ICEMSS

Proceedings of the

2nd International Conference on Engineering, Management and Social Sciences

"Bridging disciplines, fostering innovation, and addressing global challenges through interdisciplinary research and collaboration"

19th - 20th February, 2025

Indraprastha College For Women
University of Delhi, India

Co-Organized by

SUBHARTI UNIVERSITY

Department of Sociology
Indraprastha College for Women-University of Delhi, India

ICEMSS – 25

2nd International Conference on Engineering, Management and Social Sciences

Delhi, India

19th-20th February, 2025

Organized by
ZEP Research

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Department of Sociology,

Indraprastha College For Women– University of Delhi, India

Publisher: ZEP Research

Acknowledgement

ZEP Research is hosting the 2nd ICEMSS-25 2nd International Conference on Engineering, Management and Social Sciences at Indraprastha College for Women-University of Delhi, India on 19th - 20th February, 2025. The main objective is to grant the amazing opportunity to learn about groundbreaking developments of this era, 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 scope 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 painstaking effort to travel such a long distance to attain this conference.

Priyanka Sahu

Mrs. Priyanka Sahu
Founder
ZEP Research

Editorial

Dear Readers,

It is with great pleasure that we present the proceedings of the 2nd International Conference on Engineering, Management, and Social Sciences, held on 19th-20th February 2025. This conference will serve as a dynamic platform for scholars, researchers, and professionals to engage in meaningful dialogue, share groundbreaking research, and explore innovative solutions to address the global challenges we face today.

The theme of this conference, *Bridging Disciplines, Fostering Innovation, and Addressing Global Challenges through Interdisciplinary Research and Collaboration*, reflects the growing need to connect diverse fields of knowledge to drive progress and create impactful change. Through this compilation of research papers, we aim to showcase the invaluable contributions made by participants from various disciplines, each offering unique perspectives and solutions that transcend traditional boundaries.

The book proceedings provide a comprehensive collection of research across engineering, management, and social sciences, illustrating how interdisciplinary collaboration is pivotal to finding innovative approaches to the complex challenges that affect our societies globally.

We would like to extend our deepest gratitude to all the contributors, reviewers, and participants whose efforts have made this conference possible. We also thank the organizing committee and our esteemed collaborators, including ZEP Research and Indraprastha College for Women, for their continued support in ensuring the success of the conference and the publication of this important volume.

We hope that the research presented here serves as a source of inspiration, fosters new collaborations, and contributes to furthering academic knowledge and societal progress.

Warm Regards,

Dr. J. P. Singh
Organizing Secretary
2nd ICEMSS, 2025
IPCW, University of Delhi, India

Preface

ZEP Research is hosting the 2nd ICEMSS-2025 Conference at Indraprastha College for Women-University of Delhi, India on 19th-20th February, 2025. This edition of conference is called in Delhi. Hosted onsite and online mode for the convenience of our attendees.

It is our pleasure to have Professor Dr. Rohan Singh, Dr. Abdulwahed Jalal Nori, Dr. Manoj Kumar Jha, Anamika Rana, Madhurima Ganguly and Dr. Alma Bangayan-Manera as our Session Chair and the Keynote Speakers- Asst. Prof. Pol. Lt. Col. Waiphot Kulachai, Ph.D. will be spoken on The Future of Work: How Employee Wellbeing Drives Organizational Excellence, Dr. Nitin Aggrawal will be spoken on Wellbeing and Productivity: A New Era of Management, Dr. Alfe M. Solina will be spoken on Management Shifts amidst the Challenging Landscape of Emerging Technologies, Dr. Dipa Mitra will be spoken on Empowering through Servent Leadership in a VUCA World, Dr. Kamal Gulati, Dr. Kausik Mukherjee will be spoken on Strategic Management for Organizational Development, Prof. Minaketan Behera will be spoken on Tribal Development in India: Initiatives, Challenge and Road Ahead, Prof. (Dr.) Ipseeta Nanda and Dr. Sagar Onkarrao Manjare ICEMSS Conferences aims to set a collaborative goal for finding of new dimensions in research field, 2nd ICEMSS-2025 is bound to serve as a platform that facilitates the deliberation of the challenges involved in the practical implementation of all the most advanced knowledge produced in the fields of Management, Education, Social Sciences, applied science, and various field of engineering and technology.

This conference serves as a crucial platform for researchers, practitioners, and industry leaders to exchange ideas, share insights, and forge collaborations. Through keynote presentations, technical sessions, Panel Discussion and interactive workshops, we aim to explore the latest developments, thoughts, and ethical considerations in this rapidly evolving field.

We are honoured to host distinguished experts and enthusiasts from around the globe, each contributing unique perspectives and expertise.

We extend our heartfelt gratitude to all participants, sponsors, and organizers whose dedication has made this event possible. Let us embark on this journey of discovery, innovation, and collaboration.

Welcome to the International Conference on Engineering, Management and Social Sciences.

2nd International Conference on Engineering, Management and Social Sciences

Delhi, India

19th -20th February, 2025
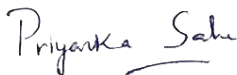
Organizer's Message

Mrs. Priyanka Sahu
Founder
ZEP Research, India

Dear All,

It is with great pleasure that we present the proceedings of the 2nd International Conference on Engineering, Management, and Social Sciences (ICEMSS-2025). This compilation of scholarly contributions represents the collective efforts of researchers, academicians, industry experts, and practitioners who are dedicated to advancing knowledge and fostering innovation in their respective fields.

The 2nd ICEMSS-2025 serves as a platform for intellectual exchange, interdisciplinary discussions, and the dissemination of pioneering research that bridges the domains of engineering, management, and social sciences. The papers included in this volume reflect a broad spectrum of cutting-edge studies, innovative methodologies, and practical applications aimed at addressing contemporary global challenges.

We extend our sincere gratitude to all the authors, reviewers, keynote speakers, and participants for their invaluable contributions. Special appreciation is due to Indraprastha College for Women and the organizing committee, technical team, and advisory board for their unwavering dedication in making this conference a success.
As we move forward, we hope that the insights and discoveries shared in this proceedings book will inspire further research, collaborations, and meaningful advancements across disciplines. We look forward to continuing this journey of academic excellence and innovation in future editions of 2nd ICEMSS-2025.

