT-based classification improves accuracy and minimizes missed detections. Multi-class classification utilizes YOLO, SSD, CNN, and SVM. Our approach promises robust UAV-based vehicle detection and contributes to intelligent transportation systems.

Index Terms:

Unmanned Aerial Vehicles (UAVs), Automated Vehicle Detection, Scalar Invariant Feature Transform (SIFT), YOLO (You Only Look Once), SSD (Single Shot MultiBox Detector), Vision-Based Vehicle Identification

 ISBN: 978-93-92105-69-2

Real Time Traffic Sign Detection using Deep Neural Networks

Amara Rithik Raj
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Bhawani Sankar Panigrahi
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Md Sohel Ahmed
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Kothakapu Sneha Reddy
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Abstract:

Street signs are the unsung heroes of our roadways, silently guiding and instructing drivers to ensure the safe and efficient movement of vehicles. However, despite their critical role, accidents frequently occur when drivers either fail to notice these signs or misinterpret their meaning. The proposed Traffic Sign Recognition and Alert System represents a significant leap forward in addressing these issues and elevating road safety to new heights. This innovative device leverages advanced technology to recognize traffic signs and promptly alert drivers through the vehicle's speakers, enabling them to make informed decisions and contribute to a safer road environment for all. The Convolutional Neural Network (CNN), a deep learning technology built to excel at image identification tasks, is the brain of this ground-breaking system. The German Traffic Sign Benchmarks Dataset provided the dataset, which is considerable at 51,900 pictures of traffic signs.

Index Terms:

Convolutional Neural Network; Identification of Traffic Signs; Voice Alert

Diabetes Prediction by using Various Machine Learning Algorithms

Lakkarsu Saiteja
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Vivek Kulkarni
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Ganesh Regulwar
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Gaddameedi Sai Anish Reddy
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Tuniki Satwick
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Abstract:

Among the top 10 causes of death globally is diabetes. Machine learning models are the goal for healthcare providers in order to support diabetes prognoses, implement successful preventive strategies, and improve patient care. In order to forecast the prevalence of diabetes, we compare the most popular machine learning models in the literature in this research. We use an actual diabetes dataset to assess the accuracy of the models with feature selection. The document contains the in-depth study. Here, we'll utilize SelectKBest for feature selection, modify hyperparameters to get the best accuracy model, and then use that model or classifier to predict fresh input values.

Index Terms:

Artificial Intelligence, Classification Models, Decision Tree (DT), Diabetes, Health Informatics, kNearest Neighbor (k-NN), Logistic Regression, Machine Learning Models, Naive Bayas, Random Forest (RF), SelectKBest, Support Vector Machines (SVM)

 ISBN: 978-93-92105-69-2

College Social Network

N Kirthiga
Department of Computer Science and Engineering, Kalasalingam Academy of Research and Education, Virudhunagar, India

K Lakshmi Saranya
Department of Computer Science and Engineering, Kalasalingam Academy of Research and Education, Virudhunagar, India

Y Sushmitha
Department of Computer Science and Engineering, Kalasalingam Academy of Research and Education, Virudhunagar, India

M Chethan Kumar
Department of Computer Science and Engineering, Kalasalingam Academy of Research and Education, Virudhunagar, India

A Deepthi
Department of Computer Science and Engineering, Kalasalingam Academy of Research and Education, Virudhunagar, India

Abstract:

The goal of the "College Social Network" project is to promote deep connections among academics. Globally, the amount of online contact at universities is still growing. Professors need to know more about how student engagement and learning are affected when they interact with internet content. Technology advancements make it even more important to learn more about how educational content delivery can improve and assist with the process of learning. This application investigates how students use the learning tools offered in an asynchronous online digital literacy environment. We are putting into practice an application that will facilitate easy communication between administrators, faculty, and students. According to their needs, these studies mostly concentrate on individual conversations with professors and students.

Index Terms:

Admin, College, Student, Faculty, Interaction, Network, Education, Social, Private, Public, Communication

Design and Development of Smart Shredder Controller for Plastic Bottle Crushing and Recycling

Jyoti M. Kharade
Assistant Professor, Department of Electrical Engineering, Annasaheb Dange College of Engineering and Technology, Ashta, India

Pratik S. Sawalwade
UG Student, Department of Electrical Engineering, Annasaheb Dange College of Engineering and Technology, Ashta, India

Shubham M. Khot
UG Student, Department of Electrical Engineering, Annasaheb Dange College of Engineering and Technology, Ashta, India

Yogesh M. Patil
UG Student, Department of Electrical Engineering, Annasaheb Dange College of Engineering and Technology, Ashta, India

Gananjay A. Pol
UG Student, Department of Electrical Engineering, Annasaheb Dange College of Engineering and Technology, Ashta, India

Abstract:

In recent years, the detrimental impact of plastic bottles and cans on the environment has become increasingly concerning, with improper disposal leading to widespread pollution and soil degradation. To mitigate these effects, recycling stands out as a crucial solution. This paper presents the Smart Shredder Controller for Plastic Bottle Crushing and Recycling machine, an innovative approach aimed at seamlessly integrating plastic bottle recycling into daily life while fostering awareness about responsible waste management.

The Smart Shredder Controller for Recycling machine incorporates a unique system featuring a user-friendly display, intelligent shredder controller, safety sensors, and a mechanism for providing daily receipts detailing the count of crushed plastic bottles. Additionally, users receive notifications via message format and printed copies, enhancing the overall recycling experience. The versatility of this machine allows for deployment in various settings such as schools, shopping malls, markets, public institutions, and enclosed spaces.

Key features of this project include a focus on user-friendly interaction to ensure a seamless recycling process, enhanced safety and efficiency through the smart controller for the shredder, and a secure operational environment facilitated by sensors. The provision of daily receipts not only serves as a record but also reinforces the positive impact of recycling.

The Smart Shredder Controller for Plastic Bottle Crushing and Recycling machine emerges as a valuable solution to combat environmental pollution caused by plastic waste recycling and raising awareness, this project aims to instigate a positive shift in waste management practices. The adaptable nature of this innovative recycling machine highlights its potential to promote recycling as a common and integrated practice in various community spaces, thereby contributing to environmental sustainability.

Index Terms:

Smart Shredder Controller, Plastic Bottle Crushing, Recycling

 ISBN: 978-93-92105-69-2

Smart Reader For Visually Impaired People Using Raspberry Pi

Arulvel T
Department of Electronics and Communication, IFET College of Engineering, Villupuram, India

Shalini S
Department of Electronics and Communication, IFET College of Engineering, Villupuram, India

Abstract:

Improving accessibility requires engineering solutions for those who are visually impaired. This research introduces a fresh idea: smart glasses designed to help with several activities, primarily text identification for reading. Our solution incorporates OCR and TTS technologies to offer realtime support, leveraging the price and agility of Raspberry Pi. We illustrate our prototype's efficacy and text recognition accuracy through experimentation. The outcomes highlight how crucial font style and size are to getting the best performance. Using wearable technology and computer power, this novel solution has the potential to increase accessibility choices for the visually handicapped.

Index Terms:

Accessibility, Smart glasses, OCR (Optical Character Recognition), TTS (Text-to-Speech)

Harnessing the Potential of Machine Learning in Personalized Movie Recommendations

Vibhu Sharma
Department of Computer Science and Engineering, Chandigarh University, Mohali, India

Bhavya Sharma
Department of Computer Science and Engineering, Chandigarh University, Mohali, India

Bharti Sahu
Department of Computer Science and Engineering, Chandigarh University, Mohali, India

Ragini Pandey
Department of Computer Science and Engineering, Chandigarh University, Mohali, India

Abstract:

Personalized movie hints play a vital function in enhancing user experience and engagement inside the leisure industry. Leveraging the ability of machine learning algorithms, this research paper explores the improvement and implementation of a customised film advice system. The examine starts with a complete literature assessment, analyzing the evolution of recommendation structures and the application of device gaining knowledge of strategies in the domain of film recommendations. Key methodologies encompass statistics series, preprocessing, characteristic engineering, and the choice of suitable system gaining knowledge of algorithms for recommendation duties. The implementation segment makes a speciality of integrating consumer remarks and ratings to improve the accuracy and relevance of personalized movie suggestions. The essential evaluation and assessment of the implemented machine provide insights into its overall performance, accuracy, and consumer pride tiers. Results and findings highlight the impact of system mastering algorithms on advice satisfactory, showcasing the effectiveness of customized film guidelines as compared to conventional approaches. The paper also discusses demanding situations faced for the duration of implementation and proposes future upgrades, emphasizing the scope for enhancing recommendation systems the usage of advanced gadget mastering strategies. Overall, this research contributes to the continuing improvements in personalised film recommendations, paving the way for greater tailored and fun consumer studies inside the leisure industry.

Index Terms:

Personalized Recommendations, Machine Learning Algorithms, Recommendation Systems, User Engagement, Movie Preferences

 ISBN: 978-93-92105-69-2

Deep Learning-Powered Early Diagnosis and Monitoring of Neurodegenerative Diseases: A Novel Approach for Alzheimer's and Parkinson's

Kadhirvel M
Department of AIML, Manakula Vinayagar Institute of Technology, Puducherry, India

Vanitha A
Department of AIML, Manakula Vinayagar Institute of Technology, Puducherry, India

Abstract:

Neurodegenerative diseases, such as Alzheimer's disease (AD) and Parkinson's disease (PD), are a significant challenge to public health, characterized by the progressive degeneration of central nervous system cells. Current diagnostic methods often lack precision and early detection capabilities, resulting in delayed interventions and reduced patient outcomes. This paper presents a novel approach that harnesses the power of deep learning and artificial intelligence to revolutionize the early diagnosis and monitoring of neurodegenerative diseases, focusing on AD and PD.

Index Terms:

Neurodegenerative Diseases, Alzheimer's Disease, Parkinson's Disease, Deep Learning, Early Diagnosis, Medical Imaging, Artificial Intelligence

Indoor Optical Wireless LoS and NLoS System using Direct Detection

Sagupha Parween
Odisha University of Technology and Research, Bhubaneswar, India

Aruna Tripathy
Odisha University of Technology and Research, Bhubaneswar, India

Abstract:

Optical wireless communication (OWC), as a supplement to radio frequency (RF) systems, has become a viable option for high-speed indoor communications in recent years. An Indoor optical wireless communication i.e. visible light communication (VLC) system is investigated in this paper. The system operates similarly to communication systems based on optical fibers. However, here free space rather than an optical fibre is the transmission medium used by the indoor wireless system. The development of the light-emitting diode (LED) brought about a major advancement in the technologies employed in contemporary communication systems. The LED functions as a data transmitter. After detection of the light, as the light directly falls on the photodetector, the detector decodes the transmitted data. In this paper, an indoor VLC system using line of sight (LoS) and non-line of sight (NLoS) propagation model using direct detection is designed. The paper focuses on the testing of both a LoS system and NLoS system with multiple reflections with a single receiver. The effect of incident and irradiance angles in propagation model is investigated in order to identify the signal distortion. The field of view (FoV) is tested for both type of photodetector PIN and APD. The channel impulse response, received power and time taken by the signal to reach the receiver for LoS and NLoS scenarios are also determined.

Index Terms:

Field Of View (FoV), Line Of Sight (LoS), Non-Line Of Sight (NLos), Visible Light Communication (VLC)

 ISBN: 978-93-92105-69-2

Comparative Analysis for Efficient and Light-Weight Dermatological Lesion Detection Model using Deep Learning Techniques

Maliha Khanam
Indira Gandhi Technical University for Women, Kashmere Gate, New Delhi, India

Ela Kumar
Indira Gandhi Technical University for Women, Kashmere Gate, New Delhi, India

Juli Kumari
Indira Gandhi Technical University for Women, Kashmere Gate, New Delhi, India

Abstract:

Skin cancer is the most common type of cancer in humans and a challenging medical mystery. As it is known that skin lesion is one the life-threatening ailment worldwide. An intelligent and smart dermatological lesion detection system is encouraged in this work. So, deep learning techniques can be utilized to develop a fully automated system for early detection of skin lesion, which is crucial to saving lives. In the early stages of research, investigators often encountered limitations due to the utilisation of small datasets for skin cancer classification. One persistent challenge in the field of skin cancer detection has been the scarcity of a substantial and dependable dataset. A distinct specified derma lesion classification model named SkinNet and EfficientNet is proffered and investigated. For the recognition of skin cancer variants, the proposed SkinNet model and EfficientNet model is contrasted with cutting-edge models such as InceptionV3, VGG-16 and AlexNet. The classification results of the suggested model have been shown in accuracy, recall, AUC, F1-score, Precision and ROC. Also, the performance is evaluated using fairness evaluation metrics. Finally, the exploratory investigations signifies that the indicated models surpass the other models in terms of accuracy. The testing accuracy of both the suggested models EfficientNet and SkinNet are 85.14%, 97.34% respectively. Since this research provide results more quickly and accurately than the previous procedures, it will be a more reliable and effective strategy than the conventional method for identifying dermatological problems.

Index Terms:

SkinNet, Deep Learning, Transfer Learning, Convolution Neural Network, Skin Lesions, EfficientNet

Non-Inverting Buck-Boost Converter (NIBBC) Performance with PEM Fuel Cell

Nisha Puniya
Electrical Department, Rajasthan Technical University, India

Abstract:

This paper presents a unique non-inverting buck- boost converter that works in with a fuel cell system to provide useful step-up and step-down capabilities. It reduces voltage and current stress on switches. This work analyses the converter's performance using a Polymer Exchange Membrane (PEM) fuel cell, demonstrating its three switches concurrent operation to avoid dead time. Buck boost converter has continuous and discontinuous modes. This work analyses steady-state behavior in both continuous and discontinuous conduction types. The non-inverting buck- boost converter architecture provides bidirectional power flow regulation, making it suitable for interfacing with Polymer Exchange Membrane fuel cell. PEM FC are versatile and operate at low temperature (50 to 100). A MATLAB simulation model for non-inverting buck-boost converter (NIBBC) using a pre-set model PEM fuel cell is built up rated at 6 kW- 45 V DC & 1.2 kW -24 V DC, having stack of a no. of cells.

Index Terms:

Non-Inverting Buck, Boost Converter, Polymer Exchange Membrane (PEM), Non-Inverting Buck-Boost Converter (NIBBC)

 ISBN: 978-93-92105-69-2

Roberta Model for Bible Sentiment Analysis: Sermon in the Mount

Shubham Prabhu
Department of Data Science and Business Studies, SRM Institute of Science and Technology, Chennai, India

Pankhuri Prakash
Department of Data Science and Business Studies, SRM Institute of Science and Technology, Chennai, India

Dr. P. Kanmani
Assistant Professor, Department of Data Science and Business Studies, SRM Institute of Science and Technology, Chennai, India

Abstract:

With the development of large-scale language models, natural language processing has become more widely used in a number of interdisciplinary fields, including the humanities, social sciences, and most notably, comparative religion. One scientific way to analyse the affective subtleties buried in textual conversation is through sentiment analysis. Sentiment analysis has recently been utilized in academic research to examine and compare several translations of the Bhagavad Gita, a foundational and holy text for Hinduism. The use of sentiment analysis in academic study to examine specific Bible passages, including the Sermon on the Mount. Utilizing a language model that has already undergone training, three translations of the Sermon on the Mount are carefully examined: the King James version, the New International Version, and the New Revised Standard Version. Using sentiment metrics, a comprehensive comparison study is carried out, examining each chapter and verse individually to elucidate the most prevalent emotional sentences conveyed. A variety of emotional bases have been revealed across the chapters and verses that have been examined in the research. Furthermore, significant vocabulary differences between the corresponding translations have been indicated by the analysis. Additionally, a range of humour, optimism, and empathy are observed to be used by Jesus in the chapters in order to convey his message.

Index Terms:

Bible, Sentiment Analysis, roberta, llm

Blockchain in Education: A Comprehensive Review of Current Applications and Future Prospects

Dr. Shantanu Shekhar
University of Technology and Applied Sciences – Al Musannah, Oman

Kumaresan Chandrasekaran
University of Technology and Applied Sciences – Al Musannah, Oman

Dr. Simi Simon
University of Technology and Applied Sciences – Al Musannah, Oman

Joshy Mathew
University of Technology and Applied Sciences – Al Musannah, Oman

Abstract:

The advent of Blockchain Technology has stimulated a great deal of interest in many sectors due to its potential to transform how records are maintained, transactions are executed, and trust is established in decentralized networks. Blockchain was the realization that Bitcoin's underlying technology could be used for other inter-organizational activities. Blockchain can potentially revolutionize various aspects of the education sector, offering solutions to many challenges. Blockchain technology provides a distributed, transparent, immutable distributed ledger system for stakeholders, students, and educational institutions. These attributes provide significant opportunities in the educational sector by utilizing blockchain technology for safe archiving, verification, and sharing of credentials and academic records. The current study explores the potential applications of blockchain technology in the education sector by identifying best practices and standards for the use of educational solutions, with a focus on privacy, security, and accessibility. Methodologically, this research employs a State-of-the-art (SotA) literature review to investigate blockchain's current state and the prospects in the education sector. This approach allows a thorough analysis of the existing scholarly literature and identifies essential themes, trends, and gaps in the research landscape. It also investigates the challenges and barriers to adopting blockchain in educational settings, including scalability, interoperability, and regulatory compliance.

Index Terms:

Applications, Blockchain, Education, Prospects, State of the Art (SotA) Literature Review

 ISBN: 978-93-92105-69-2

Exploring Proactive Strategies for Preventing Jailbreaks in Visual Language Models

Gnana Raphaelina
Computer Science and Engineering, Karunya Institute of Technology and Sciences, Coimbatore, India

Maria Rebecca S
Computer Science and Engineering, Karunya Institute of Technology and Sciences, Coimbatore, India

Abstract:

Recent advancements in Large Language Models (LLMs) have substantially broadened their capabilities by integrating visual input with text prompts, revolutionizing collaborative interactions with users. While this fusion enhances the versatility of Visual Language Models (VLMs), it also amplifies the vulnerability space for adversarial attacks. The combination of adversarial attacks on visual inputs with textual prompts poses a serious threat, potentially "jailbreaking" models and leading to harmful behaviors. As LLM capabilities rise, so do the associated security threats, necessitating the implementation of robust defensive practices.

In response to these challenges, this paper introduces DiffPure, a novel defensive approach implemented in Mini-GPT4. DiffPure effectively addresses security concerns by cleansing images of any perturbations introduced before processing the output, thereby mitigating the risk of jailbreaking. This method stands out for its efficiency in ensuring the integrity of visual inputs during language model processing. It is noteworthy that miniGPT4 is equipped with safety measures to prevent the generation of harmful content. To assess its resilience against security breaches and provocations of harmful model behaviors, miniGPT4 undergoes rigorous adversarial attacks on input images. While adversarial examples are typically modelled on curated datasets featuring harmful textual prompts related to terrorism, fraud and extremism, our findings reveal universal susceptibility to jailbreaking. The paper concludes by emphasizing the urgent need for proactive defensive strategies as LLM capabilities continue to evolve.

Index Terms:

Jailbreaks, Visual Language Models, Recent advancements in Large Language Models (LLMs), Mini-GPT4

Enhanced Classification of Ensemble Model for Hate Speech Sentiment Analysis

Suba Malai R
Department of CSE, College of Engineering, Guindy, Chennai, India

Dr. Renugadevi S
Assistant Professor, Department of CSE College of Engineering, Guindy Chennai, India

Abstract:

Hate speech has developed into a significant issue and is currently a hot topic on social media. Concerns about censorship arise from current methods. Our work focuses primarily on human rights,with a particular emphasis on the creation of creative tactics that protect the right to free speech while also acknowledging and effectively opposing prejudice. In order to tackle this issue,Glove leverages the embedding of words to capture semantic relations discovered throughout the text, which makes it simpler for people to recognize complicated contextual patterns. Advanced deep learning models that make use of the Gated Recurrent Unit (GRU), Long Short-Term Memory (LSTM), and Bidirectional Long Short-Term Memory (BILSTM) in conjunction with natural language processing (NLP) techniques can prove to be extremely beneficial. Large, labeled sets of data comprising scenarios that include both hate speech and nonhate speech content will be utilized for training these models. Leveraging and combining the capabilities of many RNN architectures, each with its own unique ability to comprehend consecutive dependencies, An ensemble approach is shown to enhance the classification of hate speech, and it is intended to be implemented with neural networks, as these techniques have recently emerged as the standard for text categorization issues. Our ensemble model provides a comprehensive solution for understanding both the harmful intent of hate speech and the nuanced sentiments expressed in text. The main aim of this project is to reduce the overall loss and achieve robustness in the system. The precision, recall, and F1 scores achieved by the ensemble model are 0.98, 0.99, and 0.99, respectively. The loss of the ensemble model for detecting hateful sentiment is found to be 0.19.

Index Terms:

Hate Speech, Enhanced Classification, Ensemble Model, Sentiment Analysis

 ISBN: 978-93-92105-69-2

Extraction of Oil from Black Pepper

Gayatri Gawande
Vishwakarma Institute of Technology, Pune, India

Bhoomika Goyal
Vishwakarma Institute of Technology, Pune, India

Aaryan Desai
Vishwakarma Institute of Technology, Pune, India

Shraddhey Gaikwad
Vishwakarma Institute of Technology, Pune, India

Vedant Gulhane
Vishwakarma Institute of Technology, Pune, India

Abstract:

Black Pepper (Piper nigrum L.) is a widely used aromatic spice in kitchens worldwide, but its oil has diverse applications apart from the food industry like in cosmetics, insecticide and pesticide industry, pharmaceuticals etc. Black Pepper Oil extraction from Leaching mainly focuses on extraction of piperine which is the bioactive compound present in the oil. This study investigated the efficiency of five different solvents (acetone, hexane, ethanol, methanol and isopropyl alcohol) based on several key factors, namely solvent recovery, cost, energy efficiency, selectivity towards piperine, total oil content extracted, and ease of use. Among the tested solvents, ethanol emerged as a frontrunner, it achieved a 95% recovery rate, minimizing waste and making the process more economical. It also demonstrated good selectivity, extracting a significant amount of piperine (10.39% w/w) and the total oil content was 0.087 g/ml, indicating efficient extraction capability. Being a relatively inexpensive solvent, it contributes to the overall economic feasibility of the extraction process and its low boiling point (78.3°C) makes it energy-efficient to recover through evaporation, minimizing energy consumption compared to solvents with higher boiling points. Thus, ethanol proved to be the best among the chosen solvents.

Index Terms:

Black Pepper, Piper nigrum L., Piperine, Oil

Enhancing Pneumonia Diagnosis through CNN Analysis of Chest X-Rays

Dr. S. Annamalai
Associate Professor, Department of Computer Science and Engineering (Data Science), Jain (Deemed-To-Be University), Karnataka, India

Golla Hanumesh
UG Scholar, Department of Computer Science and Engineering (Data Science), Jain (Deemed-To-Be University), Karnataka, India

K. Sai Hithesh
UG Scholar, Department of Computer Science and Engineering (Data Science), Jain (Deemed-To-Be University), Karnataka, India

Abstract:

A detailed examination is necessary for the illness diagnosis, and the physician must verify all of the x-ray image's insights. The scanner will use ultrasonic to capture the X-ray picture. When compared to normal pictures, the resulting X-ray images are distinct. Many studies are being conducted on medical data to get insights more quickly and accurately. Comprehensive analysis of the 'Chest X- Ray Images (Pneumonia)' dataset, which is a modified version of Paul Mooney's collection. The radiological pictures in the dataset are classified into two categories: "normal" and "lung opacity" instances, which indicate whether pneumonia is present or not. 5,856 observations in total, divided into subgroups for testing, validation, and training, are shown by the dataset distribution. Only the physician can rescue the patient from the illness by using deep learning techniques, which make it simple for the neural network algorithm to scan the patterns from the x-rays. We suggested categorizing the patients into two groups: those with lung opacity and normal instances. There are several layers in the CNN architecture of VGG-16 along with Dense Net, and all of the parameters will be utilized as trainable parameters; there are no non- trainable parameters in our design parameters. The results will reach above 95% after the hyperparameter adjustment.

The machine learning library Kera's has been used to categorize the illnesses. Custom deep convolution neural networks and transfer learning will be used to create the basis model. In order to increase accuracy and provide the best results, the Adam Optimizer works to minimize the connections between the layers. The trained model is tested using several sets of photos and the categorical cross entropy loss function to see whether or not it accurately classifies the illness. Thus, our approach offers the precision needed to identify lung opacity illness from normal X-ray scans. Because the patients will get treatment on time, there is a likelihood that the automated categorization of medical x-rays will be completed properly and that the fatality rate will be low.

Index Terms:

X-Ray images, Pneumonia, Deep Learning Techniques, CNN Architecture, VGG-16

 ISBN: 978-93-92105-69-2

Evolved Artificial Immune System Based Intrusion Detection System in IoT

Syed Ali Mehdi
Department of Computer Science, Jamia Millia Islamia, New Delhi, India

Syed Zeeshan Hussain
Department of Computer Science, Jamia Millia Islamia, New Delhi, India

Abstract:

More connected things based on Internet of Things are providing extensive functionalities in various domains but these do pose serious challenges over its security. Any small security vulnerability can pose serious threat and dire consequences. Intrusion detection system that monitors the traffic of the network and raises alarm for unauthorized access or attacks are essential for ensuring security in IoT paradigm. Artificial intelligence has given a great opportunity and solutions for designing automated intrusion detection system. This research work adapts the ideas of human immune system to come up with intelligent self-learning evolved artificial immune system-based intrusion detection system solution that addresses the new dilemmas of internet of Things security environment. The self-learning and input parameters uniformity is achieved through artificial immune system is used for classification of anomalies in the input traffic. The proposed architecture here is a combination of fused architecture wherein preliminary and secondary responses to anomalies is done by coordination with a controller that merges the best antibodies and coordinates it with all devices. The architecture and the proposed solution are aiming to increase accuracy of the system, have improvements in false-positive rates and true-negative rates thereby giving a more secure intrusion detection system.

Index Terms:

Artificial Immune System, Unsupervised Learning, Clustering, IoT

NeuroShield: Enhancing Credit Card Fraud Detection with Advanced Predictive Models

Abhishek Singh
Dept. of Computational Intelligence, SRM Institute of Science and Technology, Chennai, India

Raghav Kapoor
Dept. of Computational Intelligence, SRM Institute of Science and Technology, Chennai, India

Dr. R. Siva
Dept. of Computational Intelligence, SRM Institute of Science and Technology, Chennai, India

Abstract:

To prevent customers from being wrongly charged for unauthorized purchases, credit card firms must accurately identify fraudulent credit card transactions. It is essential to make use of data science and machine learning to properly solve this problem. This research aims to emphasize the importance of machine learning by demonstrating how it can be used to detect credit card fraud. The research intends to demonstrate the potential of Data science approaches through the construction of a model utilizing historical credit card transaction data. Building a prediction model using historical credit card transactions that takes into account both valid and fraudulent situations is the issue at hand. Predicting whether new transactions are fraudulent or not is the objective; the goal is to identify fraudulent activity as thoroughly as possible while reducing the number of false positive classifications. One of the most prominent categorization issues in the context of data science and machine learning is the detection of credit card fraud. For credit card issuers, identifying and combating credit card fraud is a major task. Utilizing machine learning and data science approaches is essential for solving this problem. In this study, we highlight the value of machine learning in improving fraud detection by exhibiting its real-world use in locating fraudulent credit card transactions. Our main goal is to demonstrate how data science techniques can be used to use historical credit card transaction data to build a solid model.