Mrs. Priyanka Sahu
Founder, ZEP Research, India

Principal's Message

Prof. Poonam Kumria
Principal
Indraprastha College for Women-University of Delhi, India

Dear All,

It is with great joy that I extend my heartfelt congratulations and best wishes for the success of the 2nd International Conference on Engineering, Management, and Social Sciences, to be held on the 19th and 20th of February 2025.

This conference marks a significant milestone in fostering interdisciplinary research and collaboration, bridging the fields of engineering, management, and social sciences. Such a gathering of minds provides an exceptional opportunity for knowledge exchange, innovation, and the development of impactful solutions to address global challenges.

I would like to thank the organizing committee and ZEP Research for their unwavering commitment and invaluable support in making this conference a reality. The partnership between Indraprastha College for Women University of Delhi and ZEP Research stands as a model of excellence for future research collaboration and academic engagement.

I am confident that this conference will serve as a catalyst for new ideas, foster meaningful dialogue, and open doors to future collaborations that will benefit both academia and society at large. I wish all participants the very best as they engage in discussions and share their ground breaking research during this two-day event.

Best Wishes,

Prof. Poonam Kumria

Principal

Indraprastha College for Women

University of Delhi

Message from the Organizing Secretary

Dr. J P Singh
Assistant Professor
Department of Sociology,
Indraprastha College For Women– University of Delhi, India

Dear Esteemed Delegates, Scholars, and Collaborators,

It is with great pleasure that we welcome you to the 2nd International Conference on Engineering, Management, and Social Sciences, to be held on 19th-20th February 2025. This conference aims to bridge disciplines, foster innovation, and address the pressing global challenges of our time through meaningful interdisciplinary research and collaboration. This conference embodies our collective commitment to bridging disciplines, fostering innovation, and addressing global challenges through interdisciplinary research and collaboration.

In the ever-evolving world, the intersection between engineering, management, and social sciences is crucial for creating impactful solutions that contribute to societal progress. This conference serves as a dynamic platform for researchers, academicians, and professionals to exchange ideas, share groundbreaking research, and collaborate on projects that address the pressing issues facing our global community. By coming together, we aim to inspire the next generation of innovators and thought leaders.
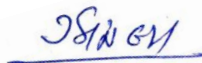
I would like to express our sincere appreciation to our collaboration partner ZEP Research for their unwavering support and invaluable contribution in making this event a reality. Their dedication to academic excellence and research has been instrumental in bringing this event to life. We are truly honored to be collaborating with such a prestigious organization.

I am also deeply grateful to the Principal of our college for providing the infrastructure and resources necessary to host this event. The leadership and vision of

our Principal, Prof. Poonam Kumria have been pivotal in ensuring the success of this conference. I extend our heartfelt thanks to all our collaborators, participants, and sponsors. We are confident that the knowledge shared here will foster new partnerships, spark innovative ideas, and inspire solutions that will have a lasting impact on both local and global scales.

Thank you once again to all participants, collaborators, and sponsors for your invaluable contributions. Looking forward to the fruitful discussions, collaborations, and groundbreaking ideas that will emerge from this conference.

Warm Regards,

Dr. J. P. Singh
Organizing Secretary
2nd ICEMSS, 2025
IPCW, University of Delhi, India

Keynote Speakers

Dr. Dipa Mitra
Associate Professor and Former-Head, M.Phil. & Ph.D. Program,
Indian Institute of Social Welfare and Business Management
affiliated to University of Calcutta, India

Message

It is a great honour to join the International Conference on Engineering, Management, and Social Sciences (ICEMSS). As an Associate Professor and Former Head of the M.Phil. & Ph.D. Program at the Indian Institute of Social Welfare & Business Management, Calcutta University, I bring over 24 years in academia, corporate training, and research excellence to this platform.

My Keynote, "Empowering through Servant Leadership," explores the transformative power of leading with empathy, humility, and selflessness. In today's VUCA world, effective leadership isn't just about authority; it's about empowering others, fostering growth, and building resilient communities. I am eager to share insights on how leaders can inspire impactful change by prioritizing the growth and well-being of their teams. Let us explore how this leadership style, rooted in service and humility, can navigate today's challenges and pave the way for a more empathetic and collaborative future.

Thank you, and I wish all delegates a stimulating and rewarding conference experience!

Dr. Dipa Mitra
Keynote Speaker
ICEMSS-2025

Prof. (Dr) Ipseeta Nanda
Professor, School of Engineering
IILM University, Greater Noida, UP, India

Message

Contributing to the International Conference on Engineering, Management, and Social Sciences (ICEMSS-2025) is an honor. This prestigious platform brings together researchers, academicians, and professionals to exchange knowledge and insights that drive innovation across various fields. As we navigate the evolving landscape of [mention specific research topic, e.g., AI, IoT, automation, healthcare, etc.], this conference serves as a crucial forum for fostering Contributing to the International Conference on Engineering, Management, and Social Sciences (ICEMSS-2025) is an honor. This prestigious platform brings together researchers, academicians, and professionals to exchange knowledge and insights that drive innovation across various fields. As we navigate the evolving landscape of [mention specific research topic, e.g., AI, IoT, automation, healthcare, etc.], this conference serves as a crucial forum for fostering collaboration, advancing research, and exploring the practical applications of emerging technologies. It is my sincere hope that the discussions and ideas exchanged here will inspire new perspectives and contribute to meaningful advancements in our respective fields.I extend my heartfelt gratitude to the organizers and participants for making this event a success. Wishing everyone a productive and enriching conference experience. collaboration, advancing research, and exploring the practical applications of emerging technologies. It is my sincere hope that the discussions and ideas exchanged here will inspire new perspectives and contribute to meaningful advancements in our respective fields. I extend my heartfelt gratitude to the organizers and participants for making this event a success. Wishing everyone a productive and enriching conference experience.

Ipseeta Nanda

Prof. (Dr) Ipseeta Nanda
Keynote Speaker
ICEMSS-2025

Asst.Prof.Pol.Lt.Col. Waiphot Kulachai, Ph.D
Deputy Dean
College of Politics and Government,
Suan Sunandha Rajabhat University, Thailand

Message

It is my great pleasure to welcome you all to the 2nd International Conference on Engineering, Management, and Social Sciences (ICEMSS) in New Delhi, India, on February 19-20, 2025. This conference serves as an incredible platform for scholars, researchers, and professionals to exchange ideas, share cutting-edge research, and explore innovative solutions to the challenges in our fields.

As we navigate the rapidly evolving landscape of management and organizational development, it is through collaborative discussions and knowledge-sharing that we can drive meaningful progress. I look forward to engaging with you, gaining new insights, and fostering valuable connections.

Wishing you all an inspiring and productive conference!

Asst. Prof.Pol.Lt.Col. Waiphot Kulachai, Ph.D.
Keynote Speaker
ICEMSS-2025

Dr. Nitin Aggrawal
Director
National Productivity Council,
Ministry of Commerce and Industry Govt of India

Message

Dr. Nitin Aggrawal is a seasoned professional with over two decades of experience in consultancy, training, research, and policy administration. A distinguished expert in building strategic engagements, Dr. Aggrawal specializes in fostering collaborations between government entities, industry leaders, and academic institutions. His work spans across domains such as e-governance, productivity management, and public-sector transformation, making him a trailblazer in integrating innovative solutions for nation-building.

Dr. Aggrawal holds a Doctorate in Management, an MBA from the prestigious Faculty of Management Studies, Delhi University, and a Master's in Computer Applications. This unique blend of technical and managerial expertise enables him to address complex challenges in technology and governance.

In his illustrious career, Dr. Aggrawal has:

☐ Spearheaded Government Initiatives: Established a Technical Support Unit for CSR monitoring, facilitated productivity enhancement programs, and contributed to trade negotiations with global stakeholders.

☐ Led Public Sector Transformation: Developed national frameworks for CSR, digital governance, and productivity incentives, creating significant socio-economic impact.

☐ Championed Innovation: Directed policy frameworks for Industry 4.0, digital skilling and sustainability through 100% employment assurance, increase women participation in nation building, etc. as well as positioning organizations as thought leaders in technology and innovation.

☐ Advocated for Youth Engagement: Designed national internship programs to bridge academia and industry, fostering the next generation of innovators.

Dr. Aggrawal's insights into technology and innovation have been pivotal in shaping India's e-governance strategies, digital transformation efforts, and sustainable development initiatives. His leadership in stakeholder relationship

management and capacity building has garnered him recognition as a trusted advisor and visionary thought leader.

As a adjust faculty, Dr. Aggrawal brings unparalleled expertise and an inspiring narrative of how alignment of CSR with ESG framework can be made to drive transformative change.

His presence promises to inspire budding policy makers and implementers to become innovative and dream big and turn their ideas into impactful realities.

Wishing you all an inspiring and productive conference!

Dr. Nitin Aggrawal
Keynote Speaker
ICEMSS-2025

Dr. Kausik Mukherjee
Associate Dean
AKS University,Satna, Madhya Pradesh, India

Message

Management Expertise in Domain Managerial Economics, Human Resources Management,Reserch Methodology, General Management, Strategic Management, Basic Electronics, Management Consultancy, Market Research. adopted five villages under this project. He has been involved in several developmental projects in these villages that include but are not limited to - **a.** Preparation of village development plans with grama panchayats **b.** working on several projects for uplifting the scheduled caste and schedule tribe communities in these village through interventions in livelihood creation c. creation of farmer producer organization d. creation of e-hub and library for women, students and farmers and so on. Leadership, Motivation, Commitment, Organisational Citizenship, Individual and Expertise as **Economic researcher:** They conduct research regarding economic problems in delivery or production of products and services or their distribution. They also look into fiscal policies. Financial: He helps the organisation better the business performance. He also supervises the business operations, management of finance, profitability, financial strategies etc. **Investment analyst:** His research and collect data regarding assets of a company, analyse the stocks, currencies, bonds and commodities at hand. **Market research analyst:** His main duty is to collect data of competitors and existing customers and then analyse them. They perform a thorough study of the market conditions and identify the potential areas where sales of a product or service can be profitable.

Dr. Kausik Mukherjee
Keynote Speaker
ICEMSS-2025

Dr. Alfe M. Solina
Associate Professor V
Cavite State University- IMUS Campus, Philippines

Message

In this year's ICEMSS, scholars and researchers across the globe have crafted another milestone in their continuing journey towards development and innovation. We take pride as we carry on with our independent roles to realize the common goal of reshaping our society and communities to be resilient, inclusive and sustainable. Let this conference be the impetus of that transformation.

Thank you, and I wish all delegates a stimulating and rewarding conference experience!

Dr. Alfe M. Solina
Keynote Speaker
ICEMSS-2025

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2nd International Conference on Engineering, Management and Social Sciences

ABSTRACTS

Explainability of AI in Tomato Disease Detection via Transfer Learning and Analysis of Model Interpretability

Laatiri Youssef

Institut Supérieur d'Informatique et des Technologies de Communication, Tunisie

Abstract

Tomato leaf diseases are particularly challenging due to several factors, including diagnostic complexity, high treatment costs, and the difficulty of early-stage detection. These diseases result in significant crop losses and reduced production for growers. Early detection is critical to implementing effective treatments and minimizing damage. However, manual diagnosis by experts is often insufficient for early-stage detection. To address this challenge, researchers have explored computer-aided systems employing machine learning and deep learning methodologies, which involve training datasets to accurately detect tomato leaf diseases.This study proposes a hybrid model that combines the feature extraction capabilities of a Convolutional Neural Network (CNN) with the temporal pattern recognition strengths of a Long Short-Term Memory (LSTM) network, enhanced by an attention mechanism to improve robustness. The CNN component extracts features from tomato leaf images, while the LSTM network analyzes sequential dependencies between the convolutional layers and the fully connected layers. The final output layer utilizes the softmax activation function for classification.The hybrid model was trained and validated using the publicly available PlantVillage dataset. Experimental results demonstrate the model's effectiveness, achieving an accuracy of 97.12%, validation accuracy of 95.48%, and a validation loss of 0.1208. The proposed hybrid model outperforms traditional CNN-based approaches, with the integration of LSTM and attention mechanisms contributing to its superior performance.