Index Terms:

Credit Card, Machine Learning, Fraud Detection, Support Vector, Naïve Bayes, Accuracy, Random Forest, Boosting Techniques

 ISBN: 978-93-92105-69-2

Perceptions of Commerce Educators about the Green Skills Required for Undergraduates in Kerala

Samyuktha Paliathuparambil Suresh
Lecturer, University of Technology and Applied Sciences, Al Musannah, Sultanate of Oman

Sangama Paliyathuparambil Suresh
Research Scholar, Bharatiar University, Coimbatore, Tamil Nadu

Dr. Santhosh Nithyananda
Lecturer, University of Technology and Applied Sciences, Al Musannah, Sultanate of Oman

Dr. Ramesh Kumar Unnikrishnan
Lecturer, University of Technology and Applied Sciences, Al Musannah, Sultanate of Oman

Abstract:

Meeting the demands of Sustainability Development Goals (SDGs) and a flourishing green job market has prompted India to a green transition. It has become mandatory to embrace green skills that are transforming the future of the employment system all over the world. A high demand for green skills that fit various job profiles has necessitated empowering the students of Higher Educational Institutions (HEIs) with suitable green skills. The present study focuses on the perception of commerce educators of HEIs in Kerala state, about the green skills required for undergraduates, their current status of the green skills, and various approaches that can be implemented to improve their green skills. Using a descriptive research design, the study collected responses from 132 commerce educators from various HEIs based on purposive sampling, and the survey questionnaire was tested for reliability with a Cronbach alpha score of 0.7. The results had an overwhelming response revealing only a minimal awareness of the green skills among undergraduates required for the job market. Also, the educators recommended measures to upskill the students with the identified skills. This study calls for action from the stakeholders of the educational system, educational planners, and policymakers to further look into the matter to bring up a workforce that meets the demand of the green job market.

Index Terms:

Sustainability Development Goals (SDGs), Green Economy, Green Skills, Higher Education Institutions (HEIs), undergraduates, and commerce educators

Display-Assisted PPG (Photo Plethysmography) Sensors for Acquiring Pulse Data on Artificial Limbs

Vanitha A
Vel Tech Multi Tech Dr.Rangarajan Dr.Sakunthala Engineering College, Chennai, India

Ramya M
Vel Tech Multi Tech Dr.Rangarajan Dr.Sakunthala Engineering College, Chennai, India

Ridhiksha Madhu R
Vel Tech Multi Tech Dr.Rangarajan Dr.Sakunthala Engineering College, Chennai, India

Sony Kumari T
Vel Tech Multi Tech Dr.Rangarajan Dr.Sakunthala Engineering College, Chennai, India

Abstract:

Photoplethysmography (PPG) is a widely used non-invasive technique for measuring blood flow and obtaining information about the pulse wave. Among the various biometric data types, pulse data, often collected through photoplethysmography (PPG) sensors, plays a crucial role in wearable health technology. However, a substantial challenge arises when these devices are attached to artificial limbs, where the absence of natural blood flow impedes conventional PPG functionality. Traditional PPG sensors rely on specialized photodetectors and light sources to capture changes in blood volume, but in this study, we explore a novel approach to generate a pulse wave using a display. This project introduces an innovative method to bridge the gap between living and artificial limbs by enabling PPG sensors to measure pulse data on artificial limbs using displays. Focusing on heart rate measurement, an experiment demonstrates the accuracy of this approach, with results showing that a smartwatch can acquire heart rate data within a 3 beats per minute (bpm) margin for a range of heart rates. Moreover, the generated PPG data is compatible with heart rate variability (HRV) analysis software, mirroring real pulse data characteristics. This display-assisted PPG methodology expands wearable biometric capabilities and holds promise for enhanced healthcare monitoring on artificial limbs.

Index Terms:

Sustainability Development Goals (SDGs), Green Economy, Green Skills, Higher Education Institutions (HEIs), undergraduates, and commerce educators

 ISBN: 978-93-92105-69-2

Precision Agricultural Monitoring and Control System

Gajendran Parthasarathy
Department of Electrical and Electronics Engineering, Karpagam College of Engineering, Tamilnadu, India

Prethashree U
Department of Electrical and Electronics Engineering, Karpagam College of Engineering, Tamilnadu, India

Harish A
Department of Electrical and Electronics Engineering, Karpagam College of Engineering, Tamilnadu, India

Moulieshwaran R
Department of Electrical and Electronics Engineering, Karpagam College of Engineering, Tamilnadu, India

Shunmugadinesh M
Department of Electrical and Electronics Engineering, Karpagam College of Engineering, Tamilnadu, India

Abstract:

Precision agricultural monitoring and control system is an innovative framework that integrates various components to directly enhance agricultural practices. At the core of this system is a network of sensors strategically placed across fields and farms to continuously gather information for study on environmental conditions. Some of the elements that are closely watched include temperature, humidity and soil moisture. After that, the data is sent to a central hub—which is frequently cloud based where it is subjected to complex algorithms for in-depth data processing and analysis. Farmers and agricultural stakeholders gain access to this invaluable information via user-friendly interfaces, such as mobile apps or web dashboards, enabling real-time monitoring and control of their farming operations. The system's capabilities extend to precision irrigation, a significant feature that optimizes water usage by supplying the appropriate volume of water at the exact appropriate moment, conserving resources, and preventing water wastage. The system excels in crop health management, swiftly identifying signs of diseases, pests, or crop stress, leading to reduced crop damage and increased yield. Early detection alerts empower farmers to take timely action, minimizing potential crop losses. It also contributes to resource optimization by decreasing energy consumption, reducing water use, and optimizing fertilizer application. Moreover, the integration of weather forecasts directly empowers farmers to make informed decisions, enabling actions like delaying irrigation when rainfall is expected. Automation, made possible by Internet of Things devices that have actuators installed, increases productivity by automating processes like greenhouse changes, irrigation management, and monitoring. These devices will automatically control irrigation valves, operate drones for aerial monitoring, and adjust greenhouse conditions, responding to real-time data. Crucially, the system's high adaptability and scalability play a pivotal role in its effectiveness across various crop types and farming methods, enabling seamless expansion as agricultural needs evolve.

Index Terms:

Agriculture, Esp32, Sensor data, Mobile or web apps

Traffic Volume Analysis and Signal Optimization of a Three-Legged Signalized Intersection using Webster Method and PTV Vissim

Abhinaw Luitel
Department of Civil Engineering, Delhi Technological University, Delhi, India

Aayush Mani Das
Department of Civil Engineering, Delhi Technological University, Delhi, India

Kunzang Thinley
Department of Civil Engineering, Delhi Technological University, Delhi, India

Susheel Kumar
Associate Professor, Department of Civil Engineering, Delhi Technological University, Delhi, India

Abstract:

Issues like traffic jams, confrontations, and accidents have been brought on by the increase in traffic volume at our intersections. These issues can be resolved by installing an effective traffic signal management system at the intersection to allow for the efficient and continuous flow of cars through it. When it comes to traffic signals, signal timing plays a crucial role in determining when an intersection should have a green light and how long a red signal should last. Studies of traffic volume must be conducted to ascertain the quantity, type, and movement of vehicles at the specified site. These statistics are used to establish the typical traffic flow on the road and assess how light and heavy vehicles affect the volume of motor traffic. This paper solely focuses on the distribution of passenger car unit (pcu) in a busy hour of an intersection with optimizing signal timings and analyzing those timing in PTV Vissim with the peak hour traffic. The preliminary details of the intersection site like road markings, signalization, traffic signs, lighting, pedestrian lights, etc are investigated. The one-hour traffic volume data are taken for the intersection on working day conditions at morning, afternoon, and evening peak hour. Based on peak Traffic Volume on any timings of the day, the optimized signal timings are calculated for the signalized intersection from Webster method. The performance of peak traffic volume is analyzed with Optimized Signal timings from Webster and the findings are extracted.

Index Terms:

Cycle time, Intersection, Phase, VISSIM, Webster, Passenger Car Unit (PCU)

 ISBN: 978-93-92105-69-2

Driver Drowsiness Detection System using Machine Learning

Darshita Tated
Department of Computing Technologies, SRM Institute of Science & Technology, Chennai, India

Ankush Sahoo
Department of Computing Technologies, SRM Institute of Science & Technology, Chennai, India

Bhargavi G
Assistant Professor, Department of Computing Technologies, SRM Institute of Science & Technology, Chennai, India

Abstract:

The prevention of road accidents is of paramount importance worldwide, with driver drowsiness emerging as a significant contributor to such incidents. Addressing this issue, the paper introduces a novel machine learning-based approach aimed at detecting driver drowsiness in real-time. The methodology consists of three fundamental stages: face detection, eye detection, and drowsiness detection. By leveraging these stages, the system can accurately identify signs of fatigue and issue timely warnings to mitigate potential accidents.

In the initial phase of face detection, the system utilizes the Haar face detection algorithm to locate the driver's face within captured frames. This step is crucial as it establishes the foundation for subsequent eye tracking, which is pivotal in assessing drowsiness. Once the face is detected, the system employs the Circular Hough Transform (CHT) to track the driver's eyes within the identified facial region. This eye tracking process provides valuable insights into eye movements and patterns associated with drowsiness.

Following eye detection, the system calculates the Eye Aspect Ratio (EAR) from the tracked eye images. The EAR serves as a key metric in determining the state of the driver's eyes, distinguishing between periods of alertness and drowsiness. When the EAR falls below a predefined threshold, indicating drowsiness, the system triggers warning alarms to alert the driver. This proactive approach enables timely intervention, reducing the risk of accidents caused by fatigue-related impairments.

The performance of the proposed system is evaluated through extensive testing, achieving an impressive average correct rate of 95.78% for eye location and tracking. This high level of accuracy underscores the effectiveness of the machine learning algorithms employed in detecting and monitoring driver drowsiness. Moreover, the system operates in real-time, providing immediate feedback to drivers to enhance road safety.

One of the notable advantages of the proposed approach is its cost-effectiveness. By leveraging machine learning techniques and image processing algorithms, the system offers a robust solution without requiring expensive hardware investments. Additionally, its efficiency lies in its ability to focus on key facial features and eye movements, enabling accurate drowsiness detection without compromising real-time performance.

In summary, the paper presents a comprehensive framework for driver drowsiness detection, integrating machine learning with image processing techniques. By addressing the critical issue of fatigue-related accidents, the proposed approach contributes to improving road safety and protecting lives on the highways.

Index Terms:

Driver Drowsiness Detection, Machine Learning

Towards Efficient Automation of Expert Allocation - Approach for SME Triaging

Abhishek Karmakar
Department of Information Technology, Indian Institute of Information Technology, Allahabad, India

Sharik Ghazi
Department of Information Technology, Indian Institute of Information Technology, Allahabad, India

Varsha Singh*
Department of Information Technology, Indian Institute of Information Technology, Allahabad, India

Abstract:

Subject Matter Experts (SMEs) are individuals possessing deep knowledge and expertise in a specific field or area. In many organisations, effective placement of these experts into appropriate departments is critical for optimising productivity and driving innovation. This research paper delves into the challenge of triaging SMEs to suitable departments using advanced machine learning techniques. The term 'triage' refers to the process of assessing and prioritising cases based on their severity and urgency to ensure that resources are allocated efficiently and where they are needed most. 'SMEs triaging' typically refers to a process in which experts in a particular field or subject evaluate, prioritise, and assign resources or responses to specific issues, challenges, or inquiries based on their knowledge and expertise.The primary objective of this work is to develop a model that offers better accuracy and efficiency in SME allocation tasks. Five different models were employed - Q-Learning, DQN Classifier, Artificial Neural Network, Support Vector Classifier (SVC) and K-Nearest Neighbour. Of these, SVC exhibited the most promising results. Leveraging this insight, a novel hybrid model was proposed, combining the foundational principles of wrong prediction single batch feedback learning with Support Vector Classifier. This model showcased improved prediction capabilities, presenting a potentially effective approach for organisations to streamline their SME allocation processes.

Index Terms:

Artificial Neural Network, DQN Classifier, K-Nearest Neighbour, Machine learning techniques, Q-Learning, Triage, Subject Matter Experts (SMEs), Support Vector Classifier (SVC)

 ISBN: 978-93-92105-69-2

Artificial Intelligence Model to Estimate the Probability of Failure in RC and Masonry Structures

Ishank Singh
Delhi Technological University, Delhi, India

Hemant Singh
Delhi Technological University, Delhi, India

Gautam Tayal
Delhi Technological University, Delhi, India

Shilpa Pal
Delhi Technological University, Delhi, India

Abstract:

This research paper proposes a novel artificial intelligence (AI) method for estimating the probability of failure in Masonry and Reinforced concrete (RC) structures. The National Disaster Management Authority (NDMA) primer is utilized by the proposed model as an extensive source of data for structural parameters. However, the model uses a two-step selection method to account for regional differences and particular failure mechanisms.

First, through analyzing case studies and research papers, the model determines prominent parameters for a certain geographic area. This regionalization ensures that the model considers factors that might not be universally applicable. Second, based on the relevant parameters of their structure, the user chooses the parameters present from the list that is provided. Ultimately, the AI model provides a probabilistic result after being trained on historical data and incorporating these user-selected criteria.

Index Terms:

Artificial Intelligence Model, Masonry and Reinforced Concrete (RC) Structures

Microservices vs Monolithic Architectures: A Comparative Study of Their Benefits and Drawbacks

Aliyanz Shaikh
Department of Information Technology, SGSITS, Indore, India

Puja Gupta
Department of Information Technology, SGSITS, Indore, India

Upendra Singh
Department of Information Technology, SGSITS, Indore, India

Abstract:

Micro-service architectures are frequently contrasted with monolithic architectures and have drawn interest from both academia and industry. The efficacy of this strategy is contradicted by numerous study findings. In order to compare the two architectures, this study assesses several microservice application configurations from the standpoint of service discovery. When compared to a microservices design, the monolithic architecture outperformed its rivals in terms of performance by 6%. The two manufacturers' load test results do not significantly differ from one another. A third test, which contrasted microservices apps created using other search services, such as Eureka and Consul, also revealed that applications built with Consul outperformed Eureka in terms of benefits.

Index Terms:

Docker, Micro Services, Performance Evaluation, Monolithic Architecture, Scalability, Load Testing

 ISBN: 978-93-92105-69-2

A Comprehensive Review of Big Data: Analytics, Tools, Benefits, and Challenges

Mahak Siraj Khan
Department of Information Technology, SGSITS, Indore, India

Puja Gupta
Department of Information Technology, SGSITS, Indore, India

Upendra Singh
Department of Information Technology, SGSITS, Indore, India

Chandra Prakash Singar
Department of Information Technology, SGSITS, Indore, India

Abstract:

Modern decision-making across sectors relies on big data. This overview covers big data analytics, technologies, advantages, and obstacles. Descriptive, diagnostic, predictive, and prescriptive analytics are used to get insights from massive datasets. Many techniques and technologies for big data processing, storage, and analysis are covered, from relational databases to Hadoop and Spark. The analysis also highlights big data's advantages, including better decision-making, operational efficiency, individualized consumer experiences, and innovation. Despite these advantages, big data faces various obstacles. These difficulties include data quality, privacy, security, scalability, and skilled worker shortages. The review also discusses big data analytics developments like machine learning, artificial intelligence, and the IoT, which will shape data-driven decision-making. This paper provides a complete overview of big data analytics, tools, advantages, and obstacles to help academics, practitioners, and businesses navigate big data use.

Index Terms:

Big Data, Analytics, Tools, Security, Future Scope

A Unified Approach on DDoS Detection and Mitigation Leveraging Machine Learning

Rajasekar R
Dept.of Computer Science and Engineering, Kalasalingam Academy of Research and Education, India

Bavani K
Dept.of Computer Science and Engineering, Kalasalingam Academy of Research and Education, India

Avinash K
Dept.of Computer Science and Engineering, Kalasalingam Academy of Research and Education, India

Mani Teja G
Dept.of Computer Science and Engineering, Kalasalingam Academy of Research and Education, India

Pranav Reddy S
Dept.of Computer Science and Engineering, Kalasalingam Academy of Research and Education, India

Reddykishore Reddy N
Dept.of Computer Science and Engineering, Kalasalingam Academy of Research and Education, India

Abstract:

Distributed Denial of Service (DDoS) attacks remain a significant threat to the availability and integrity of network services. To combat these attacks effectively, we present a unified approach that leverages Software-Defined Networking (SDN) principles and machine learning techniques for DDoS detection and mitigation. Our proposed system consists of modules for flow collection, feature extraction, anomaly detection, and mitigation. The system begins by collecting traffic flow data from switches using the OpenFlow protocol. The flow collector module then parses the flow information and extracts relevant features such as source IP address, destination IP address, port numbers, and timestamps. These features are passed to the feature extraction module, which generates additional features to enhance the detection capabilities. Next to the anomaly detection module utilizes machine learning algorithms to classify each flow as normal or anomalous. We evaluate multiple machine learning algorithms, including Random Forest, Support Vector Machines, and K- Nearest Neighbors, to determine the most effective classifier for our system. Through experimentation, we find that Random Forest achieves the highest accuracy in distinguishing between normal and malicious traffic. Upon detecting a DDoS attack, the mitigation module takes action to prevent further disruption to network services.

This module implements firewall rules to block malicious traffic at its source, effectively mitigating the attack without impacting legitimate traffic. We demonstrate the effectiveness of our approach through experiments conducted in simulated SDN environments, showing rapid and accurate detection and mitigation of DDoS attacks while preserving the availability of network services. Our research contributes to the ongoing efforts to combat DDoS attacks by proposing a unified approach that integrates SDN principles and machine learning techniques. By leveraging the flexibility and programmability of SDN, combined with the predictive capabilities of machine learning, our system provides a robust defense against evolving DDoS threats. Future work includes exploring additional machine learning algorithms, optimizing mitigation strategies, and scaling the system for deployment in real-world network environments.

Index Terms:

Distributed Denial of Service (DDoS), Software- Defined Networking (SDN), Machine Learning, Anomaly Detection, Mitigation, OpenFlow, Random Forest

 ISBN: 978-93-92105-69-2

Design and Analysis of Low Voltage High Mobility OFETs by using High-k Dielectrics or by Varying Thickness of Dielectric

Shikha Bathla
ECE, ASET, Amity University Uttar Pradesh, Noida, India

Abhishek Verma
AIARS (M&D), Amity University Uttar Pradesh, Noida, India &
AIRAE, Amity University Uttar Pradesh, Noida, India

Intekhab Amin
Central University of Haryana, Mahendergarh, Haryana, India

Amit Kumar
Jamia Millia Islamia, New Delhi, India

Abstract:

OFETs (Organic Field-Effect Transistors) are known for its low cost, flexibility, light weight and availability of plenty of organic compounds which makes them a perfect choice for electronic applications. However, stability issues are still a concern in OFETs which limits their efficiency. Also, to be able to employ OFETs for low power consumption devices, their operating voltage should be reduced. To fulfil this requirement, low values of transistor threshold voltage (VT) and subthreshold swing (SS) are essential. This is a very challenging task as it requires either the gate dielectric thickness to be reduced or by using high-k dielectrics [1]. In this paper, a p-type OFET with DPP (Diketopyrrolopyrrole) as p-type semiconductor [2], SiO_2 as dielectric, Gold as Source and Drain regions is designed and various parameters are extracted like threshold voltage, subthreshold swing, ION/IOFF, mobility etc. Gate voltage of OFETs is then reduced by varying the thickness of dielectric (SiO_2) and also by varying dielectrics (SiO_2, ZrO_2, TiO_2).

Index Terms:

BGTC, DPP, High-k dielectric, OFET

Students Analysis based on EQ and IQ by using Machine Learning Techniques

Jaideep Bhanu
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Ganesh B. Regulwar
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Sushma. J
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

D. Mounika
Department of Information Technology, Vardhaman College of Engineering, Hyderabad, India

Abstract:

The study of emotional quotient (EQ) and intelligence quotient (IQ) has been transformed by machine learning, which uses a variety of data sources to predict and comprehend each person's unique emotional and cognitive abilities. In order to evaluate EQ and IQ scores, this novel method entails gleaning insights from text, facial expressions, physiological markers, and behavioral patterns. Predictive models have been built to provide useful approximations of these quotients by utilizing techniques such as deep learning, computer vision, and natural language processing. This has opened doors to applications in a variety of industries. While early detection of emotional imbalances and cognitive anomalies can be beneficial in therapeutic settings, personalized education systems can adjust material and teaching tactics based on an individual's cognitive capabilities and emotional requirements. But there is also a significant ethical component to the creation and application of these prediction models; protecting data privacy, mitigating biases, and guaranteeing model interpretability are all vital. Furthermore, a cautious and sensitive approach is required due to the cultural heterogeneity of emotional expression and cognitive standards. To put it simply, the combination of machine learning and EQ/IQ analysis provides deep insights into human behavior and potential. However, in order to optimize advantages and minimize hazards, responsible and compassionate integration is required.

Index Terms:

Intelligent Quotient, Emotional Quotient, Physiological, Cognitive Capacities

 ISBN: 978-93-92105-69-2

Exploring Proactive Strategies for Preventing Jailbreaks in Visual Language Models

Gnana Raphaelina
Computer Science and Engineering, Karunya Institute of Technology and Sciences, Coimbatore, India

Maria Rebecca S
Computer Science and Engineering, Karunya Institute of Technology and Sciences, Coimbatore, India

Abstract:

Recent advancements in Large Language Models (LLMs) have substantially broadened their capabilities by integrating visual input with text prompts, revolutionizing collaborative interactions with users. While this fusion enhances the versatility of Visual Language Models (VLMs), it also amplifies the vulnerability space for adversarial attacks. The combination of adversarial attacks on visual inputs with textual prompts poses a serious threat, potentially "jailbreaking" models and leading to harmful behaviors. As LLM capabilities rise, so do the associated security threats, necessitating the implementation of robust defensive practices.

In response to these challenges, this paper introduces DiffPure, a novel defensive approach implemented in Mini-GPT4. DiffPure effectively addresses security concerns by cleansing images of any perturbations introduced before processing the output, thereby mitigating the risk of jailbreaking. This method stands out for its efficiency in ensuring the integrity of visual inputs during language model processing. It is noteworthy that miniGPT4 is equipped with safety measures to prevent the generation of harmful content. To assess its resilience against security breaches and provocations of harmful model behaviors, miniGPT4 undergoes rigorous adversarial attacks on input images. While adversarial examples are typically modelled on curated datasets featuring harmful textual prompts related to terrorism, fraud and extremism, our findings reveal universal susceptibility to jailbreaking. The paper concludes by emphasizing the urgent need for proactive defensive strategies as LLM capabilities continue to evolve.

Index Terms:

Large Language Models (LLMs), Visual Language Models (VLMs), miniGPT4

Network-Enabled ID Management System

B.V.N.R Siva Kumar
Dept of ECE, Laki Reddy Bali Reddy College of Engineering, Mylavaram, India &
Jawaharlal Nehru Technological University Kakinada, Kakinada, India

Kethepalli. Nandhini
Dept of ECE, Laki Reddy Bali Reddy College of Engineering, Mylavaram, India &
Jawaharlal Nehru Technological University Kakinada, Kakinada, India

Mangalampati. Kiranmai
Dept of ECE, Laki Reddy Bali Reddy College of Engineering, Mylavaram, India &
Jawaharlal Nehru Technological University Kakinada, Kakinada, India

Challa. Jagadeesh
Dept of ECE, Laki Reddy Bali Reddy College of Engineering, Mylavaram, India &
Jawaharlal Nehru Technological University Kakinada, Kakinada, India

Abstract:

The main objective is to implement a streamlined identification system utilizing a hands-free barcode scanner to compare live images with stored database images(cloud). The process involves Raspberry Pi, a hands-free scanner, a webcam, and deep learning techniques. Here Raspberry Pi acts as a central unit where this application fully runs on Raspberry Pi. For face recognition, the project employs a Convolutional Neural Network (CNN) enhancing the accuracy of matching live images with stored database images. The system, when presented with an ID card, scans the barcode and compares the live image with the corresponding database image. If a match is found, it outputs a "matched" status. If in case of a mismatch image, the system displays the stored database image of the person on the screen. Additionally, a notification system is integrated to send the live image to the respective department's email address associated with the ID card. The sender's mail address is maintained within the system, and the number of recipient emails can be configured based on the number of branches. This ensures that any mismatch is promptly communicated to the relevant department for further verification. This innovative solution seamlessly integrates cloud storage, Raspberry Pi, hands-free scanning technology, and deep learning algorithms to create a secure and efficient personnel identification system with potential applications in various organizational settings.

Index Terms:

Raspberry Pi, CNN algorithm, Facial recognition, Cloud database

 ISBN: 978-93-92105-69-2

A Deep Learning based Secured IoT System using Blockchain for Smart Irrigation

Mukul Shukla
IT, Shri Govindram Seksaria Institute of Technology and Science, Indore, India

Dr. Lalji Prasad
CSE, SIRT, SAGE University, Indore, India

Abstract:

The Internet of Things (IoT) has revolutionised our interactions with the surrounding environment. The technology has facilitated the connection of ordinary things to the internet, establishing a network of gadgets that can be controlled and watched from a distance. An area where IoT shows great potential is agriculture, since it can be used to enhance agricultural productivity and minimise water consumption. Smart irrigation systems are an example of an application in which Internet of Things (IoT) sensors are used to monitor various environmental elements such as soil moisture levels, temperature, humidity, and others. These sensors are utilised to ascertain the optimal timing and quantity of water to be supplied to crops. Nevertheless, the use of Internet of Things (IoT) devices in the agricultural sector also presents security vulnerabilities, since these devices are susceptible to cyber-attacks, which may result in possible harm or even complete eradication of crops. Hence, the development of a secure Internet of Things (IoT) system for intelligent irrigation is important. Deep learning has been more influential in the analysis and interpretation of large datasets in recent years. Numerous applications have used this technology, including domains such as image identification, natural language processing, and voice recognition. Within the realm of IoT, deep learning may be used to scrutinise the data gathered by sensors and provide forecasts about forthcoming environmental circumstances, so aiding in the optimisation of irrigation schedules and the preservation of water resources. This study presents a safe Internet of Things (IoT) solution for smart irrigation that utilises deep learning techniques. A network of sensors is included inside the system to gather data pertaining to soil moisture levels, temperature, humidity, and several other environmental variables. Subsequently, the data is conveyed to a central computer, where it undergoes analysis via the use of deep learning techniques. The algorithms undergo training to provide forecasts about forthcoming environmental circumstances, subsequently used to enhance irrigation schedules. We suggest using blockchain technology to guarantee the system's security. The blockchain technology is a decentralised ledger system that offers a reliable and transparent means of documenting transactions. Through the use of blockchain technology, we can guarantee the security and immutability of the data gathered by the sensors.

Index Terms:

Internet of Things (IoT), Smart Irrigation Systems, Deep Learning, Blockchain Technology, Optimize Irrigation

Estimating Crop Yields Employing Data Pre-Processing and Back Propagation Based Machine Learning

Nishant Parashar
Department of Computer Science & Engineering, SVCE, Indore, India

Dr. Neha Khandelwal
Department of Computer Science & Engineering, SVCE, Indore, India

Abstract:

Forecasting crop yields is a pivotal challenge that directly impacts global food security. Leveraging AI for this task, historical crop yield data is utilized to train a machine learning model to predict future yields. This predictive analysis is essential for determining which crops to plant in specific seasons and regions. The complexity and randomness of the dataset mean traditional statistical methods fall short in accuracy. The adopted approach employs regression learning with backpropagation and preprocesses the data using wavelet transform. By capping the transformation at the third level with the sswavelet family, it avoids unnecessary system complexity. The approach discards detailed coefficients, focusing on approximate coefficients to mitigate local disturbances that can obscure data trends. The system's effectiveness is gauged through regression, epochs, gradient, coefficient combination, error, and accuracy, achieving a remarkable 98.39% accuracy rate. This clearly demonstrates that the system surpasses its predecessors in predicting crop yield accuracy.