Keywords: CNN-LSTM, hybrid model, deep learning, supervised learning, tomato leaf disease detection, Attention

A Next Word Likelihood: A Comprehensive Survey

Abhilasha Sharma[1], Mohini Yadav[2]
[1,2]Delhi Technological University, Delhi, India

Abstract

This research paper involves an in-depth examination of next-word likelihood systems using state-of-the-art natural language processing (NLP) and machine learning methodologies with various preprocessing methods like tokenization, text stemming, word embedding etc. These systems play a crucial role in improving communication efficiency, minimizing keystrokes, and enhancing user experience in several languages like English, Hindi, Bangla, Dzongkha, Urdu, and Japanese. The approaches range from recurrent neural networks (RNNs), long short term memory (LSTM), Bidirectional LSTM, and transformer-based models like BERT in various ways. Significant improvements involve incorporating hybrid language models, using self-attention mechanisms, and employing specific datasets designed for linguistic settings. These advancements reach high accuracy levels in the minimum amount of time possible, handling problems like morphological complexity, resource constraints, and varied linguistic structures. This thorough analysis highlights the revolutionary possibility of predictive models in real time operations across various domains from assistive technologies to multilingual text processing.

Keywords: Word Embedding, Keystrokes minimization, Attention, Tokenization,
N-gram, Stemming, User experience enhancement.

A Comprehensive Review of Vision-Based Deep Learning Techniques for Fall Detection in Elderly Individuals

Abhilasha Sharma[1], Piyush Agarwal[2]
[1,2]Delhi Technological University, Delhi, India

Abstract

Falls among the elderly are major threats to their health, resulting in serious injuries, hospitalization or even death. The rapid and unprecedented increase of the global age in population has magnified the need for effective and automatic fall detection systems to ensure quick and timely medical attention. This review paper explores vision-based deep learning techniques for fall detection, particularly their advantages over ordinary wearable sensor-based methods. Different computer-vision algorithms based on convolutional neural networks (CNNs), recurrent neural networks (RNNs) and long short-term memory (LSTMs), and hybrid architectures like CNN-LSTM and vision transformer (ViTs), are discussed. Built on modern works based on human posture estimation, optical flow, and multi-stream deep learning architectures, these approaches have demonstrated an exceptional accuracy and robustness across various settings. The comparative analysis of publicly available databases like URFD, Le2i, UP-Fall, and CAUCAFall on fall detection clearly testifies to the challenges of real-world deployment, such as illumination changes, occlusions, and dataset bias. This paper points towards the promise of deep learning-based vision systems for reducing fall risk amongst the elderly, paving the way for further progress and development in healthcare technology.

Keywords: Computer Vision, Deep Learning, Elderly Care, Fall Detection

Comprehensive Review of Image-to-Text Generation

Abhilasha Sharma[1], Nishant Raj[2]

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Abstract

Image captioning connects visual understanding with language by creating meaningful textual descriptions from images and videos. Traditional approaches have used encoder-decoder architectures, which pair methods like Convolutional Neural Networks (CNNs) for extracting image features with Recurrent Neural Networks (RNNs) or Long Short-Term Memory (LSTM) networks for generating text sequentially. Recent developments may include hybrid models integrating with attention mechanisms, transformers, and pre-trained models like Contrastive Language-Image Pretraining (CLIP) and Vision Transformers (ViTs). This research paper reviews 13 advanced techniques in image captioning, focusing on their architectures, methodologies, and performance metrics. Additionally, we address challenges such as scalability, dataset biases, and computational costs, suggesting paths for future research. Detailed diagrams and tables summarize methods and results, offering a thorough exploration of this evolving field.

Keywords: Neural Architecture; Data Preprocessing Techniques; Model Design Approaches; Feature Embedding

Reliability and Responsiveness of the Gross Motor Function Measure among Children with Cerebral Palsy in India

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Abstract

Cerebral palsy is the most common motor disability in children which is a neurological disorder, often treated by health care professionals. Assessment and therapeutic intervention of motor function are important components of rehabilitation for children with Cerebral Palsy (CP) . Gross Motor Function Measure (GMFM) is used frequently as a standard measure for gross motor function of CP children in India. An initiation is being taken to check Reliability and Responsiveness of GMFM-88 in children with CP who belong to Indian culture and society.

Objectives: To check Reliability and Responsiveness of the GMFM-88 in children with cerebral palsy who belong to Indian society.

Methodology: 60 children with CP (mean age = 27.52 months, SD = ±17.2) were selected. Clinical measurement study design was used. Test- retest and Interrater were used for data collection. Purposive sampling method was used based on GMFCS level. Children were assessed using GMFM-88 by principal investigator on 1st day and 2nd day (retest). Interrater was assessed on 3rd day morning. Data was analysed by SPSS version 26. Correlation analysis of GMFM-88 test– retest and interrater were calculated by Pearson's correlation test. Internal consistency was measured by Cronbach's alpha.

Result: Study shows moderate positive correlation between GMFM-88 test scores and GMFM-88 retest scores (r = 0.590, p < 0.01). There is significant positive correlation between GMFM-88 test scores (principal investigator) and GMFM-88 scores (interrater) (r = 0.890, p 0 .90) category. Conclusion: GMFM-88 may be considered as an effective tool which is suitable to measure gross motor function among children with CP in India

Keywords: Cerebral palsy, Rehabilitation, Disability, Reliability

Review of Diffuser Augmented Wind Turbines and its development in Urban areas

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Abstract

The increasing necessity for sustainable energy alternatives and the focus on energy-conserving architectural designs have catalyzed comprehensive research initiatives directed towards the advancement of wind energy technology specifically adapted for metropolitan settings. Commercial wind turbines should operate at high speeds. But it is found that in Urban areas wind speed is low. Despite of advancements in wind turbine technology, the deployment of wind turbines in metropolitan areas remains severely limited. Numerous studies have investigated various designs of urban wind turbines, employing field data, wind tunnel testing, and computational fluid dynamics (CFD) to evaluate both new and existing turbine designs. This study contributes to the understanding of urban wind energy by reviewing the state-of-the-art in urban wind turbine designs. It also explores the potential of flanged diffuser shroud mechanism, which is installed on building rooftops to house small wind turbines. Employing computational fluid dynamics (CFD) simulations, this review compares the operational efficacy of the diffuser shroud mechanism. The CFD findings also validate the ability of the turbine to harness wind power generation in complex urban settings by leveraging airflow over structures.

Keywords: Small Wind Turbine, CFD, Diffuser, Energy Generation, Sustainable Energy.

Machine Learning Methods for Nighttime Pedestrian Detection

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Abstract

Pedestrian detection is a very basic component of autonomous driving and also surveillance systems in urban environments. Such powerful pedestrian detection systems would significantly find application especially at nighttime and lowvisi bility applications such as surveillance and autonomous driving. The present state-of-the-art in ADAS and auto technologies are generally failing because of the inability to cope up with the constraints related to lighting conditions, occlusions, and other changes of the environment. Multi sensor fusion with adaptive feature extraction, based on deep learning, are the most advanced techniques. This survey integrates the outcomes of various studies on the use of CNNs, multispectral data fusion, and reinforcement learning to achieve better accuracy in detection. Techniques include combining visible, infrared, and millimeter-wave (MMW) radar data, novel architectures like MLF-CNN and SIFRCNN, and special modules for models such as YOLOv5. Results show that the combination of complementary sensor data enhances robustness in detection, particularly in adverse conditions. Some future research directions include the improvement of detection reliability and its integration into real-time applications.

Keywords: Object detection, Task analysis, Neural networks, Image segmentation, Convolutional neural networks, saliency map, thermal image.

The Representation of Legal Defendants in Literature: Victim, Villain, or Both

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Abstract

This paper explores the representation of legal defendants in current literature, including the meeting of law, morality, and social beliefs. Through two cases of famous characters, Billy Pilgrim in Kurt Vonnegut's Slaughterhouse-Five or Briony Tallis in Ian McEwan's Atonement, the use of legal battles to advocate the criticism of the justice system as well as investigating the moral complexity will be discussed. Billy Pilgrim was a victim of the dehumanizing forces of war, with legal and moral frameworks becoming meaningless and traditional justice irrelevant. In the meantime, the false accusation and then failed attempt at Briony Tallis's atonement illustrates the inability of legal systems to reflect upon subjective realities and human motivations. Both characters disrupt the binary of victim versus villain, and offer reflections on the impotency of state institutions and mechanisms to render the reality of human behaviour and its repercussions. Through an investigation of these contemporary representations of legal respondents, the paper will contend that fiction is a powerful medium through which to question how law is implicated in social, moral, and personal realities, stimulating the sort of critical thinking required to consider the essence of justice and human responsibility.

Keywords: legal systems, behavior, critical

Recent Advances and Future Directions in Fintech Interventions: A Comprehensive Review

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Abstract

Fintech interventions have gained much attention recently, primarily to tackle the challenges encountered in our current financial systems. This paper analyses literature from the period between January 2019 and the middle of 2021 on FinTech interventions including blockchain, machine learning, digital currencies, and risk management solutions. To this end, the study employs a systematic review approach to synthesize literature from a large number of sources and discuss important novelties such as CBDCs, IoTs, Big Data, and KYC procedures. These technologies are described here due to the contribution they make towards financial inclusion, operations, and security. Note that the investigation has restrictions concerning both the period (two-and-a-half years) and the technologies included (a selection); thus, some newer trends such as augmented reality or gamified finance are not discussed in this study. From the practical perspective, the study underlines the importance of flexible legal environments and the implementation of robust and flexible technological solutions by the financial sector to address the existing and future needs of consumers as well as to address compliance issues. Although there are some constraints in terms of data and territorial scope of the analyzed literature, this review can be useful for further research and practical implementation of FinTech innovations.

Keywords: Fintech Interventions, Future Directions in Fintech, Financial Services, Digital Finance, Emerging Technologies

Deep Learning Algorithm for Detection and Recognition of Tomato Leaf Disease

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Abstract

Agricultural productivity greatly affects the economy of any country, e.g. in India, Italy and Tunisia where agriculture accounts for in 20% of the GDP in India, 30% in Tunisia and about 55% in Italy. In such cases, if the plant is affected by known and unknown widespread diseases and is not properly treated in time and if plant pathologists intervene, this will lead to huge economic losses and will also increase the global food problem. To get rid of these diseases, they must be detected and treated early to prevent serious consequences. This will reduce production. The current primitive manual method of detecting plant diseases is time-consuming and does not benefit farmers. It can sometimes lead to incorrect diagnosis as well. Therefore, new solutions must be adopted using techniques such as image processing and deep learning to successfully detect plant diseases in early stages. The proposed model is expected to provide excellent results. Transfer learning is also used to make the model efficient and cost-effective. Since tomato diseases are essential for successful treatment, deep learning has demonstrated significant potential in identifying plant diseases, offering impressive levels of accuracy and efficiency. This study examines the effectiveness of two distinct deep learning models, namely Convolutional Neural Networks (CNNs) and VGG16, in diagnosing diseases impacting tomatoes. The dataset comprises both diseased and healthy tomato samples, which are utilized for training and testing the models based on photos of tomato diseases. The CNN model exhibits superior performance, achieving training accuracy of 98.24% and testing accuracy of 97.48%.