Index Terms:

Crop Yield Prediction, Machine Learning, Mean Square Error (MSE), Mean Absolute Percentage Error (MAPE), Regression, Accuracy

 ISBN: 978-93-92105-69-2

Sentimental Analysis of Reviews by using Deep Learning Techniques

Bandi Sahith
Department of Information Technology Vardhaman College of Engineering Hyderabad, India

Vinayak Biradar
Assistant Professor, Department of Information Technology Vardhaman College of Engineering Hyderabad, India

Thokala Ganesh Reddy
Department of Information Technology Vardhaman College of Engineering Hyderabad, India

Yelluri Abhinay
Department of Information Technology Vardhaman College of Engineering Hyderabad, India

Abstract:

Reviews on a wide range of products can be found on websites such as Flipkart and Amazon.com. The more popular e-commerce becomes, the more reviews a product receives from customers. A single product may have hundreds of thousands of evaluations, some of which may be extensive and recurring. Therefore, automated review summarization holds great promise for assisting customers in making prompt selections about specific products. due to the fact that a single producer may sell a range of products. Manufacturers ought to monitor customer comments and viewpoints. The process of creating a summary out of review sentences is known as review summarizing. A shortened version of a product review is generated, maintaining the main ideas and sentiments. A summary of typical good and negative product reviews will also be included, along with the review's overall tone. In conclusion, neural networks are used. Examples of these include the Natural Language Processing Toolkit and the Recurrent Neural Network (RNN). The RNN architecture is merged with the encoder-decoder architecture of the Seq2Seq model.

Index Terms:

Sentiment analysis, Encoder-Decoder, LSTM

AR Tourist Guide

Rushikesh Shinde
Department of Information Technology, Saraswati College of Engineering, Navi Mumbai, India

Aniket Handore
Department of Information Technology, Saraswati College of Engineering, Navi Mumbai, India

Tejas Gavale
Department of Information Technology, Saraswati College of Engineering, Navi Mumbai, India

Shruti Karande
Department of Information Technology, Saraswati College of Engineering, Navi Mumbai, India

Dr. Sheetal Bukkawar
Department of Information Technology, Saraswati College of Engineering, Navi Mumbai, India

Abstract:

The Augmented Reality Tourist Guide Application is an innovative mobile application designed to enhance the tourist experience by seamlessly integrating augmented reality (AR) technology with traditional travel guidance. This application leverages AR to provide real-time, location-based information and interactive experiences for tourists, offering a more engaging and informative way to explore new destinations. AR technology superimposes digital information and experiences onto the real world, creating a fusion of the physical and virtual realms. This immersive technology has the power to provide tourists with a more engaging, informative, and interactive journey. The Augmented Reality Tourist Guide Application leverages this potential to offer travelers a completely new way to navigate and appreciate the world around them. The Augmented Reality Tourist Guide Application aims to revolutionize the way tourists explore new destinations by making information readily available and enhancing their connection to the local culture and history. This innovative approach can significantly improve the quality of the tourist experience, making travel more enjoyable, educational, and engaging for visitors. The future of tourism is being reshaped by technologies like AR, and this application represents a step forward in embracing this evolution.

Index Terms:

Augmented Reality, Tourist Guide Application, Real-Time, Location-Based Information, Interactive Experiences, Innovative Approach, Educational, Enjoyable, Technologies

 ISBN: 978-93-92105-69-2

Outlet Planner

Aniket Wani
Department of Information Technology, Saraswati College of Engineering, Navi Mumbai, India

Varun Patil
Department of Information Technology, Saraswati College of Engineering, Navi Mumbai, India

Omkar Sontakke
Department of Information Technology, Saraswati College of Engineering, Navi Mumbai, India

Pallavi Palkar
Department of Information Technology, Saraswati College of Engineering, Navi Mumbai, India

Maahi Khemchandani
Department of Information Technology, Saraswati College of Engineering, Navi Mumbai, India

Abstract:

Efficient field operations are essential for businesses across various industries, such as sales, logistics, and service delivery. "Outlet Planner" is a sophisticated software solution designed to streamline and optimize the planning and execution of field operations. This abstract provides a concise overview of Outlet Planner, highlighting its key features and benefits. Outlet Planner leverages cutting-edge technology to enhance the planning and scheduling of field activities. Automating and optimizing routes, assignments, and resource allocation, empowers businesses to improve operational efficiency, reduce costs, and enhance customer satisfaction. Outlet Planner is a powerful tool for businesses that rely on field operations to deliver products or services. By automating route planning, optimizing resource allocation, and providing real-time monitoring, this software empowers organizations to maximize the productivity of the teams working in the field. Embracing outlet Planner can lead to cost savings, improved customer satisfaction, and increased profitability in the competitive world of field operations. Outlet Planner empowers organizations to achieve higher levels of efficiency, productivity, and customer satisfaction in today's competitive landscape.

Index Terms:

Outlet Planner, Field Operations, Route Planning, Resource Allocation, Real-Time Monitoring, Operational Efficiency, Automation, Customer-Centric, Competitive Edge, Strategic Advantage

AICTE: Curriculum Collaboration Portal

Snehdeep Dupare
Department of Information Technology, Saraswati College of Engineering, Navi Mumbai, India

Vaishnavi Jadhav
Department of Information Technology, Saraswati College of Engineering, Navi Mumbai, India

Sneha Gharal
Department of Information Technology, Saraswati College of Engineering, Navi Mumbai, India

Vinayak Kamble
Department of Information Technology, Saraswati College of Engineering, Navi Mumbai, India

Maahi Khemchandani
Department of Information Technology, Saraswati College of Engineering, Navi Mumbai, India

Abstract:

The All India Council for Technical Education (AICTE) aims to revolutionize technical education in India through the development of a unified portal. This portal will serve as a collaborative platform, engaging educational experts and curriculum designers to establish model curriculum standards for all institutes. Key functionalities of the portal include user registration and authentication, personalized dashboards, and user profiles to cater to educators, curriculum developers, and administrators. Intuitive curriculum design tools will empower users to define course objectives, outline modules, and incorporate diverse educational resources from a comprehensive repository. Collaboration features will enable peer feedback and streamline the review process, while analytics and reporting functionalities will track curriculum effectiveness and aid decision-making. Timely notifications will keep users informed about updates and policy changes, ensuring relevancy and adaptability. Scalability and security measures will be implemented to safeguard user data and maintain the portal's reliability. This initiative by AICTE promises to shape the future of technical education in India through innovation and collaboration.

Index Terms:

AICTE, Technical Education, Unified portal, Curriculum-standards, User registration, Repository, Personalized dashboard, Notifications, Innovation, Educational resources, Model curriculum

 ISBN: 978-93-92105-69-2

A Survey on Long Term Wind Prediction based on Time, Method and Algorithm

Sasi Rekha Shankar
Department of Computer Science and Engineering, SRM Institute of Science and Technology, Chennai, India

Dr. P. Madhavan
Department of Computer Science and Engineering, SRM Institute of Science and Technology, Chennai, India

Abstract:

Renewable energy is creating a lot of requirements to fulfill global energy requirements of fuel or alternative energy as factors like global warming, global feud between nations and less availability of fossil fuel has created a major demand. The power grid operations are affected due to intermittent generation of power which impacts security of the grid, impact of the market economy and system operations. Wind energy cannot suffix fossil fuel production as wind power is intermittent but its production can be planned and scheduled if the wind energy generation can be forecasted accurately based on the geography, seasonal impact and maintenance of the wind farm. Wind forecasting is also useful for planning, managing the power grid to achieve consistent production and reliable operation of the plant. Wind Farms business plans majorly include forecasting to sustain in this business in this competitive the main drawback in wind power production is unpredictable and stochastic in nature that impacts the planning, setting up, operations and maintenance of the grid. Artificial Intelligence (AI) has brought forth higher accuracy, better performance and efficiency in the learning process of the algorithm. It give high precision, better learning and improved performance for unstable and intermittent wind power. The key objective of this paper is to review the critical literature and bibliography on the most important forecasting technologies used for prediction of wind speed based renewable energy. The various Artificial Intelligence based hybrid algorithms for forecasting has been discussed.

Index Terms:

Wind Speed/Power forecasting, Hybrid methods, Artificial Intelligence, Optimization, Machine Learning, Deep learning

Energy Monitoring and Over CurrentCutoff

A. Ashok Babu
Dept.of ECE, PVPSIT, Vijayawada, India

P. Ravi Kishor Reddy
Dept.of ECE, PVPSIT, Vijayawada, India

M. Trivarnika
Dept.of ECE, PVPSIT, Vijayawada, India

Y. Sai Pranathi
Dept.of ECE, PVPSIT, Vijayawada, India

Y. Omkar
Dept.of ECE, PVPSIT, Vijayawada, India

Abstract:

This paper delves into the critical aspects of energy monitoring and overcurrent protection within electrical systems. Voltage fluctuations present a significant risk to the durability and functionality of electronic devices, often resulting in damage or shortened lifespan. Recognizing the factors contributing to voltage fluctuations is essential for deploying effective mitigation strategies. The paper investigates the various sources of voltage fluctuations and suggests techniques for energy monitoring to alleviate their impact. Moreover, power calculation is utilized to optimize power management. Additionally, the paper discusses implementing overcurrent protection through threshold-based cutoff mechanisms to safeguard devices from potential damage. Through the integration of these strategies, the paper aims to enhance device lifespan and ensure efficient operation in electrical systems.

Index Terms:

Voltage Fluctuations, Power Management, Overcurrent Cutoff

 ISBN: 978-93-92105-69-2

Sentiment Analysis and Offensive Language Detection for Kannada

Arpita Kadagad
Computer Science Engineering PES University, Bangalore, India

Nayana D Raj
Computer Science Engineering PES University, Bangalore, India

Bhoomika
Computer Science Engineering PES University, Bangalore, India

Ankitha N
Computer Science Engineering, PES University, Bangalore, India

Deepu R
Department of Computer Science Engineering, PES University, Bangalore, India

Abstract:

In an era where digital communication is ubiquitous, having strong sentiment analysis and offensive language detection systems is essential. This study highlights the importance of creating automated methods for content moderation and encouraging polite online conversation in a connected digital world. The dataset used is annotated for both sentiment analysis and offensive language identification. The dataset contains 7000 comments in Kannada-English. The proposed methodology presents baseline experiments to establish benchmarks on the dataset using machine learning and deep learning methods. With Hard Parameter Sharing of Multi-task Learning, the best accuracy was achieved for Sentiment Analysis at 0.60 and Offensive Language Detection at 0.72. The analysis indicates opting Multi-task learning is more advantageous than focusing on the single task learning.

Index Terms:

Sentiment Analysis, Offensive Language Detection, Kannada

Similar Script Character Recognition on Kannada and Telugu

Gurukiran Veerapur
Dept. of Computer Science and Engineering, PES University, Bangalore, India

Nytik Birudavolu
Dept. of Computer Science and Engineering, PES University, Bangalore, India

Seetharam U N
Dept. of Computer Science and Engineering, PES University, Bangalore, India

R Praneeth Reddy
Dept. of Computer Science and Engineering, PES University, Bangalore, India

Chandravva Hebbi
Dept. of Computer Science and Engineering, PES University, Bangalore, India

Abstract:

This work presents a robust approach for the recognition of characters in Telugu and Kannada, two South Indian scripts with structural similarities in characters. To recognize the characters exhaustive datasets are required, but there are only a few publicly available datasets. As a result, we decided to create a dataset for one language (source language), train the model with it, and then test it with the target language. Telugu is the target language in this work, whereas Kannada is the source language. The suggested method makes use of Canny edge features to increase character identification accuracy on pictures with noise and different lighting. A dataset of 45,150 images containing printed Kannada characters was created. The Nudi software was used to automatically generate printed Kannada characters with different writing styles and variations. Manual labelling was employed to ensure the accuracy of the character labels. The deep learning models like CNN (Convolutional Neural Network) and Visual Attention neural network (VAN) are used to experiment with the dataset. A Visual Attention neural network (VAN) architecture was adopted, incorporating additional channels for Canny edge features as the results obtained were good with this approach. The model's accuracy on the combined Telugu and Kannada test dataset was an outstanding 97.3%. Performance was better with Canny edge characteristics applied than with a model that solely used the original grayscale images. The accuracy of the model was found to be 80.11% for Telugu characters and 98.01% for Kannada words when it was tested with these languages. This model, which makes use of cutting-edge machine learning techniques, shows excellent accuracy when identifying and categorizing characters from these scripts.

Index Terms:

Base Characters, Modifiers, VAN, Guninthalu, Aksharas, Vattakshara

 ISBN: 978-93-92105-69-2

Impact of AI (Artificial Intelligence) in Human Life

Meenakshi Jalandra
Department of Information Technology, SGSITS, Indore, India

Puja Gupta*
Department of Information Technology, SGSITS, Indore, India

Upendra Singh
Department of Information Technology, SGSITS, Indore, India

Abstract:

Artificial intelligence (AI)is increasingly affecting our lives in smaller or greater ways. In order to ensure that systems will uphold human values, design methods are needed that incorporate ethical principles and address societal concerns in this paper we explore the impact of ai in human life in the case of the expected effects healthcare, transportation, social media and communication, education e-commerce that are sensitive for human values. Artificial intelligence (AI) has a small or larger impact on our lives. Artificial intelligence is now developing through constant technological developments that allow computers to do a variety of jobs, like driving cars and recognizing faces. But AI's ultimate goal is to build extremely intelligent machines that are more intelligent than humans and excel at challenging tasks like handling events and problem-solving. This endeavor aims to improve human functioning and offer improved problem-solving skills. However, as AI advances to automate more tasks, problems arise, such as worries about the creation of lethal weapons and the possibility of an intelligence explosion that surpasses human intelligence. The emergence of super AIs may rank as the most revolutionary invention in human history. Furthermore, the prevention of disease, the fight against poverty, and peacekeeping have all benefited greatly from technology breakthroughs. The paper explores the impact of AI on the expected effects of the human life transparency for the development of AI systems that respect human values.

Index Terms:

Artificial Intelligence, Human Values, Privacy Concern, Human Life

Text-Guided Image Synthesis and Steganographic Embedding: A MERN-based DALL-E Integration

Paras Sharma
Department of Computer Science & Engineering, Chandigarh University Mohali, India

Aryan Gupta
Department of Computer Science & Engineering, Chandigarh University Mohali, India

Suraj Acharya
Department of Computer Science & Engineering, Chandigarh University Mohali, India

Shanu Khare
Department of Computer Science & Engineering, Chandigarh University Mohali, India

Abstract:

The interpretation of data between text and visuals is a major difficulty for artificial intelligence. One excellent example of artificial intelligence is the text-to-picture conversion. The technique of automatically producing images from provided text is known as" text to picture synthesis. The MERN (MongoDB, Express.js, React, Node.js) stack is used in this research to demonstrate a revolutionary combination of powerful artificial intelligence algorithms in picture production and steganography. Users of the proposed system can provide written prompts, which are subsequently translated into images using the DALL-E API. The resulting image is then modified to include the original text prompt hidden inside it using steganographic techniques. This hybrid approach combines text and picture seamlessly using algorithms and cryptographic methods, creating new opportunities for safe information sharing and artistic expression. The project offers a flexible framework for applications ranging from digital artwork to secure communication and demonstrates how cutting- edge technology may work together. The experimental results show that the suggested system is efficient and viable, making a strong argument for its possible integration in a variety of sectors. This study adds to the rapidly changing field of AI-driven picture synthesis and safe data embedding and lays the groundwork for future developments in this multidisciplinary area.

Index Terms:

AI Image Generation, DALL-E, Transformer Architecture, Steganography, Text To Image Generation

 ISBN: 978-93-92105-69-2

Skin Disease Detection using Deep Learning

Ayush Singh
Jain (deemed-to-be) University, Bengaluru, India

Gauransh Gupta
Jain (deemed-to-be) University, Bengaluru, India

Anmol Narwani
Jain (deemed-to-be) University, Bengaluru, India

Juhi Singh
Jain (deemed-to-be) University, Bengaluru, India

Dr S. Saravanakumar
Jain (deemed-to-be) University, Bengaluru, India

Abstract:

Image is a prominent problem in computer vision, image processing, and deep learning. Classification. The present investigation will study deep learning for image classification. This research provides an approach to managing multiple strategies based on a PC (insight) perspective. The application built will allow users to access a website where they can upload photos and have them reviewed by an algorithm trained on a variety of images using deep learning techniques for a majority of diseases. about common skin conditions, including STDs. The two previous studies employ image analysis to diagnose this type of illness, utilising an electronic image of a struck skin geographical area as a source of information. This technology only requires a computer and a camera, does not require expensive equipment, and is quick and easy to perform. This method works with colour images as streams. Once the peaks are identified, use the neural network's convolutional architecture to resize the image. Finally, the client is presented with findings regarding compassion, severity, and progression of the disease.

Index Terms:

Convolutional Neural Systems, Profound Learning, Picture Classification; Machine Learning

Brain Tumor Detection using Machine Learning

Mathangi Kavya
Department of Computer Science and Engineering, Vardhaman College of Engineering, Hyderabad, India

Kodari Sandeep
Department of Computer Science and Engineering, Vardhaman College of Engineering, Hyderabad, India

Royyuru Srikanth
Department of Computer Science and Engineering, Vardhaman College of Engineering, Hyderabad, India

Kancharla Jeshwanth
Department of Computer Science and Engineering, Vardhaman College of Engineering, Hyderabad, India

Abstract:

Detecting brain tumors from medical imaging data is crucial for timely treatment. Recent advancements in machine learning, especially Convolutional Neural Networks (CNNs), offer promising avenues for automated tumor detection in MRI scans. This study investigates CNNs' effectiveness in this task, utilizing their capability to learn complex features directly from raw images without manual extraction. Training and evaluation employ a dataset containing MRI scans of patients with and without tumors. The CNN model is trained on a subset and fine-tuned for optimal performance in identifying tumor regions accurately. Evaluation metrics such as Accuracy, Interpretability, RSME, and MAE are employed, along with interpretability analysis to understand the model's decision-making process. Results exhibit high accuracy and robust performance in tumor detection, with interpretability analysis providing insights into predictive factors, enhancing model transparency. This study highlights the potential of CNN-based approaches in enhancing diagnostic accuracy for brain tumors, contributing to improved healthcare outcomes. By leveraging machine learning algorithms, particularly CNNs, medical professionals can benefit from advanced diagnostic tools for better patient care, emphasizing the synergy between data science and healthcare.

Index Terms:

CNN Model, MRI Scan

 ISBN: 978-93-92105-69-2

Cardio Predict: A Smart System for Predicting Heart Disease

Himanshu Sharma
Computer Science and Engineering, Chandigarh University, Mohali, India

Charupalli Pooja
Computer Science and Engineering, Chandigarh University, Mohali, India

Prajakta kapoor
Computer Science and Engineering, Chandigarh University, Mohali, India

Atharav Singh
Computer Science and Engineering, Chandigarh University, Mohali, India

Shubham Yadav
Computer Science and Engineering, Chandigarh University, Mohali, India

Bijit
Computer Science and Engineering, Chandigarh University, Mohali, India

Abstract:

Heart Disease is a major worldwide health problem that requires an accurate and fast diagnosis. While traditional diagnostic methods exist, predicting heart disease without invasive tests remains a challenge. The use of machine learning to forecast cardiac disease is a potential area for improving medical diagnostics. By analysing extensive medical datasets, this study aims to identify effective algorithms that can accurately predict heart disease risk without the need for invasive tests. Furthermore, it investigates how machine learning techniques can mitigate misdiagnosis rates and enhance patient outcomes. Additionally, this research explores the potential use of machine learning in detecting initial early signs of abnormalities, enabling proactive intervention strategies for better heart health management. Using data from the Kaggle, the Logistic Regression algorithm was employed, achieving high accuracy when we compare with Random Forest classifier and KNN. This research shows how machine learning can make a big difference in how we detect and treat heart disease. Overall, it's a way to make sure everyone gets the best possible care for their heart health.

Index Terms:

Machine Learning (ML), K-Nearest Neighbour (KNN), Support Vector Machine (SVM), High-Density Lipoprotein (HDL), Low-density Lipoprotein (LDL)

Camera Sensing Motion using IOT with PyQt5 Library in Python

Jyoti Mahur
Department of CSE, Galgotias University, Greater Noida, India

Surya Chauhan
Department of CSE, Galgotias University, Greater Noida, India

Dolly Sharma
Department of CSE, Galgotias University, Greater Noida, India

Bharat Bhushan Naib
Department of CSE, Galgotias University, Greater Noida, India

Sandeep Bhatia
Department of CSE, Galgotias University, Greater Noida, India

Abstract:

Security is one of most significant Challenges worldwide. Due to adding crimes in metropolises, citizens are installing cameras in areas for surveillance reason to record the mortal conditioning for security purposes. An important surveillance operation is to track the stir of an object of interest using cameras and shoot the stir path through videotape feeds and also routing a call to control centers while maximizing device storehouse for object. In wireless security operations, camera stir detectors play a veritably important part in border surveillance, intrusion discovery, and asset protection. Anti-theft systems play a crucial role in mitigating theft-related risks, ensuring safety, and protecting valuable assets across different settings. The goal is to design a theft detection and monitoring system capable of identifying theft incidents using motion-sensing cameras and machine learning. When such an event occurs, the system will promptly alert the proprietor, providing an alert communication accompanied by the captured image. With the assistance of this system, we can descry and spark motion in the still place according to the conditions. The combination of PyQt5, Raspberry Pi, and Arduino provides a versatile platform for building motion sensing applications with image capture capabilities. The application provides a foundation for building a motion sensor system with image capture and database storage. Security cameras are one of the most common biases that use motion discovery technology. Machine Learning is used to make this type of application.

Index Terms:

Camera, Motion, Sensing, Detection, Video, Surveillance, IoT

 ISBN: 978-93-92105-69-2

Phishing Website Detection Using Machine Learning

Pradeep Nayak
Dept of Information Science and Engineering, Alva's Institute of Engineering and Technology, Mangalore, India

Fathima Thahiba
Dept of Information Science and Engineering, Alva's Institute of Engineering and Technology, Mangalore, India

Shramik S Shetty
Dept of Information Science and Engineering, Alva's Institute of Engineering and Technology, Mangalore, India

Akash K Acharya
Dept of Information Science and Engineering, Alva's Institute of Engineering and Technology, Mangalore, India

Abstract:

Phishing attacks continue to be a concern, in the realm of security as they target sensitive information by using deceptive websites. The usual methods of detecting phishing websites heavily rely on heuristics and manual inspection. These approaches have limitations when it comes to adapting to phishing tactics. In our study we put forward an approach for identifying phishing websites using learning techniques. We utilize a neural network architecture that analyzes both the content and structure of websites. This architecture allows us to automatically detect phishing websites by learning patterns that indicate behavior. Phishing are one of the most common and most dangerous attacks among cybercrimes. The aim of these attacks is to steal the information used by individuals and organizations to conduct transactions. Phishing websites contain various hints among their contents and web browser-based information. Phishing is a new type of network attack where the attacker creates a replica of an existing Web page to fool users (e.g., by using specially designed e-mails or instant messages) into submitting personal, financial, or password data to what they think is their service provides' Web site. The purpose of this study is to perform Machine Learning (ML) based classification for features including Phishing Websites Data in UCI Machine Learning Repository database. Our results clearly demonstrate that our proposed Machine learning approach surpasses existing techniques in terms of accuracy and reliability when it comes to detecting phishing websites across scenarios. The findings from this study carry implications for enhancing security as they offer a more efficient and scalable solution, for detecting phishing websites.

Index Terms:

Phishing, Classification, Random Forest, SVM

Attire Fit: Smart Clothing Suggestion using GAN

Kavin Kumar R
Dept of CSE (Data Science), Jain (Deemed-To-Be University), Ramanagara, India

Nalin Raj
Dept of CSE (Data Science), Jain (Deemed-To-Be University), Ramanagara, India

Neelam Nanda Kishore Reddy
Dept of CSE (Data Science), Jain (Deemed-To-Be University), Ramanagara, India

Tamalampudi Hema Chandhan
Dept of CSE (Data Science), Jain (Deemed-To-Be University), Ramanagara, India

Dr.Ramesh S
Dept of CSE (Data Science), Jain (Deemed-To-Be University), Ramanagara, India

Abstract:

In recent times, we have witnessed the brink of a radical transformation in shopping, particularly facilitated by the rapid advancement in technology. The outbreak of the COVID- 19 pandemic further fueled the surge in online e-shopping platforms, making it effortless for users to purchase virtually anything from the comfort of their homes. While online shopping offers undeniable convenience, it also presents a significant drawback: the inability to physically try on clothes. Despite the advantages of online shopping, this restriction can lead to uncertainty and dissatisfaction with purchases. However, the emergence of artificial intelligence (AI) has opened up new possibilities for addressing this challenge. By leveraging AI capabilities, we can develop innovative solutions that overcome the drawbacks of online shopping and enhance the overall user experience. The "Virtual Outfit Tryon" project is a game-changing innovation in online shopping, offering a novel approach that sets it apart from traditional methods that rely on Augmented Reality (AR). Instead of AR, it utilizes Generative Adversarial Networks (GANs), a powerful machine learning model, to seamlessly superimpose chosen outfits onto user-provided photos. GANs generate images ensuring a realistic fit and style depiction without the need for complex AR setups. This approach makes virtual try-ons accessible to a wider range of devices and users, enhancing convenience and eliminating compatibility issues. With a user-friendly interface, individuals can effortlessly visualize how different outfits look on them, boosting confidence in their online clothing purchases. In summary, the "Virtual Outfit Tryon" project revolutionizes virtual apparel trials by prioritizing simplicity, accuracy, and accessibility.

Index Terms:

Alignment Aware Segment (ALIAS), Thin Plate Spin (TPS), Geometric Matching Module (GMM), Normalization

 ISBN: 978-93-92105-69-2

Real Estate Price Prediction using Lasso and Ridge Regression

Siddhartha Dhar
Department of Computing Technologies, College of Engineering and Technology, Student of Engineering and Technology, SRM Institute of Science and Technology, Chennai, India

Saptorshee Nag
Department of Computing Technologies, College of Engineering and Technology, Student of Engineering and Technology, SRM Institute of Science and Technology, Chennai, India

Dr. Sworna Kokila M.L.*
Department of Computing Technologies, College of Engineering and Technology, Student of Engineering and Technology, SRM Institute of Science and Technology, Chennai, India

Abstract:

The real estate market is a complicated, dynamic system that is impacted by many different things. Property price forecasting that is accurate is essential for all parties involved, including investors, buyers, and sellers. The goal of this work is to improve prediction accuracy and address multicollinearity- related concerns by investigating the use of Lasso and Ridge regression approaches for real estate price prediction. Regularisation techniques like Lasso and Ridge regression add penalty terms to the conventional linear regression model. Lasso uses L1 regularisation, which pushes some coefficients to exactly zero and promotes sparsity in the model. In contrast, Ridge uses L2 regularisation to reduce multicollinearity and keep coefficients from growing too big. A wide range of features, including location, property size, number of bedrooms, bathrooms, and other pertinent details, are included in the dataset used in this study. To assess how well the Lasso and Ridge regression models perform in terms of accuracy and feature selection, they are put into practice and contrasted with conventional linear regression. Additionally, the paper analyses the impact of different regularisation parameters on model performance and provides insights into selecting ideal values for Lasso and Ridge regression. It includes a discussion of the practical ramifications for real estate stakeholders, including the identification of important factors impacting property values.