Keywords: *Artificial intelligence; Deep learning; Plant diseases; Transfer learning; Network*

Financial Inclusion and Women Economic Empowerment: Role of MUDRA Yojana in Promoting Atmanirbhar Bharat in Rural Jharkhand

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Abstract

Formal transactions through bank branches are a component of institutional financial inclusion. One potential way to increase formal financial inclusion and optimize the reach of benefits like direct cash transfers is to provide banking services to the most remote regions of the nation. The rural populace is misinformed about banking rules and loan procedures due to ignorance and incomplete information, which encourages the use of informal sources and makes capital unavailable. The unavailability of capital limits the growth of the entrepreneurial set up in rural areas. The national goals of financial inclusion and Atmanirbhar Bharat (self-reliance) are being pursued by the government through a variety of measures. The involvement of women is essential to achieving the goals of Atmanirbhar Bharat and full institutional financial inclusion. One significant indicator of societal growth is the status of women. Women make up about half of the population, and their empowerment is important for overall growth. The Hon. Prime Minister introduced the Pradhan Mantri Mudra Yojana (PMMY) on April 8, 2015, to lend up to 10 lakh rupees to small and microbusinesses that are neither farms nor corporations to end the capital funds crisis. Commercial banks, regional rural banks (RRBs), microfinance institutions (MFIS), small financing banks, non-banking financial firms (NBFCs), and other financial intermediaries distribute these loans. Improving people's quality of life and growing micro and small businesses are the primary objectives. The objective of the paper is to investigate the role of financial inclusion and women empowerment through the Mudra yojana in promoting Atmanirbhar Bharat in rural Jharkhand.

Keywords: Financial Inclusion, Mudra Yojana, Rural Development, Women Empowerment

Exponentially Carpet Weaving Optimization Enabled GoogleNet for Melanoma Classification using Skin Images

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Abstract

Skin cancer is an invasive condition characterized by abnormal proliferation of melanocyte cells in body, where the cells can multiply and spread through lymph nodes for damaging nearby tissues. The early detection is essential for better treatment. Currently, it is widely recognized that melanoma is the common skin cancer since it is significantly more likely to spread to other parts of the body when it is not treated or diagnosed promptly. To mitigate this challenge, an approach is proposed for melanoma classification using skin images named Exponentially Carpet Weaving Optimization enabled GoogleNet (ECWO_GoogleNet). The input skin image is pre-processed by Adaptive Kalman filter. Then, the skin lesion segmentation is performed by utilizing ENet, and then feature extraction is carried out. At last, the melanoma classification is conducted by GoogleNet, which is classified into Melanoma, Melanocytic nevus, Basal cell carcinoma, Actinic keratosis, Benign keratosis (solar lentigo / seborrheic keratosis / lichen planus-like keratosis), Dermatofibroma, Vascular lesion, and Squamous cell carcinoma. Here, GoogleNet is trained by ECWO. The analytic measures of ECWO_GoogleNet namely, Accuracy, True Positive Rate (TPR) and True Negative Rate (TNR) achieved 91.89%, 91.99%, and 91.27%.

Keywords: Skin image, Melanoma classification, Adaptive Kalman filter, ENet, GoogleNet.

AI-Powered Question Generation and Evaluation Framework for Enhanced Educational Assessments

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Abstract

An AI-powered system for generating and evaluating educational questions, addressing challenges related to scalability and personalized learning. Leveraging the Llama 3.3 70B model on Groq Cloud, the system ensures fast and efficient processing. It generates a user-defined number of theory, coding, and design questions based on the specified difficulty level and skills.To generate questions, the system employs Retrieval-Augmented Generation (RAG), first searching for relevant content in an uploaded PDF document. If the requested skills are found in the document, it formulates questions accordingly. If no matching content is available, or if no document is provided, the system falls back on a pretrained knowledge base to ensure comprehensive question generation.For efficient workflow management, the framework integrates LangGraph, LlamaIndex for document structuring, Hugging Face embeddings for semantic analysis, and ChromaDB for optimized vector storage. This combination enables real-time validation of questions, adaptive difficulty adjustments, and alignment with Bloom's Taxonomy to assess cognitive complexity.During evaluation, user responses are analyzed for relevance to the question. If a PDF is available, answers are compared against its content; otherwise, they are assessed using the pretrained knowledge base. The system then assigns scores and provides targeted feedback, helping users identify areas for improvement.Results demonstrate the system's scalability across various subjects, its ability to reduce educator workload, and its effectiveness in personalizing learning by dynamically identifying skill gaps. By integrating AI into assessments, this approach enhances the efficiency and accessibility of education

Keywords: Automated Question Generation, RAG, Llama 3.3 70B, LlamaIndex, Groq Cloud, LangGraph, Adaptive Assessments, Bloom's Taxonomy, Skill-Based Learning, Vector Embeddings, Real-Time Feedback

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Exploring the Key Drivers of Employee Performance: A Comprehensive Study of Contributing Factors

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Abstract

Background: Especially in demanding sectors like healthcare, emotional intelligence (EI) has been shown to be quite crucial for employee performance. In order to bridge information gaps concerning how Emotional Intelligence (EI) impacts workplace dynamics and results in diverse organisational contexts, this paper investigates how employee performance in public and private hospitals is affected by Emotional Intelligence.

Objective: Analyzing the dynamics between public and private hospitals in the Delhi-NCR region, identify major emotional intelligence (EI) elements affecting job performance, and look for the relationship between EI and employee performance.

Methodology: We followed a cross-sectional strategy and a descriptive study design. Using a rigorous questionnaire including demographic data, an Emotional Intelligence Scale, a Job Performance Scale, and a Comparative Analysis Scale, data from 400 healthcare professionals was collected. Though the emphasis of comparative research was variation in hospital types, quantitative analytical methods like correlation and regression analysis revealed relationships.

Findings: Emotional intelligence and employee performance shown to be really closely correlated. Higher EI workers had improved interpersonal relationships, stress control, and decision-making. Private hospital staff participants attributed somewhat greater EI and performance levels to superior resources and training opportunities. Public hospitals, on the other hand, showed how capable they might be of enabling staff members to grow more flexible and resilient.

Conclusion: Emotional intelligence helps public and private hospitals' staff operate far better. Specifically tailored to develop emotional intelligence (EI), training courses can boost workplace efficiency, hence improving organizational results and patient care. The results highlight the significance of moving early to incorporate the development of Emotional Intelligence (EI) into hospital administration.