Index Terms:

Real Estate Price Prediction, Lasso Regression, Ridge Regression, Regularization, Pipelining, Cross-Validation, Categorical Cross Entropy

Virtual Reality Graded Exposure Therapy for Phobia and PTSD

Adith Menon
Department of Computer Science and Engineering, Sahrdaya College of Engineering and Technology, Thrissur, India

Adwaidh CR
Department of Computer Science and Engineering, Sahrdaya College of Engineering and Technology, Thrissur, India

Anoysius Joju
Department of Computer Science and Engineering, Sahrdaya College of Engineering and Technology, Thrissur, India

Rithik VR
Department of Computer Science and Engineering, Sahrdaya College of Engineering and Technology, Thrissur, India

Krishnadas J
Associate Professor, Department of Computer Science and Engineering, Sahrdaya College of Engineering and Technology, Thrissur, India

Abstract:

By combining virtual reality technology with graded exposure therapy, Virtual Reality Graded Exposure Therapy (VRGET) transforms the treatment of anxiety disorders. VRGET uses controlled exposure to anxiety-inducing stimuli using immersive virtual environments, addressing the global problem of anxiety disorders. With a method that mimics real-world circumstances, people can methodically face their fears in a supervised, safe environment. Situations that are adaptable to meet certain needs. Safety comes first since VRGET makes exposure therapy risk-free in the real world. With its potential across multiple mental health domains, it presents a promising treatment option for PTSD and phobias. This abstract emphasizes VRGET's transformational significance in changing anxiety treatment and lays the groundwork for a thorough investigation of the technology.

Index Terms:

Virtual Reality, Anxiety Disorders, Exposure Therapy

 ISBN: 978-93-92105-69-2

Evaluating the Impact of Green Hydrogen: A Sentiment Analysis Approach

Harshika Tyagi
M.Sc. Statistics, CHRIST (Deemed to be University), Bengaluru, India

Sivakumar R
Associate Professor, Department of Statistics and Data Science, CHRIST (Deemed to be University), Bengaluru, India

Abstract:

This research employs sentiment analysis to investigate the influence of green hydrogen, focusing on understanding how the general populace views this technology as critical to the shift toward sustainable energy. This study conducts a comprehensive analysis of prevalent sentiments by utilizing sentiment analysis across various textual sources like news articles and public forums. Its objective is to extract practical insights and deepen comprehension of public perceptions. To achieve this, the methodology involves thorough data preprocessing and the application of advanced machine-learning and deep-learning techniques to uncover textual patterns. Additionally, visualization techniques are utilized to enhance interpretability. The findings of this study are anticipated to significantly impact discussions surrounding green hydrogen and inform public policies geared towards attaining more sustainable and environmentally friendly energy sources. Moreover, the research identifies potential limitations and suggests areas for further exploration.

Index Terms:

Green Hydrogen, Sentiment Analysis, Sustainable Development, Machine Learning Models, Deep Learning Models

Incorporating Indian Attire and Motion Data into 3D Avatars

Anushka Jalori
PES University, Bengaluru, India

Athira Prajod
PES University, Bengaluru, India

Arushi Pandey
PES University, Bengaluru, India

Anushka Pandey
PES University, Bengaluru, India

Preet Kanwal
PES University, Bengaluru, India

Abstract:

The Augmented Reality and Virtual Reality industry has surged significantly in recent years. Despite this, current work in the 3D animation domain solely focuses on either generation of avatars, or replicating the motion on non-refined parameterised models which lack detail and personalisation. The personalisation of 3D avatars is limited to Western clothing and incorporation of Indian clothing remains vastly unexplored.

We, therefore, propose an approach that incorporates motion sequences into detailed 3D animatable avatars, adaptable to traditional Indian clothing styles. In the initial phase, we generate 3D avatars from 2D images of people in various Indian attires. Subsequently, motion sequence data is extracted from monocular RGB videos and stored as a sequence of SMPL-X parameters. The final stage involves integrating these two components.

For 3D model generation, an initial body structure from SMPL-X is utilized. Then ECON predicts front and back body normals via image-to-image translation networks. An iterative feedback loop with an optimiser and scheduler further enhances the model. For motion sequence data a pre-trained CNN model, temporal encoder and an adversarial learning network are utilised.

The fidelity of the generated models is evaluated using the Structural Similarity Index (SSIM). The output of the final stage enables us to create personalized 3D animatable avatars enhanced with natural motion sequence data and has noteworthy applications in the AR/VR and gaming industry.

Index Terms:

3D Avatar, AR/VR, Animation, Model Personalisation

 ISBN: 978-93-92105-69-2

AI-Driven Diabetic Retinopathy Detection: Advancements in Early Diagnosis

Dennis Heraald V
Division of Data Science and Cyber Security Karunya Institute of Technology and Sciences, Coimbatore, India

Martin Victor K
Division of Artificial Intelligence and Machine Learning Karunya Institute of Technology and Sciences, Coimbatore, India

Abstract:

Diabetic retinopathy (DR), a dangerous side effect of diabetes mellitus, is the main factor causing vision impairment worldwide. To stop irreparable retinal damage, prompt detection and treatment are essential. The goal of this project is to improve the efficacy and precision of screening procedures by developing and implementing a machine-learning-based strategy for the early identification of diabetic retinopathy. To extract pertinent features including microaneurysms, exudates, and hemorrhages, high-resolution retinal pictures undergo preprocessing. To automatically extract complex patterns and minute anomalies from retinal pictures, we use convolutional neural networks. The model has strong performance across a range of severity levels due to its training on a varied dataset that includes photos from different stages of diabetic retinopathy. This finding is important because it has the potential to transform the screening process for diabetic retinopathy, allowing for prompt intervention and lowering the risk of vision loss. The amalgamation of machine learning and clinical data lays the groundwork for a more intricate and customized method of diagnosing diabetic retinopathy, hence augmenting the wider domain of precision medicine and digital healthcare.

Index Terms:

Diabetic Retinopathy, Medical Imaging, Convolutional Neural Network (CNN), Image Classification, Deep Learning, Computer-Aided Diagnosis

Extraction of Oil from Black Pepper

Gayatri Gawande
Department Of Chemical Engineering, Vishwakarma Institute of Technology, Pune, India

Bhoomika Goyal*
Department Of Chemical Engineering, Vishwakarma Institute of Technology, Pune, India

Aaryan Desai
Department Of Chemical Engineering, Vishwakarma Institute of Technology, Pune, India

Shraddhey Gaikwad
Department Of Chemical Engineering, Vishwakarma Institute of Technology, Pune, India

Vedant Gulhane
Department Of Chemical Engineering, Vishwakarma Institute of Technology, Pune, India

Abstract:

Black Pepper (Piper nigrum L.) is a widely used aromatic spice in kitchens worldwide, but its oil has diverse applications apart from the food industry like in cosmetics, insecticide and pesticide industry, pharmaceuticals etc. Black Pepper Oil extraction from Leaching mainly focuses on extraction of piperine which is the bioactive compound present in the oil. This study investigated the efficiency of five different solvents (acetone, hexane, ethanol, methanol and isopropyl alcohol) based on several key factors, namely solvent recovery, cost, energy efficiency, selectivity towards piperine, total oil content extracted, and ease of use. Among the tested solvents, ethanol emerged as a frontrunner, it achieved a 95% recovery rate, minimizing waste and making the process more economical. It also demonstrated good selectivity, extracting a significant amount of piperine (10.39% w/w) and the total oil content was 0.087 g/ml, indicating efficient extraction capability. Being a relatively inexpensive solvent, it contributes to the overall economic feasibility of the extraction process and its low boiling point (78.3°C) makes it energy-efficient to recover through evaporation, minimizing energy consumption compared to solvents with higher boiling points. Thus, ethanol proved to be the best among the chosen solvents.

Index Terms:

Black Pepper, Extraction Process, Piper Nigrum, Distillation, Piperine, Ethanol

 ISBN: 978-93-92105-69-2

Data-Driven Dynamic Fashion Market Insights using Data Analytics

T. Divya Darshini
School of Computer Application, Karpagam College of Engineering, Coimbatore, India

Abstract:

The rapid growth of e-commerce has transformed the landscape of retail, making it essential for businesses to adopt innovative approaches to stay competitive. In this study, the exponential growth of information on the internet has paved the way for innovative methodologies to harness valuable insights for informed decision-making. This paper delves into the pivotal role of web scraping, data analysis, and visualization techniques in empowering fashion e-commerce enterprises with the tools necessary for informed decision-making and sustained success. The paper commences by highlighting the indispensability of web scraping in the contemporary fashion e-commerce environment. With the proliferation of online businesses, the internet is a vast repository of valuable data. Web scraping emerges as a crucial tool for collecting dynamic data from diverse sources, aiding businesses in gathering competitive intelligence, optimizing pricing strategies, and understanding customer behavior. The focus on Exploratory Data Analysis (EDA) showcases a systematic approach to deciphering product categories, prices, ratings, reviews, and sales patterns, providing actionable insights for product development and marketing strategies. Understanding discount strategies and employing data visualization techniques further contribute to refining sales strategies and facilitating a dynamic decision-making process. The paper emphasizes the creation of a dynamic dashboard based on real-time information, highlighting the impact of data visualization techniques on information interpretation. This comprehensive approach equips businesses with the knowledge to create products aligned with evolving consumer needs. Additionally, it guides the crafting of communication strategies that resonate with specific demographics, maximizing engagement. By fostering a marketplace where products find their perfect match in the hearts of consumers, this approach not only enhances competitiveness but also establishes a foundation for sustained growth and consumer satisfaction in the ever-evolving e-commerce landscape. The presented framework serves as a blueprint for organizations seeking to leverage the vast expanse of the internet for data-centric decision-making.

Index Terms:

Web scrapping, Fashion Market, Data Analysis, Exploratory Data Analysis (EDA), Visualization, Dashboard, Data-Driven Insights

Web Evolution: Performance, SEO, and Accessibility Insights

Inderjeet Singh
Department of Computer Science, Chandigarh University, Mohali, India

Mudit Kapoor
Department of Computer Science, Chandigarh University, Mohali, India

Debarun Pal
Department of Computer Science, Chandigarh University, Mohali, India

Shivam Jangra
Department of Computer Science, Chandigarh University, Mohali, India

Harshit Banga
Department of Computer Science, Chandigarh University, Mohali, India

Rajeev Tanwar
Department of Computer Science, Chandigarh University, Mohali, India

Abstract:

This paper highlights the integration of Next.js and React.js frameworks in enhancing web application speed, search engine optimization (SEO) and security and accessibility practices. It theoretically looks at the mechanisms of involvement of these frameworks in the efficient web development process as well as server-side rendering, static site generation and automatic optimization features. Besides, it assesses developers' struggles in utilizing them to their full capacity by the intricacy of the configuration and the necessary updates to comply with web standards and practices. The review additionally provides a look into the future paths in web development, considering the future advancements in the frameworks which would even further improve the performance, SEO, and user experience. By conducting a detailed review of the most recent literature and techniques, this paper will provide suggestions and tips for web programmers and researchers and present the importance of Next.js and React.js as key tools for building modern and secure web applications.

Index Terms:

Next.js, React.js, Web Performance Optimization, Search Engine Optimization

 ISBN: 978-93-92105-69-2

Low Light Image Enhancement

Hezeebu Ramya Sree
Electronics and Communication Engineering, Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, India

Bejugam Neha
Electronics and Communication Engineering, Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, India

Dasari Salmon Raju
Electronics and Communication Engineering, Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, India

Dr. Arvind Vishnubhatla
Electronics and Communication Engineering, Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, India

Abstract:

Low lighting conditions leads to bad image visibility, which will affect the performance of vision algorithms of computer. In this paper, we present an innovative approach in enhancing the quality of images which are captured in low light conditions. We address the challenges of reduced visibility and increased noise through the integration of advanced image processing techniques. By incorporating spatial and frequency domain processing, we strike a balance between enhancing visibility and preserving natural details. This adaptable system holds promise for applications in surveillance, photography, and other fields where image quality in low light conditions is crucial, offering a versatile solution for diverse imaging devices and software applications. When it's dark, existing methods struggle to balance keeping details sharp and incorporating enough context. Our answer to this problem is the Multiple Intermediate Representations Network (MIRNet). The Performance of the model is measured and the model's accuracy can be increased by using Random Forest. Charbonnier Loss, Peak Signal to Noise Ratio and Structural Similarity Index Measure are the metrics used. The model is trained to provide a better accuracy.

Index Terms:

Image Processing, Low Light Images, Image Enhancement, Multiple Intermediate Representation Network (MIRNet), Charbonnier Loss, Peak Signal to Noise Ratio, Structural Similarity Index Measure

Sequence-to-Sequence Learning for Audio Transcription: Leveraging Wav2Vec2 and Whisper

Vishist Singh Solanki
Chandigarh University, Mohali, India

Aditya Upadhyay
Chandigarh University, Mohali, India

Abhishek Dewan
Chandigarh University, Mohali, India

Hariom Singh
Chandigarh University, Mohali, India

Ashutosh Kumar
Chandigarh University, Mohali, India

Er. Ashish Kumar
Assistant Professor, Chandigarh University, Mohali, India

Abstract:

Automatic speech recognition (ASR) has become a cornerstone of natural language processing (NLP), enabling real-time conversations with devices and powering essential services like voice assistants and real-time captioning. With the growing demand for accurate and efficient speech-to-text conversion, sequence-to-sequence (Seq2Seq) learning methods are emerging as powerful tools for audio transcription. This paper investigates the effectiveness of two state-of-the-art Seq2Seq models for ASR: Wav2Vec2 and Whisper. Wav2Vec2, a pre-trained model leveraging self-supervised learning, has demonstrated strong performance in general audio transcription tasks. Whisper, on the other hand, is specifically designed for ASR, incorporating additional optimization techniques for efficiency and robustness. While both models utilize deep learning architectures to convert audio into textual representations, they possess distinct strengths and limitations. This study explores the performance of Wav2Vec2 and Whisper on a diverse audio dataset encompassing various languages and speech patterns, including recordings with background noise. We evaluate the models based on transcription accuracy (Word Error Rate), noise robustness, and computational efficiency. Additionally, we analyze the impact of fine-tuning and customization strategies on both models. By comparing and contrasting the performance of Wav2Vec2 and Whisper, this research aims to offer valuable insights into the current capabilities of Seq2Seq models for ASR. These findings can inform the development of even more effective and versatile ASR systems in the future.

Index Terms:

Automatic Speech Recognition, Audio Transcription, Wav2Vec2, Whisper, ASR Models, Sequence-to-Sequence Learning

 ISBN: 978-93-92105-69-2

Implementing Inception v3, VGG-16 and VGG-19 Architectures of CNN for Medicinal Plant leaves Identification and Disease Detection

Kunal Tyagi
Amity School of Engineering and Technology, Noida, India

Saksham Vats
Amity School of Engineering and Technology, Noida, India

Vasudha Vashisht
Amity School of Engineering and Technology, Noida, India

Abstract:

Medicinal plants have been a valuable source of healing and healthcare for centuries, serving as a crucial component of traditional medicine systems worldwide. The identification of these plants is a fundamental step in harnessing their therapeutic potential and ensuring their sustainable use. Accurate identification of these plants and the early detection of diseases affecting their leaves are crucial for ensuring a consistent supply of high-quality medicinal resources. In this paper, three types of CNN architectures of deep learning are used to develop robust classification models for distinguishing between healthy and diseased medicinal plant leaves. Inception v3 is known for its versatility in handling various input image sizes without the need for extensive pre-processing, while VGG-19 exhibits high accuracy, robust feature extraction, and suitability for complex image patterns. VGG-16, known for its simplicity and ease of training, provided competitive results, particularly where computational resources were limited. These networks have been pre-trained on large-scale image datasets and fine-tuned using them. These different approaches provide a varied solution to this problem by comparing their accuracy levels, feasibility and to select which one suits the best in this study.

Index Terms:

Artificial Intelligence, Convolutional Neural Network, Image processing, Machine Learning

Exploring Artificial Neural Networks and Their Role in Automotive Domains: A Review

Divya G S
Asst. Professor, Dayananda Sagar College of Engineering, Bangalore, India

Vikram Kedambadi Vasu
Asst. Professor, Nitte Meenakshi Institute of Technology, Karnataka, India

Hanoch A N
Dayananda Sagar College of Engineering, Bangalore, Karnataka, India

A Harsha Kumar
Dayananda Sagar College of Engineering, Bangalore, Karnataka, India

Abstract:

Artificial Neural Networks (ANNs) have emerged as powerful tools in the automotive industry, revolutionizing various aspects of vehicle design, performance optimization, and safety enhancement. This paper presents a comprehensive exploration of the applications, advantages, and limitations of ANNs in automobile engineering. ANNs offer unparalleled capabilities in pattern recognition and nonlinear modeling, making them indispensable for tasks such as vehicle diagnostics, autonomous navigation, and engine performance prediction. Leveraging diverse algorithms like backpropagation, gradient descent, and reinforcement learning, ANNs enable efficient data processing and decision-making in complex automotive scenarios. However, challenges such as interpretability, overfitting, and computational complexity must be addressed to fully harness the potential of ANNs in automotive applications. Moreover, the integration of Convolutional Neural Networks (CNNs) further enhances the capabilities of ANNs, particularly in image-based tasks like object detection and classification for autonomous driving systems. By leveraging the strengths of ANNs and CNNs, the automotive industry can drive innovation, improve efficiency, and enhance safety standards, ushering in a new era of intelligent vehicle technologies.

Index Terms:

Artificial Neural Networks, Training Algorithms, Automotive Industry, Autonomous Vehicle, Engine Performance

 ISBN: 978-93-92105-69-2

IoT-driven Automatic Vehicle Speed Reduction System using Arduino and RF Technology

Sreshta Reddy Basi Reddy*
Dept. of Computer Engineering and Technology, Chaitanya Bharathi Institute of Technology, Hyderabad, India

Hamsini Duttaluri
Dept. of Computer Engineering and Technology, Chaitanya Bharathi Institute of Technology, Hyderabad, India

P.Vimala Manohara Ruth
Dept. of Computer Engineering and Technology, Chaitanya Bharathi Institute of Technology, Hyderabad, India

Abstract:

India, ranking highest in road fatalities globally, faces a pressing issue with 74% of accidents attributed to excessive speeding. To tackle this problem, the government has mandated incorporating safety technology, including over-speed warning systems, in vehicles. While current solutions involve costly implementations utilizing artificial intelligence (AI), Light Detection and Ranging (LiDAR) technology, and the Controller Area Network (CAN) protocol, our proposed model offers a cost-effective and efficient alternative using Internet of Things (IoT) sensors, Arduino and RF technology. The vehicle's speed is regulated by receiving the emitted signal, resulting in a reduction of speed to a predetermined threshold. Emphasizing the integration of speed reduction and obstacle detection, particularly in vulnerable areas like schools and hospitals, our solution helps in mitigating road accidents resulting from human error. Our model is successful in utilizing RFID and ultrasonic sensor technologies, which excel with an accuracy of 85%, at a significantly lower cost, and a reliability of 85% compared to other techniques.

Index Terms:

Artificial Intelligence, Light Detection and Ranging (LiDAR), Controller Area Network (CAN), Internet of Things, Arduino, Radio Frequency

Empowering Employees for Thriving: The Interplay between Perceived Organizational Support, Leader Member-Exchange, Job Autonomy and Agentic Work Behaviour

Divya Prabha S
PSG Institute of Management, PSG College of Technology, Coimbatore, India

Dr. Kirupa Priyadarsini M
PSG Institute of Management, PSG College of Technology, Coimbatore, India

Abstract:

The purpose of this research is to investigate the impact of perceived organizational support on employee thriving at work as well as the role of leader member exchange and job autonomy on thriving. Social exchange theory builds a strong foundation for this study. Literature review indicates that perceived organizational support, along with job autonomy and cordial relationships with leaders makes an employee to focus their behaviour to achieve their given responsibilities and reaching out for the new ways of working and contributing0 more to the organization success. Also making them to thrive at workplace. An appropriate hypothesis was formulated. To investigate the formulated model, the study conducted a survey from employee in IT sector. Convenience sampling technique was used. Validated questionnaire was used for a survey. Structural equational modelling with partial least squares was used to test the hypothesis. Results indicates that perceived organization support influence job autonomy. This leads to employee being more flexible to make choices about how to approach their work, to schedule their work which in turn feel the employee more confident taking initiatives at work. The findings evidently shows that perceived organizational support has a significant indirect effect on thriving through Job autonomy, agentic work behaviour and leader member exchange.

Index Terms:

Empowering Employees, Organizational Support, Leader Member-Exchange, Job Autonomy, Agentic Work Behaviour

 ISBN: 978-93-92105-69-2

Securing Healthcare Data Generated by Block Chain Systems on Cloud Network through AES Cryptography

Dr. Suresh. M. B
Professor & Head, Dept of ISE, East West Institute of Technology, Bangalore, India

Vidyashree. M. R
Research Scholar, Dept of CSE, East West Institute of Technology, Bangalore, India

Abstract:

The purpose of this paper is to ensure the anonymity and security of health data and improve the integrity and authenticity among patients, doctors, and insurance providers. The algorithm is proposed in this work to ensure the proper implementation of the distributed system to secure and manage healthcare data. This paper also aims to explain the methodology of wireless body area networks and how it contributes to the health monitoring system.

Wireless body area network (WBAN) plays an important role in patient health data monitoring. In this paper novel framework is designed and proposed to generate data by the sensor machines and be stored in the cloud, and the transactions can be secured by block chain. AES cryptography is used in the framework to encrypt the hashes of the blocks. The proposed framework will ensure the anonymity and security of the health data and improve the integrity and authenticity among the patients, doctors, and insurance providers.

Index Terms:

Healthcare, Block Chain System, Cloud Network, AES Cryptography, Wireless body area network (WBAN)

Psychometric Test for Medical Consultancy System

S.A. Paithane
Department of Electronics & Telecommunication, JSPM's RSCOE Tathawade Pune, MS-India & Savitribai Phule Pune University, Pune, India

Atharva Divekar
Department of Electronics & Telecommunication, JSPM's RSCOE Tathawade Pune, MS-India & Savitribai Phule Pune University, Pune, India

Om More
Department of Electronics & Telecommunication, JSPM's RSCOE Tathawade Pune, MS-India & Savitribai Phule Pune University, Pune, India

Shital Walujkar
Department of Electronics & Telecommunication, JSPM's RSCOE Tathawade Pune, MS-India & Savitribai Phule Pune University, Pune, India

Abstract:

Preliminary investigations delve into the possibility of employing chatbots in psychiatric therapy to aid behavior modification through assessments and chatbot interventions. Nevertheless, these platforms overlook the mental conditions of users, neglecting interviews, continuous surveillance, or ethical factors. We propose that enhancing emotion detection could boost user contentment among individuals seeking mental health assistance. Our suggestion encompasses an interactive psychiatric counseling service employing sophisticated natural language comprehension and multimodal emotion detection. This method permits ongoing and delicate observation of emotional fluctuations. Moreover, an instance-oriented reaction model, integrating moral discernment, facilitates suitable clinical reactions in psychiatric consultations.

Index Terms:

Conversation Service; Psychiatric Counselling; Mental Health Care; Emotion Recognition

 ISBN: 978-93-92105-69-2

Automated Vision-Based System for Real-Time Detection and Classification of Rice Diseases using YOLO - NAS

S M Suhail
Department of AI, SRM Institute of Science & Technology, Chennai, India

K Bhanu Prasad
Department of AI, SRM Institute of Science & Technology, Chennai, India

Abstract:

In "Rise Disease Detection: Advancing Agricultural Sustainability through YOLO NAS," a novel strategy for managing diseases in agriculture is presented. By integrating the cutting-edge YOLO (You Only Look Once) algorithm, the project introduces a comprehensive Leaf Disease Detection system that transforms real-time disease surveillance. Brown spot, bacterial leaf blight, hispa, dead heart, and bacterial panicle blight are the five common diseases that the system targets. It provides farmers with early insights for efficient crop management. Utilizing deep learning and computer vision, the YOLO-based method guarantees effective object recognition, improving illness detection speed and precision. The tool features a user-friendly interface, facilitating swift decision-making for farmers and enabling the implementation of targeted disease control measures. This innovation not only advances precision agriculture but also addresses the urgent need for proactive disease management in the agricultural sector. By minimizing economic losses and improving crop yield, the project contributes to fostering resilient and sustainable farming practices amid evolving environmental and agricultural challenges.

Moreover, the system's real-time capabilities enable farmers to monitor disease progression and implement timely interventions, thereby reducing the spread of infections and mitigating crop damage. By harnessing cutting-edge technology, such as YOLO NAS, the project exemplifies the potential of AI-driven solutions in addressing complex agricultural issues. The user-friendly interface further facilitates knowledge transfer and adoption among farmers, ensuring widespread uptake of sustainable practices. Overall, the project underscores the importance of technological innovation in bolstering agricultural resilience and fostering sustainable food production systems. It sets a precedent for future research and development efforts aimed at leveraging AI for the betterment of global agriculture.

Index Terms:

Real-Time Detection, Rice Diseases, YOLO-NAS

Smart Car Parking System-A New Approach to Car Park Management

Rupam Das
Department of Computer Science and Engineering, Chandigarh University Mohali, Punjab, India

Er. Ritu
Department of Computer Science and Engineering, Chandigarh University Mohali, Punjab, India

Rudra Parashar
Department of Computer Science and Engineering, Chandigarh University Mohali, Punjab, India

Priyanshu Kumar
Department of Computer Science and Engineering, Chandigarh University Mohali, Punjab, India

Shubham
Department of Computer Science and Engineering, Chandigarh University Mohali, Punjab, India

Abstract:

A ground-breaking answer to the escalating issue of parking management is the Smart Car Parking System. This system offers unmatched efficiency and ease because of its state-of-the-art hardware and software components. The system's sensors are positioned thoughtfully throughout parking lots to gather data in real-time, which is then processed by a central monitoring unit. Customers can easily find open parking spaces and the closest parking stations by using the information via a mobile application. Led indicators are another tool the system uses to show parking availability, which simplifies the procedure and gets rid of the aggravation of looking for a spot. The circular lift mechanism is revolutionary because it maximizes space use by fitting several cars into a small space. In addition, the technology improves the user experience by giving consumers proactive messages and alerts about parking availability. The future of parking management lies in this creative approach, which promotes effective use of parking resources while providing drivers with a smooth and stress-free experience.