Keywords: Emotional intelligence, employee performance, healthcare, public hospitals, private hospitals, organizational effectiveness

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Preparedness, Pedagogical Mobility, and Flexibility Practices of Alaminos City Campus Pre-Service Teachers

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Abstract

The COVID-19 pandemic transformed global education, forcing institutions to switch to online platforms. Pre-service teachers at Alaminos City Campus adapted by completing their early training in virtual classrooms. A total of 147 respondents (124 Bachelor of Elementary Education; 23 Bachelor of Secondary Education Major in Mathematics) were involved in this study. It examines the Preparedness, Pedagogical mobility, and flexibility practices of the pre-service teachers who were deployed in their practice teaching. This study employed a mixed-methods research design to explore a.)the different practices of Pre-service teachers before deployment b.) the different pedagogical mobility they experienced during their off-campus training c.) flexibility and innovations and the significant relationship across profile variables. Results showed that before off-campus training pre-service teachers were taught detailed lesson plans that aligned with the curriculum with a mean of 4.69 or description of highly practiced. An indicator stating that exit demonstration and reflective journal writing are given emphasis before deployments also follow. Meanwhile, as to Pedagogical Experiences, the indicator stating that "There was a shift in my pedagogical approaches as I adapted to new learning environments and student demographics got the ranks first on the list with a mean of 4.92 which means most of the respondents have experienced such challenges. Moreover, the indicator "off-campus training or practice teaching encouraged me towards self-directed learning, pushing many to pursue new areas of knowledge independently." Ranks second with a mean of 4.46 with a descriptive rating of highly practiced. The indicator stating that pre-service teachers' participation in local community programs broadened their understanding of social and educational equity" ranks tenth with a mean of 3.07 or moderately experienced. It is recommended that this study be utilized to critically assess and strengthen the curriculum.

Keywords: Innovations, Mobility, Pre-Service Teachers, PSU

Evaluation of Security and Isolation Mechanisms in Containerized Environments

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Abstract

Containerization has become a cornerstone in modern software development by encapsulating applications and their dependencies into lightweight, portable units. While offering benefits such as consistent performance across environments, efficient resource usage, and faster deployment, containerization also brings forth new security and isolation challenges. Ensuring proper isolation between containers and the host system is crucial for maintaining system integrity, preventing unauthorized access, and safeguarding data.

This research focuses on evaluating the security and isolation mechanisms that protect containerized environments. Key techniques, including namespaces, control groups (cgroups), seccomp, capabilities, and more, are analyzed for their ability to isolate containers from one another and from the host system. By exploring the strengths, limitations, and trade-offs of each mechanism, this study provides insights into the most effective strategies for securing containerized environments. Additionally, it highlights the importance of a multi-layered approach that combines different isolation techniques to optimize both security and system performance.

Keywords: Container, Docker, Isolation, Virtualization, Namespaces, File System, Processes, Sandboxing, Microservices, Container orchestration, Container Security, Linux, AppArmor

6 Determinants of Manufacturing Output in India: Panel Data analysis

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Abstract

This study investigates the determinants of manufacturing output in India for the period 2000 to 2019 considering 25 states of India. The study employed panel data regression analysis on secondary data extracted from EPWRF. Traditional panel data models of POLS, FEM and REM have been estimated along with the long-run FMOLS and DOLS models. As per the result, variables of total persons engaged, fixed capital, working capital, fuel consumed and output of service sector have positive and significant influence on output of the manufacturing sector in India but agriculture production have negative and significant impact on manufacturing output in long-run. Among the three models, the study found out that Fixed Effect model is the most appropriate model and as per the FMOLS and DOLS model there exist a long-term association between the variables.

Keywords: appropriate model, FMOLS and DOLS

Changing Face of People Risk Management in Information Technology Projects in The Era of Gen Ai Disruption

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Abstract

We are in the era where Generative AI (Gen AI) is changing the fundamental way of performing various activities. Gen AI has impacted both the business as well as personal lives. HR should embrace these advancements with a human touch. This study demonstrates how Generative AI has redefined People risk management and the implementation of Risk management methodology in various IT sector projects and the benefits achieved.

People risks can affect an organization at various levels - viz project, department or organization. In Information Technology (IT) sector projects. Many people related risks requires the intervention of HR department for effective risk management. People risk management is the process of identifying, evaluating, and reducing potential risks that employees pose to a business. The goal is to prevent risks from happening by helping the Project manager and HR teams anticipate scenarios and their outcomes.

Risk management was implemented in the projects under study using a structured methodology. The methodology involves identifying risks, assess the risks and manage the risks. The identified risks are quantified in terms of Risk Exposure (RE) value. RE is calculated as the product of Probability of the occurrence of risk and the Impact of risk if it occurs. Risks are prioritized based on the Risk Exposure value. Based on the priority of risks, an appropriate risk management technique - viz Risk Avoidance, Risk Control or Risk acceptance can be selected. Mitigation and contingency planning is done based on the risk management technique selected. Periodic risk analysis was done to ascertain the effectiveness of the risk management process. A Risk management portal was implemented for the case study projects under study to track the risks.

Typical people related risks that are deliberated in this study are Code of conduct breach, Skills mismatch/inadequate with people, Low productivity, Non availability of resources, Learning curve, High Learning curve, Low motivation level, Lack of communication skills and Client attitude.

The Risk density metric was compared before and after implementation of AI in risk management. A hypothesis test was done using 2 Sample T Test on the Risk density for People dimension. The p value <0.05 proved that the improvement in Risk density before and after implementing AI in Risk management was significant. The data was based on an engagement consisting of 2500+ employees across 100+

projects.