Index Terms:

Smart Car Parking System, Parking Management Real-time Data Gathering, Central Monitoring Unit, Mobile Application, Parking Space Availability, LED Indicators Circular Lift Mechanism

 ISBN: 978-93-92105-69-2

Enabling Real-Time Communication: A Computer Vision Approach for ASL

Dr. M. John Basha
Department of Computer Science and Engineernig, Jain University, Bangalore, India

Tejavarma Dommaraju
Department of Computer Science and Engineering, Jain Univeristy, Bangalore, India

Sriharsha Velicheti
Department of Computer Science and Engineering, Jain University, Bangalore, India

Kaustubh Anand Naik
Department of Computer Science and Engineering, Jain University, Bangalore, India

Karthikeya Jaini
Department of Computer Sciecnce and Enineering, Jain University, Bangalore, India

Abstract:

Communication is the fundamental basis of human contact, and it can be frustrating and alienating for those who are hard of hearing or speaking. This project offers a cutting-edge computer vision solution designed to help people who are hard of hearing. By utilizing sophisticated methods in image processing and machine learning, the system is able to identify and identify a wide range of typical ambient noises and transform them into visual representations. Following that, a Flask online application that has been easily connected with Large Language Models (LLMs) processes these visual clues. The software improves accessibility for individuals with hearing impairments by providing real-time text-based descriptions of detected sounds through the integration of LLMs. With its accurate identification and interpretation of sounds, the system shows promise in providing the hearing impaired with a useful tool to better navigate and comprehend their environment. Expanding the sound library and improving the model for even more accuracy and usefulness could be future improvements.

Index Terms:

Computer Vision, Image Processing, Machine Learning, Flask Web Application, Large Language Models (LLMs), Real-Time Text-Based Descriptions, Accessibility

Algorithms and Approaches for Emotion Perception: A Comprehensive Study of Challenges and Findings

Anu D
Assistant Professor, Artificial Intelligence & Data Science, Nitte Meenakshi Institute of Technology, Bangalore, India

Dr. Vidhya K
Associate Professor, Information science and Engineering, East West Institute of Technology, Bangalore, India

Abstract:

Emotions are perceived through abilities, capacities by identifying the emotions, perceptions by behavioral and psychological changes subjective experience converts to mental interpretations, the emotions are also perceived from past experiences, connection with past, security looking for fact data and managing as well as remote monitoring. The knowledge based systems to achieve their goals. The emotions are one of the most natural ways of communication. Therefore, to motivate & to build a smart system we need to add the components according to the human emotion using advanced learning algorithms is very important by making use of actuators, directs its activity in order to achieve the goals based on human computer interactions. The variations in human's emotion require certain classification algorithm to differentiate them from large group of input features. In order to analyze and compute such behavior through algorithm such as reinforcement learning that allows the system to make the calculated decisions. The concept of perceptron is used to acquire, interpret and organize the information of the human emotions. To solve certain specific problems the neural network approach is considered for special processing elements. There is a specific type of pattern in neural network just the way synapses work in human brain. The way biological nervous system processes the information similar to that artificial neural network works. It's a novel structure for processing the information.

Index Terms:

Reinforcement Learning, Artificial Neural Networks, Emotions, Intelligence, Human Computer Interaction

 ISBN: 978-93-92105-69-2

AI-Enabled Crop Disease Detection in Precision Agriculture

Ranjitha. P
Assistant Professor, Dept of Electronics And Communication Engineering, IFET College of Engineering, Villupuram, India

Sowmiya.D
UG Scholar, Dept of Electronics And Communication Engineering, IFET College of Engineering, Villupuram, India

Abstract:

Threatening food security, economic growth, and ecological equilibrium, crop diseases are a major obstacle for farmers across the world. Reduced crop yields, higher resource consumption, and financial losses for farmers are the direct outcome of ineffective disease identification and management practises. Since this affects both wealthy and developing countries, it has far-reaching global consequences such as food shortages, hunger, and increased food costs. Our approach integrates cutting-edge algorithms like Faster R-CNN and CenterNet into an AI and precision agriculture framework for real-time disease detection and disease location in crops. Our product allows farmers to prevent disease outbreaks and make more informed decisions with the help of data-driven decision support, all thanks to the power of powerful computer vision. We did this by collecting extensive datasets, developing AI models, and incorporating them into real-time monitoring and decision support infrastructure. Our flexible and scalable approach provides hope for a brighter future in agricultural sustainability and security throughout the world by improving food production while decreasing negative environmental impacts.

Index Terms:

Crop diseases, Artificial intelligence (AI), Disease detection, Food security, Real-time monitoring, Faster R-CNN, CenterNet, Economic stability, Environmental sustainability, AI models

Enhancing User Experience Through MERN Application

Kartikeya Sharma
Amity University, Noida, India

Laxmi Ahuja
Amity University, Noida, India

Abstract:

The Mern stack which consists of expressjs, React, Nodejs and mongodb is a disruptive force in modern online development known for its combined javascript language scalability real-time capabilities and rapid development this stack completely changes the way that modern applications are developed this study examines merns critical role in ensuring that Fitness management systems operate as efficiently as possible traditional approaches to managing exercise facilities are inadequate which creates a need for flexible alternatives the mern stacks real-time features and modular design allow it to easily adapt to the changing needs of modern fitness facilities the study carefully looks at how important mern is to leisure center administration highlighting the things it does for automation user- friendliness centralised data storage and real-time updatesthis study is expected to make a valuable contribution to the current discussion on how technology is changing and how fitness expertise is budding.

Index Terms:

MERN Stack, MongoDB, NoSQL Database, Data Storage Efficiency, Document-Oriented Databases, Web Development Optimization

 ISBN: 978-93-92105-69-2

Leveraging the Deep Fake Voice for Robust Forgery Detection using Machine Learning

Suganya P
Assistant Professor, Department of Computer Science and Engineering, Manakula Vinayagar Institute of Technology, Puducherry, India

Gokul P
Assistant Professor, Department of Computer Science and Engineering, Manakula Vinayagar Institute of Technology, Puducherry, India

Prasath R
Assistant Professor, Department of Computer Science and Engineering, Manakula Vinayagar Institute of Technology, Puducherry, India

Sathya Ranjan Sahoo S
Assistant Professor, Department of Computer Science and Engineering, Manakula Vinayagar Institute of Technology, Puducherry, India

Abstract:

Multimedia forensics has made remarkable strides in the detection of manipulations within multimedia content driven by deep learning techniques. Despite these advancements, a major impediment has been the scarcity of comprehensive datasets necessary for effectively training convolutional neural networks (CNNs), which are commonly used in multimedia forensics. Researchers have proposed a strategic solution to this challenge by advocating for the integration of recurrent neural network (RNN) algorithms. Unlike CNNs, RNNs are well-suited for handling sequential data and capturing temporal dependencies, addressing the limitations posed by the static nature of CNNs. This integration is poised to usher in a new era by significantly enhancing prediction accuracy in multimedia forensics. The significance of integrating RNNs becomes particularly evident in the context of assessing the authenticity of multimedia objects, especially when deep learning techniques have been employed for manipulation. The temporal dynamics and sequential patterns inherent in RNNs make them adept at discerning subtle alterations in multimedia content over time, thus offering a more nuanced and accurate analysis. This capability is crucial in the face of evolving digital manipulations where adversaries continually refine their techniques. The integration of RNNs into multimedia forensic tools represents a promising avenue for reinforcing the field's resilience against the constantly changing landscape of digital manipulations. In essence, the incorporation of RNNs into multimedia forensic tools not only addresses the data limitations associated with CNNs but also enhances the tools' adaptability and precision in identifying deep learning-based manipulations. This evolution provides forensic experts with a more robust means to discern the authenticity of multimedia content, positioning the field at the forefront of combating the challenges posed by sophisticated digital manipulations in today's dynamic technological landscape.

Index Terms:

Recurrent Neural Network (RNN), Convolutional Neural Networks (CNNs), Deep Learning, Deepfake

Image Forgery Detection using CNN

Pintu Kumar
Computer Science and Engineering, Chandigarh University, Mohali, India

Aryan Prasher
Computer Science and Engineering, Chandigarh University, Mohali, India

Sourabh Budhiraja
Computer Science and Engineering, Chandigarh University, Mohali, India

Abstract:

Image tampering, the manipulation of digital images to deceive viewers, is becoming increasingly common as image editing tools become more widespread. Detecting these counterfeit products is critical to maintaining the integrity and reliability of digital media. In this study, we propose an image forgery detection method using CNN (Convolutional Neural Network). CNNs have shown remarkable performance in a variety of computer vision tasks, making them well-suited for detecting image tampering. The proposed approach involves collecting a diverse dataset of original images and image normalization, as well as types of forgeries, such as copy-moving, splicing, and retouching. Use preprocessing techniques such as resizing, normalization, and augmentation to improve the quality and diversity of your dataset. Then, a CNN architecture consisting of convolutional layers, pooling layers, and fully connected layers is developed, resulting in a binary classification output that indicates the trustworthiness of the input image. The model is trained using the collected dataset along with hyperparameter optimization through validation. Performance evaluation is performed using standard metrics such as precision, precision, recall, and F1 score on a separate test set. Additionally, fine-tuning and optimization strategies, including transfer learning, are used to improve model performance. Experimental results demonstrate the effectiveness of the proposed CNN-based approach to accurately detect image forgery using various manipulation techniques. The model achieves competitive performance and generalizes well to unseen data, showing potential for real-world applications in image forensics and digital media authentication. Future research could focus on improving the model architecture, exploring advanced learning strategies, and expanding the approach to detect new forms of image manipulation.

Index Terms:

Image Forgery, Convolutional Neural Network (CNN), Digital Media Authentication, Image Tampering, Preprocessing Techniques

 ISBN: 978-93-92105-69-2

Blood Type Detection using Image Processing

R. Venkatesh
Computer Science and Engineering, Karpagam College of Engineering, Coimbatore, India

Sidhardh Joe Bencylal
Computer Science and Engineering, Karpagam College of Engineering, Coimbatore, India

D. Snehan
Computer Science and Engineering, Karpagam College of Engineering, Coimbatore, India

M. Srihari
Computer Science and Engineering, Karpagam College of Engineering, Coimbatore, India

S. Sudarson
Computer Science and Engineering, Karpagam College of Engineering, Coimbatore, India

Abstract:

Hospitals require blood for saving patients life and knowing the blood group can avert a crisis and can spare the life of a patient. Advancements in technology is progressing rapidly such that human error can be avoided. Innovation has created image processing techniques for identifying blood group. Blood group identification is done for blood transfusion in emergency circumstances or blood donations. It is a fast and simple way to guarantee that you simply receive the proper kind of blood amid surgery or after an harm. In case you're given incompatible blood, it can be deadly causing agglutination. Thus, it is necessary to perform tests before blood transfusion. Microscopy has irregularly demonstrated it being inefficient due to its time consumption and difficulty in reproducing results. Due to these reasons, computerization of such tests is of high necessity. Based on the analysis of images captured during a slide test, a program is developed to analyze and determine the blood group without human involvement. Resultant images are then obtained to check for blood clumping and blood group is determined. Thus, it will be useful in determining the blood group.

Index Terms:

Blood Type Detection, Image Processing

Walmart Sales Forecasting using XGBoost Algorithm, Feature Engineering and Prophet

Raju Yadav
School of Computing Science and Engineering, Galgotias University, Greater Noida, India

Ujjwal Kumar
School of Computing Science and Engineering, Galgotias University, Greater Noida, India

Akhilendra khare
Associate Professor, School of Computing Science and Engineering, Galgotias University, Greater Noida, India

Nripendra Dwivedi
Associate Professor, School of Computing Science and Engineering, Galgotias University, Greater Noida, India

Abstract:

In the era of vast and ever-expanding data, the strategic utilization of big data has taken center stage in the corporate world, aiming to chart a course for the future and facilitate well-informed decision-making. In recent years, researchers and businesses have been increasingly drawn to the application of machine learning algorithms, including the Prophet algorithm, for predicting the sales of various products and commodities. This research introduces a predictive model that leverages the XGBoost, feature engineering, and Prophet algorithms in combination with meticulous feature engineering to address the challenge of forecasting sales at Walmart.

The approach presented in this paper effectively harnesses attributes from multiple dimensions to improve predictive accuracy. To validate our model, we conducted experiments on Walmart's supermarket sales datasets made available through the Kaggle competition. The results of these experiments demonstrate the superior performance of our method compared to other machine learning techniques, including the Prophet algorithm. Notably, our approach achieved an RMSSE metric that is 0.141 lower than the Logistic regression algorithm and 0.113 lower than the Ridge algorithm, underscoring its efficacy. Additionally, this research delves into the importance ranking of various features, providing valuable insights for future endeavors.

Index Terms:

Sales Forecast; XGBoost; Machine Learning Algorithms; Prophet, Feature Engineering

 ISBN: 978-93-92105-69-2

Graph Data Analysis for Influential Node Detection in Social Network

Priya Lohan
AIIT, Amity University, Noida, India

Rachna Jain
AIIT, Amity University, Noida, India

Mayank Sharma
AIIT, Amity University, Noida, India

Abstract:

In the era of increasing presence and influence of social media, understanding node dynamics in networked systems is crucial for gaining insights into information dissemination, online trends, and viral content propagation. Our proposal is a unique approach that uses graph data analysis techniques to identify influential nodes in social networks. We compute centrality measures on a weighted network model after pre-processing and feature extraction from user-generated content. This study addresses issues such noisy data, ambiguous features, nonlinear relationships, non-monotonic influence, and network scalability in order to improve the accuracy of identifying influential nodes. Social media's significance and importance are determined by each individual's conduct and role as a significant actor in any given social network. Various metrics measures, such as Degree, Closeness Centrality, Betweenness Centrality, Eigenvector Centrality, etc., are used in the visualization and analysis of the social network.

Index Terms:

Social Media; Social Network Analysis (SNA); Online Social Network (OSN) ; online Communities ;Centrality Measures ; Performance ; Efficiency

Intelligent Edge-Based System for Driver Drowsiness Monitoring in Mobile Crowd-sourcing Environments

Arravinth. V
CSE Karunya Institute of Technology and Science, Coimbatore, India

Ancy Jenifer. J
Assistant Professor, CSE Karunya Institute of Technology and Science, Coimbatore, India

Snowlin Preethi Janani
Assistant Professor, CSE Karunya Institute of Technology and Science, Coimbatore, India

M. Shilpa Aarthi
Assistant Professor, CSE Karunya Institute of Technology and Science, Coimbatore, India

T. Kavitha
Assisstant Professor, CSE Karuya Institute of Technology and Science, Coimbatore, India

Abstract:

This study presents that improves road safety by combining the capabilities of Convolutional Neural Networks (CNN) and Generative Adversarial Networks (GAN). With the help of cutting-edge machine learning methods applied to the rapidly expanding field of mobile crowdsourcing, the system can identify the first symptoms of driver exhaustion. At its heart, our approach is a convolutional neural network (CNN) model that can accurately detect drivers' degrees of sleepiness based on their facial expressions, head movement, and other visual indicators. Thanks to the approach's use of mobile devices' high-resolution cameras, the system may be simply installed in a range of vehicles. We use a GAN framework to tackle the problems of imbalanced and restricted training data. In doing so, it improves the dataset and makes it easier for CNN to learn from a wide variety of driving circumstances and unique face traits by producing realistic, synthetic pictures of sleepy drivers. Our system stands out due to its unique computing architecture that is built on the edge. In mobile crowdsourcing settings, where internet connection is not always reliable, it is essential to decrease latency and bandwidth use by processing data locally on users' mobile devices. Also, by processing sensitive data locally on the device instead of sending it to remote servers, this edge-based technique improves user privacy. Our technology outperformed previous approaches in identifying driver tiredness, according to thorough testing. Model performance was significantly enhanced by including GAN-generated data, particularly in training dataset situations that were underrepresented. This study not only shows how to effectively combine CNN and GAN in edge computing settings, but it also gives a workable approach for monitoring driver weariness. Implications for mobile crowdsourcing apps and intelligent transportation system development are substantial based on our results.

Index Terms:

Driver Drowsiness, Convolutional Neural Network, Generative Adversarial Networks, Mobile Crowdsourcing, Edge Technology

 ISBN: 978-93-92105-69-2

Survey on Modern AUV Technologies

Rishikha S
Artificial Intelligence & Data Science, Sri Sairam Institute of Technology, Chennai, India

Nehaa R
Artificial Intelligence & Data Science, Sri Sairam Institute of Technology, Chennai, India

Kannan A
Artificial Intelligence & Data Science, Sri Sairam Institute of Technology, Chennai, India

Anantha Padmanabhan S
Artificial Intelligence & Data Science, Sri Sairam Institute of Technology, Chennai, India

Abstract:

The incorporation of Autonomous Underwater Vehicles (AUVs) in underwater mining has attracted considerable interest due to their potential to revolutionize exploration and extraction operations in deep-sea environments. This survey article investigates the integration of Machine Learning (ML) and Deep Learning (DL) techniques within AUV systems. Initially, we explore the essential role played by AUVs in underwater mining activities, emphasizing their ability for autonomous navigation, data collection, and environmental monitoring. Subsequently, we scrutinize the pivotal function fulfilled by ML and DL methodologies in enhancing the capabilities of AUVs encompassing efficient path planning and obstacle avoidance as well as real-time decision-making within complex underwater scenarios. The survey entails an exhaustive analysis of numerous ML and DL algorithms customized for AUV applications such as Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs). Moreover, this paper explains the underscoring the transformative potential that arises from integrating advanced computational methodologies with AUV technologies towards optimizing underwater mining processes.

Index Terms:

Autonomous Underwater Vehicles (AUVs), Machine Learning (ML), Deep Learning (DL), Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), Reinforcement Learning (RL), Automatic Target Recognition (ATR)

Stacked Autoencoder - Based Intrusion Detection System for Financial Fraudulent

Porandla Nagaphani
Department of Networking and Communications, SRM Institute of Science and Technology, Kattankulathur, India

Bandaru Venkata Chakradhar
Department of Networking and Communications, SRM Institute of Science and Technology, Kattankulathur, India

A. Prabhuchakkaravarthy
Department of Networking and Communications, SRM Institute of Science and Technology, Kattankulathur, India

Abstract:

A strong intrusion detection system (IDS) is suggested in this paper as a way to deal with privacy risks in Internet of Things (IoT) settings and digital banking activities. The IDS uses a stacked autoencoder (AE) and deep neural network (DNN) design to use powerful deep learning methods. The stacked AE learns important features on its own from input network records, which makes later classification jobs more accurate. The guided DNN pulls out deep-learned features that are needed for accurate intruder detection. The CNN + LSTM ensemble achieved 99.9% accuracy in tests on the KDDCup99 and NSL-KDD datasets, showing outstanding performance. To make things even better, we need to look into more group methods, such as CNN and CNN + LSTM models. An easyto- use front-end interface built with the Flask framework also makes it possible for users to connect and authenticate without any problems. This study helps improve safety by showing that deep learning and ensemble methods are useful for finding intrusions.

Index Terms:

Deep Neural Network (DNN), Digital Financial Service, Internet of Things (IoT), Intrusion Detection System (IDS), Stacked Autoencoder (AE)

 ISBN: 978-93-92105-69-2

Enhancing Restaurant Dining Experience through Augmented Reality Menus

Sruthi.G.Menon
Sri Ramakrishna Engineering College, Coimbatore, India

Vishnu V
Sri Ramakrishna Engineering College, Coimbatore, India

Vevin Balaji V A
Sri Ramakrishna Engineering College, Coimbatore, India

Abstract:

Our project introduces an innovative Augmented Reality (AR) Restaurant Menu System aimed at revolutionizing the dining experience in restaurants. Traditional paper-based menus often lack interactivity and engagement, leading to suboptimal customer experiences. In contrast, our AR menu system leverages Unity and Vuforia technologies to overlay digital content onto physical menu items, providing customers with immersive and interactive presentations of dishes.

The increase of smartphones and advancements in AR technologies have opened up new possibilities for engaging customers in immersive experiences. The AR menu system offers customers a dynamic and captivating interface to explore menu items, featuring detailed information, visualizations, and multimedia content. Through seamless integration with Unity and Vuforia, our system enables real-time object recognition and tracking, ensuring accurate alignment of digital content with physical objects. By enhancing customer engagement and satisfaction, our system aims to drive business growth for restaurants while providing a memorable and enjoyable dining experience for customers.

Index Terms:

Augmented Reality, Unity, Vuforia, Real-Time Object Recognition, Visualizations

KrishiGyanVardhak: A Farmer's Guide

Raksha Balla
Department of Computer Engineering, MCT's Rajiv Gandhi Institute of Technology, Mumbai, India

Atharva Deshmukh
Department of Computer Engineering, MCT's Rajiv Gandhi Institute of Technology, Mumbai, India

Rishabh Jaiswal
Department of Computer Engineering, MCT's Rajiv Gandhi Institute of Technology, Mumbai, India

Yash Kharat
Department of Computer Engineering, MCT's Rajiv Gandhi Institute of Technology, Mumbai, India

Bhavesh Panchal
Department of Computer Engineering, MCT's Rajiv Gandhi Institute of Technology, Mumbai, India

Abstract:

This research paper explores the implementation of a cutting-edge Precision Agriculture Decision Support System (PADSS) leveraging advanced technologies and artificial intelligence (AI) for enhanced farming practices. Agriculture, as a crucial sector, faces challenges that can be mitigated through data-driven insights and innovative solutions. The PADSS integrates multi-layer perceptron (MLP), Convolutional Neural Network (CNN), and Random Forest algorithms to empower farmers with precise crop recommendations, plant disease detection, and fertilizer suggestions. The user-friendly interface, developed using Flask, ensures seamless interaction for farmers, promoting accessibility and usability. Results demonstrate the effectiveness of the proposed models, achieving high accuracy in crop classification, disease detection, and fertilizer recommendations. The PADSS emerges as a promising tool for sustainable and efficient farming practices, contributing to the evolution of precision agriculture.

Index Terms:

Precision Agriculture, Artificial Intelligence, Decision Support System, Convolutional Neural Networks, Random Forests, Precision Farming, Crop Recommendation, Plant Disease Detection, Fertilizer Recommendation, Smart Farming, Sustainable Agriculture.

 ISBN: 978-93-92105-69-2

Design and Implementation of Low-Cost LiDAR

Arunbaalaji P
Department of Aeronautical Science, Hindustan Institute of Technology & Science, Chennai, India

Ranjith Pradap S
Department of Aeronautical Science, Hindustan Institute of Technology & Science, Chennai, India

Mohamed Jafeer T
Department of Aeronautical Science, Hindustan Institute of Technology & Science, Chennai, India

Abstract:

Lidar is a proven approach for creating accurate and detailed 3D terrain point cloud models. With recent advancements of LiDAR technology, the accuracy potential of LiDAR data has significantly improved. At present, the major limitations of LiDAR are its high cost and its inability to measure distance in bad weather conditions. Our project concentrates on design and implementation of an affordable Arduino based LiDAR that gives 3D measured data that can be used to plot a 3D map. By using a low-cost LiDAR sensor and using two servo motors helps us cover an entire hemisphere. Programmed in ARDUINO IDE, the sensor will not only provide the distance but also the point coordinates of every point which the pulse hits and gets bounced back. This low-cost LiDAR can be used for variety of applications with the help of few modifications.

Index Terms:

LiDAR, Arduino, 3D mapping, Point Cloud, Low-Cost, Distance, Point Coordinates, Measurement

Applications of IOT In Next Generation Communication

Vishal Srivastava
VIPS-TC, School of Engineering & Technology, New Delhi, India

Vaniya Sharma
VIPS-TC, School of Engineering & Technology, New Delhi, India

Abstract:

The rapid growth of data usage has been attributed to the technological advancements that have occurred in wireless communication. Mobile communication has revolutionized how people communicate. Due to the increasing number of users and the need for high-speed data, real time data exchange, Internet service providers have had a hard time handling the demand for their offerings. The rapid growth of data usage has been attributed to the technological advancements that have occurred in wireless communication. Mobile communication has revolutionized how people communicate. Due to the increasing number of users and the need for high-speed data, Internet service providers have had a hard time handling the demand for their offerings.

The combination of Industrial Internet of Things (IOT) and Artificial Intelligence (AI) has revolutionized the field of communication, enabling seamless connectivity and intelligent decision-making in industrial settings and domains. However alongside its numerous advantages this fusion also introduces several drawbacks, challenges that warrant through examination. This paper explores the advancements, drawbacks, and future perspectives of next-generation communication utilizing IOT and AI. Through an extensive review of existing researches and case studies this paper enlightens the issues and limitations in leveraging these technologies in industrial communication networks. Furthermore, it explores the potential future strategies and scope and solutions to address these challenges and unseal the full capabillity of IOT and AI in time ahead of digital transformation of next generation communication.

In conclusion, the integration of IOT and AI in communication has the potential to revolutionize the way businesses operate and interact with their stakeholders. While there are challenges and drawbacks that need to be addressed, the future scope of these technologies is vast and promising. Businesses that embrace and harness the power of next-generation communication using IOT and AI will undoubtedly gain a competitive edge in the digital economy.

Index Terms:

IOT, AI, Real Time Data Exchange, Internet Service Provider, High Speed Data, Next Generation Communication, Digital Transformation, Connectivity, Digital Economy

 ISBN: 978-93-92105-69-2

A Secure Blockchain based Remote Health Monitoring System for Chronic Disease using IoT

Nithyashree V
Department of CSE, Dayananda Sagar University, Bengaluru, India

Rashmi H A
Department of CSE, Dayananda Sagar University, Bengaluru, India

Roopa Shree N
Department of CSE, Dayananda Sagar University, Bengaluru, India

S P Hrithika
Department of CSE, Dayananda Sagar University, Bengaluru, India

P Soubhagya Lakshmi
Department of CSE, Dayananda Sagar University, Bengaluru, India

Abstract:

With the increasing pervasiveness of chronic diseases, there is a great demand for effective and secure health monitoring systems. This paper proposes a solution leveraging the decentralized and tamper proof nature of blockchain technology to enhance the security, transparency and accessibility of remote health monitoring for chronic diseases and Iot devices to collect the patient real time health metrics. IoT devices are employed to collect real time patient health parameters, which are encrypted and securely transmitted to blockchain networks, ensuring a reliable and up-to-date record of patient health status. The data is transmitted securely to the blockchain network, ensuring immutability, transparency and decentralized control.The use of blockchain provides tamper-resistance and auditable record for health information, addressing concerns related to data integrity and unauthorized access. To enhance security the system employs advanced encryption techniques.Smart contracts enforce access control rules,ensuring only authorized parties can access and utilize the patient data. So whenever the doctor wants to access the patient data,the doctor must request for access. Accordingly, patients can grant or revoke access.This decentralized approach mitigates the vulnerability of singular points of failure and minimizes the potential for data breaches. The anticipated system shows the potential to revolutionize remote patient monitoring for chronic disease by providing a secure,privacy-preserving and decentralized platform for managing patient health data. By leveraging the power of blockchain technology and IoT , the system can improve patient care and reduce healthcare costs. The system delivers a steadfast foundation for building a secure, scalable and interoperable remote health monitoring infrastructure, ultimately improving the quality of life for patients with chronic diseases.

Index Terms:

IoT-Internet of things, Blockchain, Smart contract

The Significance of Artificial Intelligence in Safe Software Development Procedures and Tools for Developers

Santosh Belagalla*
ARJ BCA College, Ilkal Department of Computer Science and Application, Rani Channamma University, Belagavi, India

Prashant G K
Siddaganga Institute of Technology Tumkur, Department of Computer Science and Application, Visvesvaraya Technological University Belagavi, India

Abstract:

Artificial Intelligence (AI) has emerged as a transformative force in various industries, revolutionizing the way we operate. The significance of safeguarding software development tools and procedures has become increasingly evident. This paper delves into the pivotal role played by AI in enhancing security measures throughout the software development lifecycle (SDLC) and empowering developers to create resilient and secure systems. The article commences by elucidating the ever-evolving threat landscape that software developers confront, characterized by intricate cyber-attacks and rapidly evolving security vulnerabilities. It underscores the utmost importance of integrating proactive security measures into the SDLC to anticipate potential breaches and effectively mitigate risks. The research investigates how artificial intelligence augments threat modeling, code analysis, and vulnerability identification in the realm of secure software development processes. By harnessing AI-driven technologies, developers can swiftly prioritize remediation efforts, conduct comprehensive threat assessments, and identify potential vulnerabilities in code. Moreover, AI-powered anomaly detection techniques enable real-time monitoring of software systems, facilitating prompt responses to emerging threats and intrusions. This capability empowers developers to stay one step ahead and swiftly address new challenges. Overall, this paper highlights the critical role of AI in fortifying security measures across the SDLC. By leveraging AI-driven tools and techniques, developers can proactively enhance the resilience and security of software systems, ensuring a safer digital environment.

Index Terms:

AI, Security, Software Development and Tools

 ISBN: 978-93-92105-69-2

Degradation of Direct Blue Dye using Hydrodynamic Cavitation-based Techniques and Fenton Process

Gayatri Gawande
Vishwakarma Institute of Technology, Pune, India

Atharva Tandel
Vishwakarma Institute of Technology, Pune, India

Piyush Patole
Vishwakarma Institute of Technology, Pune, India

Raj Shishupal
Vishwakarma Institute of Technology, Pune, India

Kaushik Magar
Vishwakarma Institute of Technology, Pune, India

Eshaan Jain
Vishwakarma Institute of Technology, Pune, India

Abstract:

Due to the discharge of wastewater by textile manufacturers, azo dyes such as Direct Blue dye are exposed to the elements. The treatment of wastewater contaminated with Direct Blue dye presents significant environmental challenges that require practical and long-term solutions. It is crucial to effectively remove this dye from wastewater due to its allergenic and cancer-causing properties. The objective of the study was to utilize advanced oxidation techniques (AOPs) to achieve complete decolorization and a significant reduction in chemical oxygen demand (COD). The decolorization of Direct Blue dye and the impact of pressure, pH, hydrogen peroxide (H_2O_2), and the Fenton process were investigated. other factors including pH, $FeSO_4$, H_2O_2 concentrations, and inlet pressure, were optimized. One key parameter that was utilized to enhance the efficiency of the treatment process was pressure. Extensive testing was conducted to determine the optimal pressure settings that would maximize the rate of decolorization while minimizing energy consumption. pH was identified as a critical factor when treating wastewater with Direct Blue dye. The study revealed that maintaining a pH of 2 expedited the decolorization process and significantly reduced treatment time. This pH level was found to be optimal due to its higher reactivity and effectiveness in dissolving dye molecules. The optimal dosage of hydrogen peroxide (H_2O_2) was determined to be 1 milliliter, which was incorporated into the treatment protocol. Among the various techniques evaluated, Fenton and HC/Fenton demonstrated the most promising results in treating wastewater contaminated with Direct Blue dye. Direct blue dyes are widely used in paper, textiles, and cosmetics due to their vibrant, quick-to-appear, and long-lasting colour. The dye sample was completely decolorized in 15 minutes using Fenton, and in 10 minutes using HC/Fenton, when operated at peak efficiency. The combination of Fenton and HC/Fenton holds great potential for the treatment of wastewater tainted with Direct Bluedye.

Index Terms:

Direct Blue Dye, Hydrodynamic Cavitation, Advanced Oxidation Techniques (AOPs)

Comparison of Degradation of Rhodamine B using Homogeneous and Heterogeneous Fenton Process

Gayatri Gawande
Vishwakarma Institute of Technology, Pune, India

Neeraj Chandwani
Vishwakarma Institute of Technology, Pune, India

Aaryan Gaikwad
Vishwakarma Institute of Technology, Pune, India

Anushree Naktode
Vishwakarma Institute of Technology, Pune, India

Prem Bagul
Vishwakarma Institute of Technology, Pune, India

Sayli Jathar
Vishwakarma Institute of Technology, Pune, India

Samarth Bhandare
Vishwakarma Institute of Technology, Pune, India

Abstract:

Rhodamine B (Rh-B), an azo-dye, poses a significant threat to aquatic ecosystems due to its persistence, bioaccumulation, and potential human health risks. It is used in various industries like textile, paints, etc. The Fenton process, a well-established advanced oxidation process (AOP), utilizes hydroxyl radicals (OH•) for efficient dye degradation. However, the homogeneous Fenton process suffers from limitations like iron sludge formation, narrow effective pH range, and difficulty in catalyst recovery. This study investigates heterogeneous Fenton processes as an alternative for Rh-B removal. We compare the effectiveness of homogeneous (Fe^{2+}/H_2O_2) and heterogeneous (catalyst/H_2O_2) systems for Rh-B degradation. The research explores the influence of reaction conditions (pH, catalyst type) on the performance of each process. The results are presented in terms of Rh-B removal efficiency and degradation kinetics. Use of UV-Spectroscopy is done to analyze the degradation, as well as COD is done. The study aims to identify the most promising heterogeneous catalyst for Rh-B removal and elucidate the advantages of heterogeneous Fenton processes over the homogeneous counterpart. This research contributes to the development of more sustainable and efficient methods for treating Rh-B-contaminated wastewater. The COD results for homogeneous processes were 100mg/L initial and 23mg/L after 1 hour. On the other hand, the colour disappearance was 98% analyzed by UV-spectrometer.

Index Terms:

Rhodamine B, Homogeneous, Heterogeneous Fenton Process, Rhodamine B (Rh-B)

 ISBN: 978-93-92105-69-2

A Smart Irrigation System using IOT for Farmers

P. Soubhagyalakshmi*
Assistant Professor, Department of CSE, Dayananda Sagar University Bangalore, India

M. Hemanth Reddy
Assistant Professor, Department of CSE, Dayananda Sagar University Bangalore, India

K. Hemanth Reddy
Assistant Professor, Department of CSE, Dayananda Sagar University Bangalore, India

Nithin BS
Assistant Professor, Department of CSE, Dayananda Sagar University Bangalore, India

Nikhilesh Kumar
Assistant Professor, Department of CSE, Dayananda Sagar University Bangalore, India

Abstract:

India is a country where the most crops are grown. Our ancient society was based on agriculture. Agriculture is the livelihood of the elite in India and has a strong impact on the country's economy. Irrigation can be difficult in arid regions or when rainfall is insufficient. Therefore, he wants to create and measure only the necessary product to protect the farmer. Horticulture is a subsector of agriculture that plays an important role in the economy, human nutrition, gender and employment. Agricultural products, including fruits, vegetables, flowers, spices and food products, have grown steadily and become an important part of the agricultural sector. The purpose of gardening systems is to ensure food security, while the purpose of automatic water management is to reduce the effort of human workers (gardeners) in activities. The control system is built around Arduino and programmed using the C language. GSM technology is also used to send messages about the pump to the operator's mobile phone. In this way, you can easily understand the information without wasting time and energy.

Index Terms:

Arduino, DHT11 Sensor, Soil Moisture Sensor, Relay, LCD, Pump Motor, IR Sensor, GSM, Power Supply

Kidney Condition Analysis through Iris

Sowmiya Sree B
Sri Ramakrishna Engineering College, Coimbatore, India

Swetha M
Sri Ramakrishna Engineering College, Coimbatore, India

Vengateswaran K
Sri Ramakrishna Engineering College, Coimbatore, India

Monisha P
Sri Ramakrishna Engineering College, Coimbatore, India

Abstract:

Heart disease and kidney disease are one of the major causes for dying. Certain contemporary clinic examination techniques cost a lot of money. One common alternative method for making an early discovery about the state of organs is iridology. There are numerous studies that use the computation framework in conjunction with this method. Our project propose to make a model that detects the heart anomalies through iris and predict the kidney condition with a few stages , such as capturing the target, pre-processing, histogram analysis, extraction of heart zone in ROI region and classification using thresholding calculation. Overall, our work adds the growing of research on ML in the medical field demonstrating the feasibility and potential benefits of using iridology methods in machine learning to detect abnormalities of the heart and kidney. We are aiming for the better accuracy results through machine learning algorithms compared to other research projects.

Index Terms:

ROI of Heart Zone, Iridology, Thresholding

 ISBN: 978-93-92105-69-2

Fire Fighting Robot

Fathima Thasneem M
Robotics and Automation, Adi Shankara Institute of Engineering and Technology, Kalady, India

Abstract:

Fire outbreaks pose significant threats to life and property, necessitating rapid and efficient response mechanisms. This paper proposes a novel Fire Fighting Robot (FFR) equipped with advanced functionalities for fire detection, extinguishing, and alerting, aimed at enhancing firefighting capabilities in diverse environments. The FFR integrates a Raspberry Pi microcontroller, motor driver, sensors, and actuators to achieve its multifaceted objectives.

The core functionality of the FFR lies in its fire detection capability, which employs sophisticated sensors such as infrared and temperature sensors for early detection of fire occurrences. Upon detecting a fire, the robot swiftly activates its extinguishing mechanism, comprising water or foam dispensers controlled by actuators. This automated response mechanism enables rapid containment of fire outbreaks, minimizing potential damage and risk to human life.

In addition to its proactive firefighting capabilities, the FFR serves as an early warning system by detecting the presence of fire and alerting firefighting personnel. Upon detecting a fire, the robot triggers alarms and transmits distress signals to designated authorities, facilitating prompt intervention and coordination of firefighting efforts.

The integration of Raspberry Pi as the central control unit empowers the FFR with scalability and flexibility for future enhancements and customization. Moreover, the utilization of motor drivers ensures precise control over the robot's movements and operations, enhancing its overall performance and reliability.

In conclusion, the proposed FFR represents a significant advancement in firefighting technology, offering a comprehensive solution for fire detection, extinguishing, and alerting. By leveraging advanced robotics and sensor technologies, the FFR demonstrates potential for mitigating the devastating effects of fire outbreaks and safeguarding lives and property in various settings.

Index Terms:

Fire Fighting Robot, Raspberry Pi

Bio-Based Dielectric Substrate for Implanted Radio Frequency Antennas for Precision Agriculture

Ambika Arunachalam
Assistant Professor, ECE, B S Abdur Rahman Crescent Institute of Science and Tchnology, Peerakankaranai, India

Abstract:

This article focuses on the development and testing of a bio-based monopole radio frequency (RF) sensor/antenna module for precision agriculture applications. The module is designed using a bio-based dielectric substrate derived from renewable resources, specifically polylactic acid (PLA) with a dielectric constant of 2.6 to 3.6. The module is tested under various conditions, including dry soil, underwater, and free space, and under different temperature ranges. The study also explores the use of PLA in composite materials to manipulate an increase in the materials' dielectric constant and measured in the Ultra wide band 2 to 9 GHz frequency range The results demonstrate the potential of bio-based substrates in the development of implantable antennas for precision agriculture, offering a more sustainable and eco-friendly. Monopole antenna is tested with soil and water it is analyzed under wet soil, under water and free space and it is also tested under various temperature. Electronic tests with other materials in composite should also be conducted in order to manipulate an increase in the materials dielectric constant An advanced chemical analysis should also be conducted in order to identify a more accurate understanding of the substrates molecular make up. Manipulation of mechanical, electronic, and chemical properties is important for the material to be implemented in RF sensor designs for agricultural or medical applications.

Index Terms:

Bio-Based Dielectric Substrate, Radio Frequency Antennas, Agriculture

 ISBN: 978-93-92105-69-2

Deepfake Detection through Photoplethysmography: A Survey

Lipi Kansal
Department of Computer Science and Engineering, PES University, Bengaluru, India

Meghana U R
Department of Computer Science and Engineering, PES University, Bengaluru, India

Kunal E
Department of Computer Science and Engineering, PES University, Bengaluru, India

Kuval Garg
Department of Computer Science and Engineering, PES University, Bengaluru, India

Charu Kathuria
Department of Computer Science and Engineering, PES University, Bengaluru, India

Abstract:

Deepfake videos pose a significant threat to society, fueling concerns over misinformation and manipulation. In response, researchers are exploring innovative approaches for detection, including the use of photoplethysmography (PPG) to capture physiological cues indicative of deepfake manipulation. This paper provides a comprehensive review of PPG-based detection methods, analysing their effectiveness, challenges, and future directions. By examining various approaches and discussing real-world applications, this paper contributes to the ongoing effort to combat the proliferation of deep fake videos and safeguard the integrity of visual content in the digital age.

Index Terms:

Deepfake Detection, Photoplethysmography, Deepfake videos

Inflammable Gas Detection System with Mobile Notification Interfacing

Avani Nachiket Agashe
Dept. of Information Technology Engineering, Vishwakarma Institute of Technology, Pune, India

Baviskar Abhilash Vinod
Dept. of Information Technology Engineering, Vishwakarma Institute of Technology, Pune, India

Prof. Neha Rajas
Assistant Professor, Dept. of Information Technology Engineering, Vishwakarma Institute of Technology, Pune, India

Baviskar Niraj Pramod
Dept. of Information Technology Engineering, Vishwakarma Institute of Technology, Pune, India

Bhalerao Parth Mangesh
Dept. of Information Technology Engineering, Vishwakarma Institute of Technology, Pune, India

Susmit Amol Bahadkar
Dept. of Information Technology Engineering, Vishwakarma Institute of Technology, Pune, India

Abstract:

This research presents a novel solution for the detection of inflammable gases using an Internet of Things (IoT) approach. The system integrates a NodeMCU microcontroller and an MQ2 gas sensor for precise gas detection in various environments. The NodeMCU collects and transmits gas concentration data to an online platform, ThingSpeak, allowing for continuous monitoring and visualization. In the event of a gas leak, a custom applet on IFTTT (If This Then That) is triggered, instantly notifying users via mobile devices. The proposed system offers a cost-effective, scalable, and efficient solution for enhancing safety and security in environments where inflammable gases pose potential risks. Preliminary results demonstrate the system's ability to provide timely notifications, contributing to proactive safety measures and enabling rapid responses to gas- related emergencies.

Index Terms:

NodeMCU, MQ2 sensor, IFTTT, IOT

 ISBN: 978-93-92105-69-2

Raspberry Pi Based An Assistive Vision System for Visually Challenged People using Artificial Intelligence Techniques

Kausalya. R
SRM Institute of Science and Technology, Chennai, India

Senguttuvan. S
SRM Institute of Science and Technology, Chennai, India

Suganthi Brindha. G
SRM Institute of Science and Technology, Chennai, India

Abstract:

One billion people globally suffer from preventable or untreated visual impairments. This includes various conditions such as untreated cataracts, glaucoma, corneal opacities, diabetic retinopathy, trachoma, distance vision impairment, and untreated presbyopia. Distance vision issues are more prevalent in low- and middle-income regions, especially in sub-Saharan Africa. With population growth and aging demographics, the incidence of visual impairments is expected to rise. A project aims to aid the visually impaired by using deep learning, specifically efficientnet B3 algorithms, to caption images. This technology helps individuals understand object detection, positioning, and distance in images. Advanced techniques involving efficientnet B3 algorithms and tokenization enable machines to learn various scenes and generate captions accordingly. Moreover, the project computes the distance between the camera and the primary objects within the images.

Index Terms:

Raspberry Pi, Assistive Vision System, Visually Challenged People, Artificial Intelligence

Detection of Malicious Websites using Machine Learning

S Ashok Kumar
Assistant Professor, Karunya Institute of Technology and Sciences, Coimbatore, India

Dr. D Brindha
Karunya Institute of Technology and Sciences, Coimbatore, India

Abstract:

Finding dangerous websites has grown more important as online risks have multiplied in order to protect users' security and privacy. This research uses machine learning techniques to provide a new method for spotting dangerous websites. In order to build a strong classifier that can differentiate between websites that are harmful and those that are benign, the suggested approach makes use of a wide range of variables that are taken from user behavior, network traffic, and website content. Analyzing a variety of parameters, including domain age, IP repute, URL structure, HTML content, SSL certificate information, and user interaction patterns, is part of the feature extraction process. These characteristics offer insightful information about the behavior and characteristics of websites, which helps the classifier distinguish between dangerous and legitimate entities.

Index Terms:

Malicious Websites, Machine Learning, IP repute, URL structure, HTML content, SSL certificate

 ISBN: 978-93-92105-69-2

Survey on Modern AUV Technologies

Rishikha S
Student, Artificial Intelligence & Data Science, Sri Sairam Institute of Technology, Chennai, India

Nehaa R
Student, Artificial Intelligence & Data Science, Sri Sairam Institute of Technology, Chennai, India

Kannan A
Student, Artificial Intelligence & Data Science, Sri Sairam Institute of Technology, Chennai, India

Anantha Padmanabhan S
Student, Artificial Intelligence & Data Science, Sri Sairam Institute of Technology, Chennai, India

Abstract:

The incorporation of Autonomous Underwater Vehicles (AUVs) in underwater mining has attracted considerable interest due to their potential to revolutionize exploration and extraction operations in deep-sea environments. This survey article investigates the integration of Machine Learning (ML) and Deep Learning (DL) techniques within AUV systems. Initially, we explore the essential role played by AUVs in underwater mining activities, emphasizing their ability for autonomous navigation, data collection, and environmental monitoring. Subsequently, we scrutinize the pivotal function fulfilled by ML and DL methodologies in enhancing the capabilities of AUVs encompassing efficient path planning and obstacle avoidance as well as real-time decision-making within complex underwater scenarios. The survey entails an exhaustive analysis of numerous ML and DL algorithms customized for AUV applications such as Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs). Moreover, this paper explains the underscoring the transformative potential that arises from integrating advanced computational methodologies with AUV technologies towards optimizing underwater mining processes.

Index Terms:

Autonomous Underwater Vehicles (AUVs), Machine Learning (ML), Deep Learning (DL), Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), Reinforcement Learning (RL), Automatic Target Recognition (ATR)

Factors Affecting the Inception and Growth of Slums: Case of Raipur

Dr. Vandana Agrawal
Assistant Professor, Department of Architecture, National Institute of Technology, Raipur, India

Abstract:

It's indeed a pressing issue that slums are proliferating in various parts of the world, particularly in developing countries like India. Slums not only reflect poverty but also encompass a range of socio-economic challenges such as inadequate housing, lack of basic services, and limited access to education and healthcare. The migration from rural areas to urban centers, often driven by the promise of better opportunities and facilities, is a significant factor contributing to the growth of slums. Raipur's transformation into the capital of Chhattisgarh likely accelerated this migration process, leading to the rapid formation of slum communities. Urban areas often offer more opportunities for employment, education, and healthcare compared to rural areas, leading to a continuous influx of people from rural regions. The inability of urban infrastructure to keep pace with the rapid influx of migrants results in a shortage of affordable housing, forcing many newcomers to settle in informal settlements or slums. Economic inequalities within society contribute to the formation of slums, as marginalized communities often lack access to decent housing and basic services. Poor urban planning and governance can exacerbate the problem of slums by failing to address the housing needs of growing urban populations. In many cases, slum dwellers occupy land illegally or without proper ownership rights, making it difficult for authorities to provide essential services or upgrade infrastructure in these areas. The gravity model can be a useful framework for understanding the factors that attract people to slum areas. This model typically considers factors such as proximity to employment opportunities, availability of basic services, transportation accessibility, and affordability of housing.

Index Terms:

Migration, Infrastructure Facilities, Slums, Inception of Slums, Factors, Slum Growth

 ISBN: 978-93-92105-69-2

Multilingual Psychiatric Chatbot using Artificial Intelligence

Ram Darshan C N
Department of Computer Science and Engineering, Sri Ramakrishna Engineering College, Coimbatore, India

Ravi Chidhroop S
Department of Computer Science and Engineering, Sri Ramakrishna Engineering College Coimbatore, India

Rithani S R
Department of Computer Science and Engineering, Sri Ramakrishna Engineering College Coimbatore, India

Dr. P. Perumal
Professor, Department of Computer Science and Engineering, Sri Ramakrishna Engineering College, Coimbatore, India

Abstract:

Chatbot technology is becoming increasingly popular as a tool for accessible psychological support to people in need. In this paper, we introduce NeuroTrack, a cutting-edge chatbot service that provides on-demand emotional and psychological support by using AI-driven natural language processing (NLP) in combination with advanced voice recognition (VNR) and synthesis (SYS). NeuroTrack allows users to interact with the service using both text and voice enabled communication channels, making it easy to use across multiple devices and platforms. NeuroTrack understands users' emotional and psychological questions, empathetically responds to them, and provides personalized and empathetic real-time responses. NeuroTrack's design process emphasizes inclusiveness and relevance, providing a robust framework to address a wide range of mental health issues. Our extensive usability testing, user satisfaction surveys, and other research confirm the effectiveness and usability of NeuroTrack as a valuable tool in the mental health support space. This paper is part of a growing field of conversational chatbot interventions in healthcare.

Index Terms:

Chatbot, psychological support, NeuroTrack, AI-driven, natural language processing, NLP, voice recognition, VNR, voice synthesis, SYS, emotional intelligence, mental health, usability testing, user satisfaction, healthcare intervention

Correlation Analysis of Agri-Food Emissions: Unveiling Trends and Relationships

M. Baskar
Department of Computing Technologies, School of Computing, College of Engineering and Technology, SRM Institute of Science and Technology, Kattankulathur, India

Ananya Rana
Department of Computing Technologies, School of Computing, College of Engineering and Technology, SRM Institute of Science and Technology, Kattankulathur, India

Anudatt Sunith
Department of Computing Technologies, School of Computing, College of Engineering and Technology, SRM Institute of Science and Technology, Kattankulathur, India

Abstract:

This project presents a comprehensive analysis of carbon emissions within the agri-food sector, shedding light on its substantial yet often underestimated impact on global greenhouse gas emissions. Leveraging a robust dataset from the Food and Agriculture Organization (FAO) and the Intergovernmental Panel on Climate Change (IPCC), the study delves into intricate relationships and trends that define the environmental footprint of agricultural practices. Through meticulous statistical analyses and advanced machine learning techniques, we identify, quantify, and project key factors driving emissions, offering valuable insights for future trends. The primary objective is to furnish a holistic understanding that can guide policymakers, environmentalists, and agricultural stakeholders toward sustainable practices. By informing the formulation of eco-friendly policies, our research contributes to the global effort to mitigate climate change. This proactive approach empowers decision-makers with knowledge to make informed choices, prioritizing environmental sustainability in the agri-food sector. As the project unfolds, it aspires to be a cornerstone for transformative change, fostering a positive impact on a global scale. Ultimately, this research serves as a vital tool for those striving to address the intricate challenges of carbon emissions in agriculture and advance towards a more sustainable and resilient future.

Index Terms:

Carbon Emissions, Agri-Food Sector, Greenhouse Gas Emissions, Food and Agriculture Organization (FAO), Intergovernmental Panel on Climate Change (IPCC), Environmental Footprint, Agricultural Practices, Statistical Analyses, Machine Learning Techniques, Sustainable Practices, Policymakers, Environmental Sustainability, Eco-Friendly Policies, Climate Change Mitigation, Transformative Change, Global Impact, Sustainable Future

 ISBN: 978-93-92105-69-2

Deep Fake in Picture using Convolutional Neural Network

Tanu Singh
School of Computer Science and Engineering, Galgotias University, Greater Noida, India

Pallavi Kumari
School of Computer Science and Engineering, Galgotias University, Greater Noida, India

Dr. Anupam Kumar Sharma
School of Computer Science and Engineering, Galgotias University, Greater Noida, India

Abstract:

Deepfake technology creates fictitious photos and movies using advances in machine learning and artificial intelligence. These works of art, which are frequently identical to reality, proliferated quickly on the internet and social media, fueling disinformation and societal unrest. By using traditional neural networks to distinguish false content from real imagery, this research attempts to investigate techniques for identifying and lessening the impact of deepfakes. Deepfakes have far-reaching effects beyond just being entertaining, since they have the ability to spread false information, exacerbate political discontent, and incite social upheaval. The smooth incorporation of fake information into regular conversation erodes confidence in visual media and makes it harder to recognize genuineness in a world going more and more digital. Recent research highlights the widespread harm caused by deepfakes, which affect a variety of fields from national security to personal privacy. Because of their exceptional quality and broad distribution, they have the ability to cause great harm and are therefore a powerful weapon in the hands of those who wish to create conflict and influence public opinion. In an effort to counteract this increasingly dangerous threat, this study investigates techniques for identifying and reducing the impact of deepfakes. Through the use of both real and fake imagery in training datasets for conventional neural networks, our goal is to create models that can identify the minute indicators that indicate whether or not deepfake content is real. We hope to strengthen defenses against the sneaky dissemination of false information and protect the integrity of digital media through such initiatives.

Index Terms:

Deep Fake, Convolutional Neural Network, Deepfake technology

Fake Instagram Profile Detection using Feedforward Neural Network

Dr. Kalaivani J
Department of Computing Technologies, SRM Institute of Science and Technology, Kattankulathur, India

Sayan Kumar Bag
Department of Computing Technologies, SRM Institute of Science and Technology, Kattankulathur, India

Shivansh Singh
Department of Computing Technologies, SRM Institute of Science and Technology, Kattankulathur, India

Abstract:

The project aimed to develop a robust fake account detection system for social media platforms, particularly Instagram, utilising deep learning techniques. Leveraging a dataset consisting of various features such as profile picture presence, username characteristics, and other relevant attributes, the model was trained to discern between genuine and fake accounts. The dataset underwent thorough exploratory data analysis, including visualisations to gain insights into feature distributions and correlations. The preprocessing phase involved standardisation of input data and one-hot encoding of the target variable. A deep neural network architecture was designed and trained using TensorFlow and Keras, encompassing multiple layers with dropout regularisation to enhance generalisation. The model demonstrated commendable performance, achieving an accuracy of 88% on a test dataset, as evidenced by the detailed classification report. The training progression was visually assessed through loss and accuracy plots, providing a detailed understanding of the model's learning dynamics. The resulting model showcased promising capabilities in identifying fake profiles, with precision, recall, and F1-score metrics supporting its efficacy. The abstract encapsulates the project's scope, methodology, and outcomes, highlighting the significance of employing deep learning in combating the proliferation of fake accounts on social media platforms.

Index Terms:

Fake Account Detection, Social Media Platforms, Instagram, Deep Learning Techniques, Exploratory Data Analysis, Neural Network Architecture, Model Performance

 ISBN: 978-93-92105-69-2

Sentiment Analyzed Approach to Movie Review

Mohit Bhati
Scholar, School of Computing Science & Engineering, Galgotias University, Greater Noida, India

Ashwin Dawer
Scholar, School of Computing Science & Engineering, Galgotias University, Greater Noida, India

Abstract:

Sentiment analysis has a crucial role in Natural Language Processing (NLP) paradigm by elucidating the context of a sentence or paragraph in a suitable format. It involves the examination of the meaning conveyed by the language used, emphasizing the significance of the subject through the intricate connections between linguistic categories. This article delves into semantic interpretation within the realm of NLP, revealing that the highest accuracy is attained in scrutinized papers employing the Sentiment Analysis approach, accompanied by minimal prediction errors.

Notably, the findings underscore the minimal prediction errors associated with this approach, further solidifying its efficacy in the realm of semantic analysis. The meticulous examination of these papers not only sheds light on the success of the Sentiment Analysis method but also opens avenues for refining and advancing NLP methodologies.

Index Terms:

Sentiment Analysis, Natural Language Processing (NLP), Expressive Emotions, Vocabulary

Partial Replacement of Copper Slag as A Fine Aggregate

Rutika Dindod
Parul Institute of Engineering and Technology, Vadodara, Gujarat, India

Ankita Sharma
Parul Institute of Engineering and Technology, Vadodara, Gujarat, India

Abstract:

Natural resources are depleting worldwide while at the same time the generated wastes from the industry are increasing substantially. The sustainable development for construction involves the use of nonconventional and innovative materials, and recycling of waste materials in order to compensate the lack of natural resources and to find alternative ways conserving the environment. This research investigates the feasibility of substituting copper slag for fine aggregate in concrete, employing a partial replacement approach. The physical and chemical properties of copper slag were examined, revealing its suitability for concrete production. Mix designs were formulated based on M40 concrete proportions, with varying percentages of copper slag substitution. Sieve analysis and slump tests were conducted to evaluate the workability of the concrete mixes. Additionally, compressive strength and flexural strength tests were performed at different curing periods to assess the mechanical properties of the concrete. The results indicate that concrete incorporating copper slag exhibited slightly lower compressive and flexural strengths compared to normal concrete at early curing ages. However, as the curing period progressed, the strengths of the copper slag concrete approached those of normal concrete. Notably, the slump tests demonstrated acceptable workability for all concrete mixes. This research highlights the potential of using copper slag as a sustainable alternative in concrete production, contributing to resource conservation, waste reduction, and environmental sustainability in the construction industry.

Index Terms:

Copper slag, Partial Replacement, Mix Design, Sustainable Development, Mechanical Properties

 ISBN: 978-93-92105-69-2

“Smart Rail Guard”: Innovative System for Automated Train Barrier and Accident Avoidance using IOT and Image Processing

Boppana SriKhyati*
Dept. of Computer Engineering and Technology, Chaitanya Bharathi Institute of Technology, Hyderabad, India

Karakam Manisha
Dept. of Computer Engineering and Technology, Chaitanya Bharathi Institute of Technology, Hyderabad, India

Kranthi Kumar Singamaneni
Dept. of Computer Engineering and Technology, Chaitanya Bharathi Institute of Technology, Hyderabad, India

Abstract:

Ensuring the safety and efficiency of railway systems is of utmost significance in contemporary transportation networks. This paper introduces an innovative solution named “Smart Rail Guard,” which focuses on integrating automated train barriers and advanced collision avoidance techniques, and image processing to prevent train accidents and enhance railway safety. By harnessing real-time data from diverse sources, including track occupancy, train speed, and proximity detection, the Smart Rail Guard system enables the seamless automation of train barriers. These barriers serve as the primary line of defense, obstructing unauthorized access to tracks and acting as a potent deterrent against collisions. The amalgamation of automated train barriers and collision avoidance techniques within the Smart Rail Guard system not only enhances safety but also optimizes rail traffic flow. By mitigating the risk of accidents, the system minimizes delays caused by such events, thereby resulting in more dependable and efficient railway operations. In conclusion, this paper presents a comprehensive approach to railway safety by merging automated train barriers with cutting-edge collision avoidance mechanisms and image processing. The Smart Rail Guard system aspires to revolutionize the functioning of railway systems, ensuring the safety of passengers and crew members while upholding the integrity of rail transportation networks.

Index Terms:

Automation, Railway Gate, IOT, Arduino Uno, Image processing

Credit Card Fraud Detection Using Machine Learning

Prashant Kaushik
Amity Institute of Information Technology, Amity University Noida, India

Dr. Shuchi Sethi
Amity Institute of Information Technology, Amity University Noida, India

Abstract:

Credit card issuers should be able to recognize fraudulent credit card transactions to stop visitors from being charged for things they did not buy. Similar issues may be explored using data science, and both machine literacy and data science are extremely important. The objective of this design is to determine how to model data collection using credit card fraud detection and machine literacy. A component of the credit card fraud detection issue is modelling credit card transactions using data from the bones that resulted in fraud. Determining whether a new sale is fraudulent or not is another application for this model. Our optimal tens minimize the wrong fraud groups while exposing 100 percent of the fraudulent deals.

Credit card fraud detection represents a common example in the realm of data analysis. The focus lies on scrutinizing and preparing datasets, along with implementing various anomaly detection algorithms like Isolation Forest and Original Outlier Factor on PCA- transformed credit card transaction data.

Index Terms:

Operations of Machine Literacy, Data Wisdom, Original Outlier Factor, Credit Card Fraud, Insulation Timber Algorithm, Automated Fraud Discovery

 ISBN: 978-93-92105-69-2

Leveraging Machine Learning for Smart Rice Disease Diagnosis

Dr. D. Leela Rani
Professor, Department of ECE, Mohan Babu University (Sree Vidyanikethan Engineering college), Tirupathi, India

Chanda Surya Vamsi
Department of ECE, Mohan Babu University (Sree Vidyanikethan Engineering college), Tirupathi, India

Dharmavaram Sohil Basha
Department of ECE, Mohan Babu University (Sree Vidyanikethan Engineering college), Tirupathi, India

Gaddapara Srinu
Department of ECE, Mohan Babu University (Sree Vidyanikethan Engineering college), Tirupathi, India

Chandragiri Pranathi
Department of ECE, Mohan Babu University (Sree Vidyanikethan Engineering college), Tirupathi, India

Abstract:

The proposed system is specially designed to tackle the many, many challenges faced in the wide world of rice production, particularly the identification of diverse diseases affecting rice leaves. Leveraging various, cutting-edge machine learning and deep learning technologies, more specifically the renowned VGG16 architecture, the system has big goals - aiming to classify these diseases with a high degree of accuracy. The system's process kicks off by collecting a ton of image data of rice leaves affected by diseases like well-known Brown Spot, less known Crown Sheath Rot, and the infamous Downy Mildew. This array of data is then preprocessed thoroughly to enhance its quality and to toss out any pesky noise that could potentially mess with the wholesome classification process. Following this detailed preprocessing, the images are then accustomed in order take the machine learning model to train. Once model is trained, it gets evaluated using another set of images to check if it's performing up to standards. After passing the test, the model is sent off to the real world, and deployed in a legit production environment where it can showcase its skills in classifying diseases in real-time. To add a cherry on top, the system may even include a user-friendly interface, just to make everyone's lives easier. Overall, this proposed system marks a big, giant leap in the vast field of agriculture, offering a trustworthy and efficient solution for identifying diseases in rice production.

Index Terms:

Rice, Disease detection, Machine Learning,VGG16, Deep Learning

Malicious Network Traffic Detection in VANET

Praveen Sharma
Amity Institute of Information Technology Amity University, Noida, India

Shuchi Sethi
Amity Institute of Information Technology Amity University, Noida, India

Abstract:

In this study, a unique hybrid strategy that combines Multilayer Perceptron and Random Forest algorithms is presented for improving the detection of malicious network traffic in vehicular ad hoc networks (VANETs). The suggested approach focuses on identifying Constant Position (ConstPos) and Denial of Service (DoS) assaults in order to reliably separate potentially hazardous activity from legitimate vehicular communication. By means of comprehensive testing and assessment, our methodology exhibits exceptional efficacy in precisely detecting and alleviating diverse forms of assaults, thereby strengthening the adaptability of VANETs against dynamic cyber hazards and guaranteeing more secure transport infrastructures in the times ahead.

Index Terms:

VANET, ConstPos, DoS

 ISBN: 978-93-92105-69-2

Thermodynamic Study of Gas Turbine Enclosures

Vinayak Kumar Agrawal
Department of Mechanical Engineering, Galgotias University, Greater Noida, India

Kaushalendra Kumar Dubey*
Department of Mechanical Engineering, Galgotias University, Greater Noida, India

Wasim Alvi
Lead Engineer, Baker Hughes (BHGE India), Banglore, India

Abstract:

The enclosures ventilation unit plays key role in performance of gas-turbine (GT) systems. An adequate cooling and ventilation system shields the entire GT unit from excessive radiation heat from engine hot surfaces, particularly those close to the combustor and power turbine region. This includes fuel valve actuators and any other utilities inside the turbine enclosure. The primary emphasis of this work is the thermodynamic study of GT enclosures and their performance, with particular attention paid to the evaluation of important parameters like temperature distribution (T), mean velocity of flue gases (V), function of flow rate (K), and pressure variation (Δ P). The near consensus about the GT system's performance based on the abovementioned described playing parameters facilitates experimental study, modeling, and real-world implementation. In addition, the selection of materials for the GT enclosure as a crucial factor for the efficient execution with essential thermo-physical and metallurgical properties.

Index Terms:

Gas Turbine, Heat Ventilation, Flow Rate Function

Crack Detection of Beam Using Image Processing

Sneha D. Divekar
AISSMS College of Engineering, Pune, India

Dr. Shilpi S. Bhuinyan
AISSMS College of Engineering, Pune, India

Abstract:

The earliest sign of structure degrading is a crack in the surface of the concrete. This is important for maintenance because of the concrete and further exposure would seriously harm the environment. The preferred technique for crack determination is manual inspection. In the manual examination, the sketch of the crack is prepared manually, and the conditions of irregularities are noted. While manual inspection has traditionally been the preferred method, it relies heavily on the expertise of specialists and lacks quantitative analysis capabilities. So, Automatic image based crack determination is proposed as replacement. The Proposed system incorporates image processing and data acquisition methodologies for crack detection and assessment of surface degradation for crack detection and assessment of surface degradation. By comparing the proposed method with existing approaches, namely Talab's and Sattar Dorafshan Method, the accuracy and effectiveness of the proposed approach were evaluated. A dataset comprising 55 images of cracks from a 30-year-old building with a G+3 floor situated in a coastal area was utilized for validation. Images were captured using two different smartphone cameras with resolutions of 64MP and 20MP. The proposed algorithm, implemented in MATLAB R2023a. Results validate the efficiency of the proposed methodology is accurately detecting and assessing cracks, with an accuracy rate of 70% higher than that of the other two methods.

Index Terms:

Crack Detection, Image Processing

 ISBN: 978-93-92105-69-2

Development of Novel Adaptive Quantum Key Distribution to Improve Key Generation Rate Security and Reliability

Hardeer Kaur
Research Scholar, Wireless Communication, Lovely Professional University Punjab, India

Abstract:

Quantum Key Distribution (QKD) stands at the pinnacle of secure public key generation, display unparalleled protection against eavesdropping and ensuring the integrity of communication systems. However, existing QKD protocols such as BB84, B92 and MKP16 although quite secure, suffer with low key generation rates and vulnerability to basic attacks, rendering them impractical for real-world deployment. Motivated by the impending threat posed by the exponential computational power of quantum computers, this research introduces a novel adaptive QKD protocol designed to address these shortcomings and fortify data security in quantum environment. The protocol initiates key generation between two nodes, through multiple paths, thereby creating redundant keys that can be analysed for errors and concatenated to form longer keys suitable for larger data transfers. Novel adaptive QKD algorithm, leverages Software-Defined Networking (SDN), identifies the most suitable paths from an existing network based on load considerations and manages the QKD process, mitigating unexpected errors and enhancing overall robustness. Using Python scripts and the QISKIT library for quantum simulation, the performance of the novel QKD protocol was compared against BB84, B92 and MKP16 in terms of key generation rate, average error, key length, and resilience against attacks. Results indicate a significant improvement in key generation rate and a reduction in average error, even in the presence of adversaries. Scalability analysis suggests promising prospects for future implementations, particularly in banking and ATM networks, where reliability is paramount.

Index Terms:

Quantum Key Distribution (QKD), Software-Defined Networking (SDN)

Tomato Crop Pathology Assessment Using Computer Visiong

Arav Mendiratta
Department of Computing Technology, SRM Institute of Science & Technology, Chennai, India

Dr. Jagadesshan
Assitant Professor, Department of Computing Technologies, SRM Institute of Science & Technology, Chennai, India

Adarsh Vardhan Singh
Department of Computing Technology, SRM Institute of Science & Technology, Chennai, India

Abstract:

There has been a noticeable shift in agricultural disease detection methodologies advancements toward non-destructive approaches, particularly image-based approaches. These methods use computer vision algorithms to process visual data for disease indicators, providing quick and effective detection without damaging plants. However, because environmental circumstances, plant physiology, and disease manifestation vary, achieving accuracy in computer vision for this purpose continues to be a substantial issue. Moreover, we showcase a subset of examples sourced from our extensive dataset, comprising more than 1601 images capturing the diverse range of diseases and prevalent pests affecting tomato cultivation.

Index Terms:

Pathogens; Plants; Tomato; Leaf; Deep Learning

 ISBN: 978-93-92105-69-2

An Unsupervised Approach for Summarization of Law Documents

Jayant Potdar
Computer Science Engineering and Data Science, Jain University, Bengaluru, India

Abstract:

The increasing volume of legal documents poses a significant challenge for legal professionals in efficiently extracting relevant information. This project explores the application of Natural Language Processing (NLP) techniques to address this challenge by developing an automated Law Document Summarization system. The objective is to enhance the accessibility and efficiency of legal information retrieval, enabling legal practitioners to quickly comprehend complex legal texts. The project employs state-of-the-art NLP models and algorithms to analyze and extract key insights from legal documents. Leveraging techniques such as text summarization, entity recognition, and sentiment analysis, the system aims to generate concise and coherent summaries while preserving the critical nuances of legal language. The model is trained on a diverse dataset of legal documents to ensure adaptability and accuracy across various legal domains. Additionally, The model will be using MMR technique to make the summary more diverse and have more relevance. MMR aims to maximize the relevance of the selected sentences to the main topic or theme of the document. Another critical aspect of MMR is its focus on diversity. MMR aims to select sentences that are not only relevant but also diverse from each other. The implications of this research extend beyond legal professionals, benefiting individuals seeking legal information without specialized legal knowledge. The proposed Law Document Summarization system holds promise in streamlining legal research, improving decision-making processes, and ultimately contributing to the evolution of a more accessible and efficient legal information ecosystem.

Index Terms:

Natural Language Processing (NLP), Law Document Summarization

MobileNetV2 Model for ASD Prediction from Behavioral Data Videos

Pratham Agarwal
Jain (Deemed-to-be University), Bengaluru, India

Arjun R Manvar
Jain (Deemed-to-be University), Bengaluru, India

Bhavna Ray
Jain (Deemed-to-be University), Bengaluru, India

Nyasha Singh
Jain (Deemed-to-be University), Bengaluru, India

Abstract:

This paper proposes integrating MobileNetV2 with Long Short-Term Memory (LSTM) layers for video classification in autism detection. It emphasizes the model's efficiency in capturing temporal information crucial for accurate video analysis. Leveraging MobileNetV2's effectiveness in resource-constrained settings through depthwise separable convolutions and inverted residual blocks is highlighted. The study provides a detailed code snippet for essential processes such as frame extraction, model creation, training, and evaluation, employing performance metrics like accuracy, precision, recall, and F1 score. Results demonstrate MobileNetV2's effectiveness in classifying videos, particularly in autism detection. While alternative models like Gaussian Naive Bayes, Logistic Regression, XGBoost, and Support Vector Machines are tested, MobileNetV2 and LSTM remain central due to their efficiency. The study aims to streamline autism detection through machine learning for timely interventions and positive outcomes. By contributing innovative models and approaches in video processing, it enriches the computer vision research landscape. Achieving 91 percent accuracy, the study highlights MobileNetV2's efficacy and broad applicability in various contexts. In conclusion, MobileNetV2 with LSTM layers shows promise in efficiently classifying videos for autism detection, offering avenues for future research and advancements in computer vision.

Index Terms:

ASD Prediction, Behavioral Data Videos, MobileNetV2, Long Short-Term Memory (LSTM)

 ISBN: 978-93-92105-69-2

Incorporating Indian Attire and Motion Data into 3D Avatars: A Comprehensive Survey and Hybrid Proposal

Arushi Pandey
Dept. of Computer Science, PES University, Bengaluru, India

Anushka Pandey
Dept. of Computer Science, PES University, Bengaluru, India

Athira Prajod
Dept. of Computer Science, PES University, Bengaluru, India

Anushka Jalori
Dept. of Computer Science, PES University, Bengaluru, India

Preet Kanwal
Dept. of Computer Science, PES University, Bengaluru, India

Abstract:

The Augmented Reality and Virtual Reality industry has surged significantly in recent years. Despite this, current work in the 3D modeling and animation domain solely focuses on either generation of avatars, or replicating the motion on non-refined parameterised models which lack detail and personalisation. Furthermore, the personalisation of 3D avatars is limited to Western clothing and incorporation of Indian clothing remains vastly unexplored.

This paper provides a comprehensive review of personalized avatar creation techniques and motion tracking mechanisms, and explores the applications, technologies, and tools used for avatar development, comparing and analyzing various methods from different papers in the field. Additionally, a hybrid approach is proposed to generate high fidelity avatars wearing traditional Indian clothing. The paper concludes by summarizing key findings and synthesizing insights from a variety of scholarly works.

Index Terms:

3D avatar, Animation, Augmented and Virtual Reality, Model personalisation

GnBERT: Graph Neural Networks over BERT for Knowledge Graph Representation Learning

Hutesh Vidhate
COEP Technological University, Pune, India

Anish Khobragade
COEP Technological University, Pune, India

Abstract:

Knowledge graphs play a crucial role in organizing and representing structured information in various domains. However, effectively capturing the rich semantics and complex relationships within knowledge graphs remains a challenge. In this paper, we propose GnBERT, a novel framework that combines the power of Graph Neural Networks (GNNs) with BERT (Bidirectional Encoder Representations from Transformers) for knowledge graph representation learning. GnBERT leverages the hierarchical structure of BERT's pre-trained language model and the relational semantics captured by GNNs to enhance the representation of entities and relations in knowledge graphs. Our experimental results on benchmark datasets demonstrate that GnBERT achieves state-of-the-art performance in knowledge graph completion, entity linking, and relation extraction tasks, outperforming existing approaches by a significant margin.

Index Terms:

GnBERT, Graph Neural Networks (GNNs), BERT (Bidirectional Encoder Representations from Transformers)

 ISBN: 978-93-92105-69-2

Network-Enabled ID Management System

B.V.N.R Siva Kumar
Dept of ECE, Laki Reddy Bali Reddy College of Engineering, Mylavaram, India &
Jawaharlal Nehru Technological University Kakinada, Kakinada, India

Kethepalli. Nandhini
Dept of ECE, Laki Reddy Bali Reddy College of Engineering, Mylavaram, India &
Jawaharlal Nehru Technological University Kakinada, Kakinada, India

Mangalampati.Kiranmai
Dept of ECE, Laki Reddy Bali Reddy College of Engineering, Mylavaram, India &
Jawaharlal Nehru Technological University Kakinada, Kakinada, India

Challa.Jagadeesh
Dept of ECE, Laki Reddy Bali Reddy College of Engineering, Mylavaram, India &
Jawaharlal Nehru Technological University Kakinada, Kakinada, India

Abstract:

The main objective is to implement a streamlined identification system utilizing a hands-free barcode scanner to compare live images with stored database images(cloud). The process involves Raspberry Pi, a hands-free scanner, a webcam, and deep learning techniques. Here Raspberry Pi acts as a central unit where this application fully runs on Raspberry Pi. For face recognition, the project employs a Convolutional Neural Network (CNN) enhancing the accuracy of matching live images with stored database images. The system, when presented with an ID card, scans the barcode and compares the live image with the corresponding database image. If a match is found, it outputs a "matched" status. If in case of a mismatch image, the system displays the stored database image of the person on the screen. Additionally, a notification system is integrated to send the live image to the respective department's email address associated with the ID card. The sender's mail address is maintained within the system, and the number of recipient emails can be configured based on the number of branches. This ensures that any mismatch is promptly communicated to the relevant department for further verification. This innovative solution seamlessly integrates cloud storage, Raspberry Pi, hands-free scanning technology, and deep learning algorithms to create a secure and efficient personnel identification system with potential applications in various organizational settings.

Index Terms:

Raspberry Pi, CNN Algorithm, Facial Recognition, Cloud Database

Establishment of Finite Element Model and Analysis of Lateral Malleolus Fracture

S. Thaanya Daiyas
Department of Biomedical, School of Bioengineering, Faculty of Engineering and Technology, SRM Institute of Science and Technology, Chennai, India

Dr. Varshini Karthik
Head of the Department, Department of Biomedical, School of Bioengineering, Faculty of Engineering and Technology, SRM Institute of Science and Technology, Chennai, India

Dr. D. AshokKumar Devaraj
Associate Professor, Department of Biomedical, School of Bioengineering, Faculty of Engineering and Technology, SRM Institute of Science and Technology, Chennai, India

Abstract:

Lateral malleolus fractures are common injuries in orthopedic practice, often resulting from traumatic incidents or sports-related accidents. Understanding the biomechanical behaviour of these fractures is essential for developing effective treatment strategies and optimizing patient outcomes A 3D finite element model of the human lateral malleolus was created using radiographic data. Computed tomography (CT) images and MIMICS software were used to create accurate material properties and replicate bone tissue behaviour. The ANSYS software was used to analyze the model. The output obtained from the analysis can be used in various engineering applications and surgery planning. The FEA results provide significant information about the mechanical responses of lateral malleolus fractures, which can be useful in understanding how these fractures may behave under different circumstances. This information can aid orthopedic surgeons in choosing the most appropriate treatment options, There are different approaches to treating a bone fracture, including conservative management, open reduction and internal fixation, or external fixation. Additionally, the findings may guide the development of advanced implant designs and rehabilitation protocols to enhance patient recovery and minimize complications. The model is particularly notable for the understanding of lateral malleolus fractures from a biomechanical perspective. A 3D-FE analysis was carried out, with a load of 1000N applied. It can serve as a valuable tool for clinicians and researchers working to improve the management and treatment of these common orthopedic injuries.

Index Terms:

Finite Element Analysis, Lateral Malleolus Fracture, Biomechanics, Ankle Joint

 ISBN: 978-93-92105-69-2

Algorithms and Approaches for Emotion Perception: A Comprehensive Study of Challenges and Findings

Anu D
Assistant Professor, Artificial Intelligence & Data Science, Nitte Meenakshi Institute of Technology, Bangalore, India

Dr. Vidhya K
Associate Professor, Information science and Engineering, East West Institute of Technology, Bangalore, India

Abstract:

Emotions are perceived through abilities, capacities by identifying the emotions, perceptions by behavioral and psychological changes subjective experience converts to mental interpretations, the emotions are also perceived from past experiences, connection with past, security looking for fact data and managing as well as remote monitoring. The knowledge based systems to achieve their goals. The emotions are one of the most natural ways of communication. Therefore, to motivate & to build a smart system we need to add the components according to the human emotion using advanced learning algorithms is very important by making use of actuators, directs its activity in order to achieve the goals based on human computer interactions. The variations in human's emotion require certain classification algorithm to differentiate them from large group of input features. In order to analyze and compute such behavior through algorithm such as reinforcement learning that allows the system to make the calculated decisions. The concept of perceptron is used to acquire, interpret and organize the information of the human emotions. To solve certain specific problems the neural network approach is considered for special processing elements. There is a specific type of pattern in neural network just the way synapses work in human brain. The way biological nervous system processes the information similar to that artificial neural network works. It's a novel structure for processing the information.

Index Terms:

Reinforcement Learning, Artificial Neural Networks, Emotions, Intelligence, Human Computer Interaction

Predictive Analytics for Early Detection of Heart disease

Himanshu Kumar Singh
SCSE, Galgotias University, Greater Noida, India

Aditya Raj
SCSE, Galgotias University Greater Noida, India

Dr. Vipin Rai
SCSE, Galgotias University, Greater Noida, India

Abstract:

Heart disease is a broad word that encompasses a large range of disorders that affect the cardiovascular system, from the coronary arteries (which pump blood to the cardiac muscle)to the heart valves, heart rhythm, and more.[1,2] There are several prevalent forms of coronary artery disease and other forms of heart disease which can result in heart attacks; heart failure, characterised by the body's insufficient blood flow from the heart; arrhythmias, or irregular heart rhythms; and heart valve conditions. Heart disease can be caused by a combination of hereditary predisposition, environmental risk factors (such as smoking, bad food, and lack of exercise), and medical problems (such high BP and diabetes). Heart disease treatment options consist of behavioural modifications, pharmaceuticals, and surgical interventions (such as angioplasty or bypass surgery), or a combination of these approaches. The purpose of this research project is to develop a predictive analytics model for early detection classification algorithms trained on data generated from patients with heart disease. The project involves using six different algorithms to classify whether an individual has heart disease or not. The study also compares the efficiency of all the algorithms to determine which algorithm is the most effective. [3] Additionally, the research examines which characteristics are most useful in determining the existence or non-existence of heart disease? The project title is "Predictive Analytics for Early Recognition of Heart Disease.

Index Terms:

Machine Learning Algorithm, Machine Learning, Heart Disease, Data Analytics

 ISBN: 978-93-92105-69-2

Post-Quantum Secure Digital Evidence Management: A Novel Approach with IPFS, AES, and Kyber Integration

G Madhu Purnima*
Dept. of Computer Engineering and Technology, Chaitanya Bharathi Institute of Technology, Hyderabad, India

R Rishi Tej
Dept. of Computer Engineering and Technology, Chaitanya Bharathi Institute of Technology, Hyderabad, India

G Mamatha
Dept. of Computer Engineering and Technology, Chaitanya Bharathi Institute of Technology, Hyderabad, India

Abstract:

Preserving the integrity and confidentiality of digital evidence is paramount in legal proceedings, encompassing criminal investigations and civil disputes. Digital evidence, which includes emails, documents, social media posts, and phone records, offers invaluable insights into past events and potential misconduct. Additionally, storing digital evidence allows for future reference and analysis, aiding investigations that may span extended periods or require revisiting past details in light of new information. However, existing methods for storing and transmitting digital evidence often pose challenges in balancing confidentiality and data integrity. Centralized storage creates single points of vulnerability and potential tampering, while some decentralized solutions may lack robust encryption safeguards. This paper proposes a novel system for comprehensive digital evidence protection that merges the strengths of the InterPlanetary File System (IPFS) and the Advanced Encryption Standard (AES) algorithm along with Kyber (KEM) for secure key distribution and Keccak for password hashing. IPFS, a decentralized storage network, safeguards data immutability by dis- tributing evidence across a peer-to-peer network. AES, a highly secure encryption algorithm, ensures confidentiality by encrypting files before uploading them to the IPFS network. This combined approach offers a more secure and reliable solution for digital evidence management, holding significant potential for law enforcement, forensics, and other fields where the integrity and confidentiality of digital evidence are paramount.

Index Terms:

Digital evidence, Confidentiality, IPFS, AES, Decentralized storage, Encryptio

From Pixels to Patterns: A Comprehensive Review of Image Processing and Identification

Karan Soni
Research Scholar, Dept. of CSE, Sardar Beant Singh State University, Gurdaspur, India

Dr. Rakesh Chandra Gangwar
Professor, Dept. of CSE, Sardar Beant Singh State University, Gurdaspur, India

Abstract:

Image processing, a captivating field of study, involves enhancing visual data for human comprehension and readying it for machine perception, transmission, and visualization. This pivotal endeavor aims to bridge the gap between human interpretation and technological analysis, thereby advancing our understanding of visual information. The primary objective of image processing is to enhance the quality and extract valuable insights from visual data. Picture processing employs various techniques. These include converting images to gray-scale, segmenting them, detecting edges, extracting features, and classifying them. In this study, diverse image processing approaches and their respective procedures are examined. Many image processing operations, such as pattern recognition and image analysis, typically commence with image segmentation. This process involves converting the image into binary form and then partitioning it into distinct sections, employing techniques such as K-means clustering & Otsu's method. Feature extraction encompasses leveraging the texture, shape, and color attributes of the visual image. Enhanced images, characterized by reduced noise and heightened clarity, are achieved through the collaborative utilization of an edge detector and a morphological operator. Furthermore, this paper explores supervised image categorization algorithms, including Support Vector Machines and Artificial Neural Networks. An Artificial Neural Network categorizes the image into its respective class, while a Support Vector Machine consolidates all the categorized results. In conclusion, this article offers a comprehensive overview of image processing & identification methodologies, aiding in both human comprehension and machine perception.

Index Terms:

Extraction, Segmentation, Otsu's method, K- means, Edge Detection, ANN, SVM, Active Shape model(ASM), GLCM, SIFT, Genetic Algorithm, BIM, RGB Colour, BIM, Vein Algorithm

 ISBN: 978-93-92105-69-2

Comparison of Different CNN Models in Classification of Leukemia

A Leeladhar
Electronics and Communication Engineering, Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, India

K Jahnavi
Electronics and Communication Engineering Gokaraju Rangaraju Institute of Engineering and Technology Hyderabad, India

E Shravan Kumar Goud
Electronics and Communication Engineering, Gokaraju Rangaraju Institute of Engineering and Technology Hyderabad, India

M Suneetha
Electronics and Communication Engineering, Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, India

Abstract:

Accurate classification of leukemia from blood smear images is crucial in clinical practice. In this study, we compare two deep learning models, VGG-16 and EfficientNet-B3, for leukemia classification. Leukemia, characterized by ab-normal white blood cell proliferation, poses diagnostic challenges requiring advanced computational approaches. Deep learning offers promising solutions, potentially enhancing accuracy and efficiency. We evaluate VGG-16 and EfficientNet-B3 on publicly available datasets. While VGG-16 features a deep and uniform structure, EfficientNet-B3 is optimized for computational efficiency. EfficientNet-B3 consistently outperforms VGG-16, achieving accuracies exceeding 90%, while VGG-16 typically achieves 70-80% accuracies. This performance difference is attributed to EfficientNet-B3's innovative architectural features, including depthwise separable convolutions and efficient scaling methods, enabling it to capture intricate features within blood smear images more effectively. Our findings have implications for improving leukemia diagnosis, providing clinicians with a more accurate and efficient disease identification tool. By leveraging advanced deep learning architectures like EfficientNet-B3, health- care providers can enhance diagnostic accuracy and ultimately improve patient outcomes. This research contributes to advancing automated leukemia diagnosis and underscores the potential of deep learning in revolutionizing medical image analysis for enhanced healthcare delivery.

Index Terms:

Deep Learning, Data Augmentation, Efficient Net Architecture, Leukemia Detection

Academic Document Verification using Block Chain: A Review

Shradhha Kore
Walchand College of Engineering, Sangli, India

Dr. A. P. Patil
Walchand College of Engineering, Sangli, India

Mandar Kamble
Walchand College of Engineering, Sangli, India

Prasanna Jamdar
Walchand College of Engineering, Sangli, India

Abstract:

Our work is a novel, user friendly solution that verifies academic documents by the third party using block chain technology. By using data protection technique for credential verification, the third party access becomes easier and every new pass out student not require carrying all digital identities. The work addresses the growing issue of fake academic qualifications in competitive job markets. Our focus is on making the verification process straightforward and effective, thereby contributing to the reduction of fake credentials. This paper presents discussion of different block chain techniques reviewed in terms of technologies used, data storages, data encryption, access control, privacy and scalability. Also an innovative approach which provides third party access for academic document verification is discussed here. This work is implemented using web services Pinata which simplifies process of storing and sharing files on Interplanetary file system [IPFS]. Pinata's accessibility ensures that decentralized applications relying on long term reliability can have easy access to their media and files on IPFS. Further Hardhat platform streamlines the development and deployment of smart contracts. By integrating tools like Meta mask for testing provides promising solution for data security by leveraging tamper proof nature of block chain. This challenging work ensures the validity of student credentials and enhances trust building of new pass out student in the global sector.

Index Terms:

Smart Contracts, Credential Verification, Digital Identity, Verification Process

 ISBN: 978-93-92105-69-2

Streamlined E-Ticketing and Payment Using Wi-Fi for Public Bus Systems

Thumma Sudheer Bhargava Reddy
Department of ECE, Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, India

Butti Abhinay Kumar
Department of ECE, Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, India

Yenkammagari Mahendar Reddy
Department of ECE, Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, India

Arvind Vishnubhatla
Assiociate Professor, Department of ECE, Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, India

Abstract:

Bus ticket sales have always been made in bus terminals over the counter, but with the fast growth of e- commerce, this has changed. the goal of this project is to research and create an online bus reservation system. web portal that will allow staff and customers to purchase tickets online, cancel tickets, rate drivers, and more. It will also serve as an operational instrument for bus ticketing businesses, allowing them to run their businesses efficiently. This paper examines and critically evaluates the factors that led to the development of the e-ticketing systems in use today. This study endeavor also tackles these issues encountered by passengers and bus drivers, particularly about illicit bus operations, extended wait times for bus ticket purchases, hazardous surroundings, and numerous other issues. The study examines several implementation-related concerns and offers suggestions for an efficient Web interface for the Online Bus Ticketing System. To address the client's need, this project also suggests a decision support system that offers trustworthy options for the customer to choose from. To support the research goal, this project entails developing a prototype website for the Online Bus Ticketing System. This online portal will help with future advancement that will support a completely integrated system that links bus company personnel with their cowork- ers, consumers, other transportation providers, businesses, and government agencies. The development environment uses PHP, CSS, HTML, JavaScript, MySQL database, and WampServer as programming languages.

Index Terms:

Web Development, Ticket purchase, online por- tal, PHP, HTML, CSS, Java Script, My SQL Database

Fabrication and Characterization of Nanocomposite Coated Material for Hammertoe Implant Application

R.Gayathri
SRM Institute of Science and Technology, Kattankulathur, India

S.Gnanavel*
SRM Institute of Science and Technology, Kattankulathur, India

Abstract:

One of the main goals of the current biomaterials area is the fabrication of nanocomposite coatings with superior qualities, such as greater corrosion resistance, bonding strength, and bioactivity, on the metallic implant surface. Surface analysis unveiled the existence of nanocomposite coatings on stainless steel surfaces, with the deposition of apatite being verified through XRD, FTIR, SEM, and EDS analyses. The corrosion resistance of the coatings on 316 L stainless steel material was investigated in simulated body fluid through in-vitro studies. Additionally, antibacterial properties of Zirconium dioxide (ZrO2), Hydroxyapatite (HAp), and Graphene Oxide (GO) coatings were evaluated using antibacterial tests. Antibacterial testing revealed that application of the nanocomposite coating led to a reduction in the growth of both Gram-negative and Gram-positive bacteria. The greatest inhibition zone was observed for Staphylococcus aureus and Escherichia coli, respectively. These characteristics indicate that, for the first time, the HAP-ZrO2-GO nanocomposite coating can serve as a potential anti-inflammatory agent. Contact angle measurements were employed using water and dimethyl sulfoxide (DMSO) as solvents to assess properties of coated material. The coated material surfaces exhibited hydrophobic properties. Moreover, the nanocomposite-coated 316L SS material demonstrated cell viability and showed non-toxicity in cell culture and hemolysis studies. In conclusion, this research has presented an alternative technique for preparing the nanocomposite coating at a low cost, facilitating physicochemical interactions to effectively fabricate bioactivity with antibacterial and anti-inflammatory capabilities for bioimplants.

Index Terms:

Zirconium Oxide; Hydroxyapatite; Graphene Oxide; Surface coating; Antibacterial assay; Cell viability assay; Hemolysis

 ISBN: 978-93-92105-69-2

Solar Powered Water Pump with Zeta Converter and BLDC Motor

Krishna Kumar R
Department of EEE, Karpagam College of Engineering, Coimbatore, India

Dheepika R
Department of EEE, Karpagam College of Engineering, Coimbatore, India

Nishanth G
Department of EEE, Karpagam College of Engineering, Coimbatore, India

Shafeer Ahamed S
Department of EEE, Karpagam College of Engineering, Coimbatore, India

Selvakumar S
Department of EEE, Karpagam College of Engineering, Coimbatore, India

Abstract:

In nature, solar energy is a plentiful and essential renewable energy source and doesn't require continuous operating costs, even though the initial installation cost may be higher. Solar energy is captured and utilized to power motors for a variety of uses. Direct current (DC), induction, and brushless DC (BLDC) motors are the types of motors used in these applications; the latter kind offers more widely used benefits. Using a ZETA converter in a PV system is the focus of this project. To obtain maximum PV system efficiency and enable a soft start for the PV system, a water pump can act as an inverter (VSI), acting as a mediator in the DC-DC conversion process between the photovoltaic system and an energy source. A brushless DC (BLDC) motor with permanent magnet is driven by an appropriate control system. With two inductors and two capacitors, the Zeta converter functions as a DC-DC converter with a fourth-order configuration that can function in both buck and boost modes. A brushless DC motor drives a centrifugal water pump because it is compatible with the PV generator's maximum output position. The water pumping system that is recommended driven by a Zeta converter and operated by a BLDC motor, is assessed under rapid and slow changing atmospheric circumstances utilizing the power systems simulation toolboxes of the MATLAB/Simulink environment. The suggested solar water pumping system is the subject of modeling, simulation, and experimental validation in this paper. To examine the system's performance under various load and solar irradiation scenarios, simulations are run. To confirm the viability and efficacy of the suggested method, a working prototype is also created and put to real-world testing. The results show that adding the Zeta converter in solar water pumping technique to the BLDC motor significantly improved the dependability and efficiency. The system exhibits efficient power management, guaranteeing the best possible use of solar energy for the purpose of pumping water. In areas where traditional power sources are unavailable, our research advances environmentally friendly and sustainable water pumping systems. The project's conclusions offer insightful information for creating durable, extremely effective, and energy-efficient solar-powered water pumping systems.

Index Terms:

Energy Efficiency, Environmental Impact, Photovoltaic Technology, Sustainable Development

Enhanced Retinal Image Analysis for Diabetic Retinopathy Detection using EfficientNetB3

Shaik Hussainbee
PVP Siddhartha Institute of Technology, Vijayawada, India

Velamala V S S Lakshmi Narasimha
PVP Siddhartha Institute of Technology, Vijayawada, India

Vadlamani Satya Bharathi
PVP Siddhartha Institute of Technology, Vijayawada, India

Shaik Firoj
PVP Siddhartha Institute of Technology, Vijayawada, India

Dandamudi Hareesha
PVP Siddhartha Institute of Technology, Vijayawada, India

Abstract:

One of the main causes of blindness in the entire world is Diabetic Retinopathy (DR). In order to treat the condition successfully and lessen its negative effects on people's quality of life, early and accurate detection is essential. This work used retinal fundus pictures from the Indian Diabetic Retinopathy Dataset (IDRiD) to demonstrate an improved deep learning approach for automated detection of diabetic retinopathy. The advanced convolutional neural network (CNN) model EfficientNetB3 was used in the study to achieve an astounding 90% accuracy rate in diagnosing DR from these images. This exceptional result highlights how EfficientNetB3 can enhance DR diagnosis and therapy. By demonstrating the efficiency of cutting-edge deep learning models in the analysis of medical imaging data, the proposed method opens the door to improved patient outcomes and lessened societal burden related to this potentially blinding disease.

Index Terms:

Diabetic Retinopathy, IDRiD, Deep Learning, EfficientNetB3

 ISBN: 978-93-92105-69-2

The Campus Bridge: A Collaborative Learning Platform for Student Interaction, Learning and Campus Communities

Rajvardhan Patil
Student, Computer Science & Technology Department, Department of Technology, Kolhapur, Maharashtra, India

Umesh Dukkurwadkar
Student, Computer Science & Technology Department, Department of Technology, Kolhapur, Maharashtra, India

Shubham Meher
Student, Computer Science & Technology Department, Department of Technology, Kolhapur, Maharashtra, India

Nandini Karande
Student, Computer Science & Technology Department, Department of Technology, Kolhapur, Maharashtra, India

Atharv Patil
Student, Computer Science & Technology Department, Department of Technology, Kolhapur, Maharashtra, India

Dr. Rashmi Deshmukh
Head of Department, Computer Science & Technology Department, Department of Technology, Kolhapur, Maharashtra, India

Abstract:

The Campus Bridge is a user-friendly web platform that brings together students from tier 1, tier 2, and tier 3 colleges. It creates a space where students can connect, share knowledge, ideas, and experiences, regardless of their college or background. The platform offers roadmaps to help students achieve their goals, whether they are just starting or are at an advanced level. Students can follow each other, and the system recommends connections based on their interests. There is a personal chat section for private and group conversations.

A key feature is the post section, where students can share posts about events or achievements, motivating others and helping them develop their skills. The query section allows students to ask questions, and the system provides relevant answers. Additionally, there is a public chat section where students can openly seek guidance by asking questions, and other students can respond based on their own experiences, adopting a collaborative learning environment. Importantly, the platform also includes a resource section where students can access learning materials like books, roadmaps, and videos for different subjects and branches, selected to support their learning journey.

Index Terms:

Campus Bridge, Tier 1, Tier 2, Tier 3 Colleges, Knowledge Sharing, Roadmaps, Personal Chat, Post Section, Query Section, Collaborative Learning, Resource Section

A Review on Semantic Image Segmentation using Convolutional Neural Network Based VGG Architecture

Sweta Raut
Professor, Department of CSE, Jhulelal Institue of Technology, Nagpur, India

Muskan Tahiliani
Professor, Department of CSE, Jhulelal Institue of Technology, Nagpur, India

Amera Siddiqui
Professor, Department of CSE, Jhulelal Institue of Technology, Nagpur, India

Karan Ghugal
Professor, Department of CSE, Jhulelal Institue of Technology, Nagpur, India

Vivek Karnewar
Professor, Department of CSE, Jhulelal Institue of Technology, Nagpur, India

Ziyan Ali
Professor, Department of CSE, Jhulelal Institue of Technology, Nagpur, India

Abstract:

Image segmentation is a foundational task in the field of computer vision, encompassing the division of an image into separate regions or objects. This complex procedure holds a crucial role across various applications such as medical imaging, object detection, scene comprehension, and autonomous driving. Deep learning has emerged as a powerful tool used for image segmentation, providing effective tools for extracting intricate features and patterns from complex images. Among the various deep learning architectures, the VGG (Visual Geometry Group) network has emerged as a frontrunner, demonstrating remarkable performance in image segmentation tasks.

Index Terms:

Image Segmentation, VGG Network, Convolutional Neural Networks (CNNs), Deep Learning, Object Detection, Scene Understanding, Autonomous Driving, Medical Imaging

 ISBN: 978-93-92105-69-2

Vedic Multiplier Design by Razor Flip Flop with Adaptive Hold Logic

Pradeep R
Sri Shanmugha College of Engineering and Technology, Puthur, India

Shiva Reshma R
Sri Shanmugha College of Engineering and Technology, Puthur, India

Abstract:

Digital signal processors (DSPs) play a vital role in a wide range of applications in various fields. To increase the quality of the signal, the FIR filter is mostly employed in filtering applications. The processor is based on the speed of the multiplier unit involved in the operation to operate it efficiently. It is important to use a fast method of multiplication in DSPs to perform operations such as convolution, Fourier transform, etc. In this paper, a fast method based on ancient Indian Vedic mathematics is used for designing FIR filters. The proposed method consists of a Vedic multiplier with Adaptive Hold Logic (AHL) and a razor flip-flop. According to Vedic multiplication sutras, multiplication is based on the principles of Vedic multiplication. Several Vedic methods have been developed to speed up the multiplier computations. Here, the multiplication is based on the Urdhava Tiryagbhyam sutra. In this work, the synthesis is carried out using the Xilinx ISE series of integrated circuits. The performance of DSPs can be greatly improved using the Vedic multiplier and finally compared all the parameters in terms of area, delay, and power.

Index Terms:

AHL, FIR, Razor Flip Flop, Udhava Tiryagbhyam sutra, Vedic Multiplier

Biometric-Integrated Web Application for Enhanced Emergency Medical Response: Maximizing Efficiency and Patient Care

Bharatharam S B
Department of Computer Science and Engineering, KPR Institute of Engineering and Technology, Coimbatore, India

Dhayalini M
Department of Computer Science and Engineering, KPR Institute of Engineering and Technology, Coimbatore, India

Gowthamram V
Department of Computer Science and Engineering, KPR Institute of Engineering and Technology, Coimbatore, India

Suresh P
Professor, Department of Computer Science and Engineering, KPR Institute of Engineering and Technology, Coimbatore, India

Abstract:

In the ever-evolving landscape of emergency medical services, the swift and precise identification of accident victims stands as a cornerstone of effective care delivery. In response to this imperative, we introduce a comprehensive solution that seamlessly integrates biometric identification technology with a sophisticated web-based communication system. This emergency medical response system comprises two interdependent modules, each designed to address critical aspects of emergency response. The first module leverages state-of-the-art fingerprint-enabled identification, capturing and securely storing patient data to enable swift retrieval during critical incidents. Simultaneously, the second module introduces a dynamic web application tailored to streamline communication between hospital personnel and ambulance crews. This seamless web application provides synchronized access to a comprehensive database of nearby healthcare facilities, fostering proactive treatment coordination. Leveraging patient preferences and resource availability, ambulance personnel make informed decisions, catalyzing response times and elevating patient care standards. This integrated approach heralds a new era of emergency medical response, characterized by heightened efficiency, precision, and unwavering dedication to patient-centric care.

Index Terms:

Emergency Medical Response System, fingerprint enabled identification, Web application, Patient-centric care

 ISBN: 978-93-92105-69-2

ARaceWay: An Augmented Reality Remote Control Car

Jeswin Jacob K
Sahrdaya College of Engineering and Technology, Thrissur, India

Sravan P R
Sahrdaya College of Engineering and Technology, Thrissur, India

Sreelakshmi P
Sahrdaya College of Engineering and Technology, Thrissur, India

Sreerag Menon
Sahrdaya College of Engineering and Technology, Thrissur, India

Dr. Sreeraj R
Sahrdaya College of Engineering and Technology, Thrissur, India

Abstract:

The paper introduces an innovative and interactive Aug- mented Reality (AR)-controlled Remote-Controlled (RC) car that seam- lessly integrates smartphone control, live camera streaming, and AR track creation. The AR-controlled RC car is designed to provide a unique blend of physical and digital play experiences, making it appealing to a diverse audience, including tech enthusiasts, gamers, families, and ed- ucators. The product's core features include smartphone-based control, real-time video streaming from an onboard camera, and the ability to cre- ate, customize, and navigate virtual tracks superimposed on the user's physical environment using AR technology.

Index Terms:

Human-Computer Interaction (HCI), Software Development, Kit AR Core RDS Slam

Real – Time Driver Drowsiness Detection System

Anshul Singh
Galgotias University, Noida, India

Lavish Rajpali
Galgotias University, Noida, India

Abstract:

An alarming number of traffic accidents resulting from drowsy driving in recent years has led to an urgent need for advanced systems that can instantly detect and warn drivers. This article presents the design, implementation, and evaluation of driver drowsiness detection using deep learning techniques. The system uses convolutional neural networks (CNN) to analyze faces and track drowsy drivers. By constantly monitoring the driver's face and eye movements, the system can detect signs of drowsy driving and provide timely warnings to prevent an accident. Experimental results demonstrate the effectiveness and reliability of the proposed method in real situations, demonstrating its ability to improve road safety and reduce risks associated with tired drivers.

Index Terms:

Driver Drowsiness Detection, Real-Time Monitoring, Deep Learning, Convolutional Neural Networks (CNNs), Facial Expression Analysis

 ISBN: 978-93-92105-69-2

CultivConnect: A Web Application Serving as a One-Stop Solution for Farmer's Welfare

Raj Kumar Patil
Computer Science Engineering, Vardhaman College of Engineering Shamshabad, Hyderabad, India

Tavanam Vishnu Vardhan Reddy
Computer Science Engineering, Vardhaman College of Engineering, Shamshabad, Hyderabad, India

Jaina Vivek
Computer Science Engineering, Vardhaman College of Engineering, Shamshabad, Hyderabad, India

Yenishetty Ashruth
Computer Science Engineering Vardhaman College of Engineering, Shamshabad, Hyderabad, India

Abstract:

In today's agricultural climate, technology integration has become critical for farmers' empowerment and longterm growth. This study paper describes the development and implementation of a full-stack web application intended to address the diverse needs of farmers. The show has a lot of content, like federal and state agricultural programs, modern farming techniques, current agricultural news, and detailed weather forecasts. The program also estimates crop prices using machine learning algorithms and offers personalized crop recommendations based on soil characteristics to assist farmers in making decisions. Furthermore, by submitting questions and receiving timely responses from experts and other farmers, community blogs enable farmers to support one another and share knowledge. By fusing technological advancements with agricultural expertise, this web application seeks to enhance the socioeconomic well-being, sustainability, and agricultural productivity of rural communities. In addressing the planning, implementation, and potential outcomes of this all-inclusive approach, the study highlights how critical it is to address the evolving challenges that farmers face in today's fast-paced farming world.

Index Terms:

Modern Farming, Full Stack Web Application, Socioeconomic, Sustainability, Machine Learning, Knowledge

Driver Drowsiness Detection System

Shyam Sunder
Galgotias University, Noida, India

Kabir Khari
Galgotias University, Noida, India

Abstract:

An alarming number of traffic accidents resulting from drowsy driving in recent years has led to an urgent need for advanced systems that can instantly detect and warn drivers. This article presents the design, implementation, and evaluation of driver drowsiness detection using deep learning techniques. The system uses convolutional neural networks (CNN) to analyze faces and track drowsy drivers. By constantly monitoring the driver's face and eye movements, the system can detect signs of drowsy driving and provide timely warnings to prevent an accident. Experimental results demonstrate the effectiveness and reliability of the proposed method in real situations, demonstrating its ability to improve road safety and reduce risks associated with tired drivers.

Index Terms:

Driver Drowsiness Detection, Real-Time Monitoring, Deep Learning, Convolutional Neural Networks (CNNs), Facial Expression Analysis

 ISBN: 978-93-92105-69-2

Video Summarization using Grasshopper Optimization Algorithm

Shubham Dixit
Computer Science and Engineering Department, MNNIT Allahabad, Teliyarganj, India

Suhail Shabaz
Computer Science and Engineering Department, MNNIT Allahabad, Teliyarganj, India

Yash Mittal
Computer Science and Engineering Department, MNNIT Allahabad, Teliyarganj, India

Sambit Kumar Behera
Computer Science and Engineering Department, MNNIT Allahabad, Teliyarganj, India

Rishabh Doneriya
Computer Science and Engineering Department, MNNIT Allahabad, Teliyarganj, India

Ramniwas Lodhi
Computer Science and Engineering Department, MNNIT Allahabad, Teliyarganj, India

Ranvijay
Computer Science and Engineering Department, MNNIT Allahabad, Teliyarganj, India

Abstract:

This research advocates for incorporating the Grasshopper Optimization Algorithm (GOA) into the field of video summarization, with a specific emphasis on Object of Interest-based techniques. In contrast to conventional video summarization methods, GOA takes inspiration from the collective behaviors observed in grasshoppers, presenting a unique optimization approach. Object of Interest-based video summarization entails the identification and extraction of crucial segments within a video by concentrating on predefined items or regions of interest within the frames. The GOA algorithm is employed to systematically generate a video summary based on the existence of predetermined objects or regions of interest. This methodology encompasses the identification and continual tracking of relevant entities in video frames, subsequently selecting keyframes or concise video clips containing these specified objects or regions of interest. For instance, in a surveillance video, the object of interest could be an individual or a vehicle entering a restricted area. The GOA-based summarization algorithm discerns frames or clips showcasing the presence of the specified object, thereby offering a condensed summary of the video's relevant events. Through the application of GOA in Object of Interest-based video summarization, this research introduces a bio-inspired computing paradigm to enhance the efficiency and effectiveness of video analysis. The algorithm's adaptability and resilience are harnessed to navigate the intricacies of identifying and summarizing key elements within video content. This study contributes to the evolving landscape of video summarization methodologies, showcasing the potential of GOA in providing context-aware and semantically enriched video summaries.

Index Terms:

Video Summarization, Grasshopper Optimization Algorithm, Object of Interest Similarity

StudentSphere Assistant: A Chatbot for Campus Life

Parthasarathi P
Department of Artificial Intelligence and Machine Learning, BNMIT, Bangalore, India

Kareena K P
Department of Artificial Intelligence and Machine Learning, BNMIT, Bangalore, India

Rakshitha R
Department of Artificial Intelligence and Machine Learning, BNMIT, Bangalore, India

Rakesh Bhatt
Department of Artificial Intelligence and Machine Learning, BNMIT, Bangalore, India

Dr. Anitha C
Department of Artificial Intelligence and Machine Learning, BNMIT, Bangalore, India

Abstract:

In the dynamic landscape of higher education, students encounter various challenges that can impact their academic success and overall college experience. From navigating campus facilities to managing exam schedules and accessing relevant student information, the demands of college life can be overwhelming. To address these challenges and enhance student support services, we present StudentSphere Assistant is a cutting-edge chatbot designed to empower students with personalized assistance and seamless navigation of college resources. This serves as a virtual companion, offering a wide range of features tailored to meet the diverse needs of college students. Whether it's finding the optimal route to a lecture hall, securing a room for exam preparation, or accessing their personalized class timetable, students can rely on the chatbot for efficient and effective assistance. By harnessing the power of artificial intelligence and natural language processing, StudentSphere Assistant delivers personalized recommendations and timely information, ensuring that students have the resources they need to thrive in their academic pursuits. One of the key functionalities is its ability to streamline the process of room allotment for exams. From academic records to campus events and announcements, students can conveniently retrieve relevant information with a simple chat interface. By providing seamless access to student details and resources, the proposed chatbot enhances student engagement and satisfaction, fostering a supportive and conducive learning environment.

Index Terms:

Chatbot, Algorithms, Conversation, Administrator

 ISBN: 978-93-92105-69-2

Power Load Demand Prediction using Long-Short Term Memory and Actor-Critic Model

Prajeesha
Dept. of Electronics and Communication Engineering, PES University, Bangalore, India

Aakanksh Gowda
Dept. of Electronics and Communication Engineering, PES University, Bangalore, India

Krithika N
Dept. of Electronics and Communication Engineering, PES University, Bangalore, India

Kumar Shantanu Khare
Dept. of Electronics and Communication Engineering, PES University, Bangalore, India

N C Keerthana
Dept. of Electronics and Communication Engineering, PES University, Bangalore, India

Shwetha G
Dept. of Electronics and Communication Engineering, PES University, Bangalore, India

Anuradha M
Dept. of Electronics and Communication Engineering, PES University, Bangalore, India

Abstract:

The work proposes an LSTM encoder-decoder net- work and Actor-Critic reinforcement learning to predict power load demand and optimize electricity usage. The smart meters will capture effectively, the fluctuations and patterns in the power usage of consumers. This data can be used for controlling the power distribution effectively from a substation. Our model outperformed the standard LSTMs in terms of RMSE and MAE which in turn predicts the efficiency of the entire system. In the phase of outages, the developed Actor-Critic model controls the distribution of electricity among different clients depending on the priorities fixed by us, to avoid/reduce outages. The Critic evaluates the Actor's actions to enable policy improvements. By combining deep learning for forecasting and reinforcement learning for optimization, the approach improves the accuracy of the power distribution sector in the smart grid. Further research could expand the models to additional factors like renewable, electric vehicles, etc, and investigate more advanced and dynamic decision systems.

Index Terms:

LSTM, Encoder-Decoder, Actor-Critic, Prediction, RMSE