People risks were seen as critical and HR played a key role in People risk management. Mitigating the People related risks by leveraging Gen AI tools and techniques wherever possible enabled significant reduction of risks

Keywords: Risk, Gen AI, SharePoint

Comparative Study on Impacts of Illegal and Systematic Processed Municipal Solid Waste Dumpsites in a Metropolitan City

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Abstract

As a developing country, India has immense potential to implement advanced technologies in the management of municipal solid waste. But to some extent we are failing to incorporate these advanced technologies due to various reasons mainly from the budget constraints. In this work, groundwater near the two municipal solid waste dumpsites, in Lucknow (Uttar Pradesh) has been compared based on suitability for drinking and irrigation purposes. For this objective, the water quality index (for drinking water quality assessment), sodium absorption ratio, magnesium hazard ratio, soluble sodium percentage (for irrigation water quality assessment) have been assessed. Moreover, the characterization of leachate from both the dumpsite was done by evaluating the Leachate pollution index. The estimated values of LPI and WQI for the Dubagga site are 36.61 and 65.85 respectively while for Shivri site are 6.84 and 37.04 respectively. The obtained results indicated that the Dubagga site (illegal dumpsite) is generating poor-quality water compared to the Shivri site (engineered processed dumpsite). Based on the results, it can be concluded that the unprocessed MSW dumpsite needs more attention and require immediate processing to secure the water quality. The study concludes with facts and helpful recommendations, which might be directed at other people, researchers, or government officials to strive for even greater progress.

Keywords: *Leachate, Municipal solid waste, Scientific dumpsite, Water quality index.*

Design and Development of an AI-Driven System for Screen Control via Hand Gestures and Speech Recognition

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Abstract

The Artificial Intelligence field of human-computer interaction entered a new phase with the development of hand gesture recognition and speech reorganization technologies. These days, computer vision has reached its pinnacle, where a computer can identify its owner using a simple program of image processing. In this stage of development, people are using computer vision in many areas of day to day life, like self driving car, face recognition, Color detection etc. Though wireless or Bluetooth mouse technology is invented, still that technology is not completely device free. A Bluetooth mouse has the requirement of battery power and connecting dongle. In this paper we propose HANDTRIX, a virtual control system that uses hand gestures and speech commands to operate a computer. The system uses a webcam to capture hand movements and translate them into cursor movements, keyboard inputs, and other commands. The goal of our system is to create a more natural and intuitive way to interact with computers. The system is designed to be user-friendly and accessible to users of all ages and abilities The user will be allowed to control some of the computer cursor functions with their hands like Volume and brightness control Module, Keyboard input, Users can type on a virtual keyboard by using hand gestures to select letters. It also has a functionality to reorganize the speech commands. The system does not require any external hardware devices, making it cost-effective.

Keywords: Artificial Intelligence, gesture recognition, speech reorganization.

Enhancing Text-to-SQL for Health Records with Retrieval-Augmented Generation and Instruction Tuning

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Abstract

Complex EHR data accesses are knowledge-intensive SQL, making theminaccessible to many healthcare professionals and researchers who rely on speedy accuracy in data supplied to inform patient care and research. This paper begins with an introduction to an improved Text-to-SQL framework designed with the specific needs of healthcare in mind since the EHR databases differ uniquely. Our approach inte grates Retrieval-Augmented Generation for schema and inclusion of rel evant medical terminology in SQL generation, and Instruction Tuning for flexibility on adaptation with respect to varying query structure and complexities associated with a schema. Experimental results on health care-specific datasets demonstrate how our approach significantly out performs standard Text-to-SQL models in accuracy and robustness in generating consistent highquality queries for health record applications. This framework opens ways to a much more intuitive and effective in teraction with EHR data, hence enabling health care professionals who need information directly to access it easily.

Beyond the Summit: Implementing Strategies for Employee Well-Being and Work-Life Balance in G20 Organizations

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Abstract

Work-life balance (WLB) is an issue of focus for organizations and individuals because individuals benefit from having better health and wellbeing when they have WLB and this, in turn, impacts on organizational productivity and performance. The purpose of this paper is to explore relevant WLB factors contributing to employee health and wellbeing, and to understand the interactive effects of individual WLB strategies and organizational WLB policies/programs on improving employee health and wellbeing. Several multiple regression models were used to evaluate interrelated relationships among these variables and their combined effects on employee health and wellbeing. Findings – The authors found that employees exercising their own WLB strategies showed better health conditions and wellbeing that those who do not; they were also more capable of achieving WLB. Both availability and usage of organizational WLB programs were found to help employees reduce level and household incomes were found to have moderate effects on employee health and wellbeing. Originality/value – Employee health and wellbeing are determined by multiple factors. In distinguishing from prior research in this field, this study discovers an important interface between individual WLB strategies and organizational provision of WLB policies/programs supplemented by several exogenous factors in addressing overall employee health and wellbeing. The results have implications for organizational delivery of WLB policies and other human resource management practices to support employees. The findings confirmed their stress levels, but interestingly to have no direct association with WLB and employee health. Several control variables such as age, working hours, education that the WLB of this institution influenced their career satisfaction and psychological well-being. Beside that supervisor support and family support were found not to moderate the relationship between WLB and Individual Well-being.

Keywords: Employees, Job Performance, Values, Career Hindrances, Competition, Individual Well-being.

Predictive Analytics for The Early Detection of Diabetic Foot Ulcers: Investigating Several Machine Learning Algorithms

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Abstract

Diabetes patients face a serious health risk from diabetic foot ulcers (DFUs), which can result in serious consequences like infections, hospital stays, and even amputations. Improving patient outcomes and putting prompt preventative measures in place depend on the effective early diagnosis of risk variables linked to DFUs. The purpose of this research is to investigate how predictive analytics, using a variety of machine learning algorithms, can be used to detect and track risk variables that lead to the development of DFUs in diabetic patients.

This study compares several machine learning models, such as logistic regression, decision trees, random forests, support vector machines (SVM), and deep learning approaches, using a large dataset that includes electronic health records, demographic data, clinical parameters (e.g., HbA1c levels, neuropathy status, and peripheral vascular conditions), and patient histories. Every model is trained to look for patterns and correlations in the data that indicate a higher risk of ulcer development.

Each algorithm's efficacy is assessed using performance metrics, including accuracy, precision, recall, F1-score, and the area under the receiver operating characteristic curve (AUC-ROC). To find out which risk factors have a major impact on ulcer predictions, we also do feature importance analysis. According to our research, ensemble approaches—in particular, random forests and gradient boosting algorithms—repeatedly outperform conventional models in identifying patients who are at risk, delivering excellent predictive accuracy and dependability.

The results of this study highlight the possibility of incorporating predictive models based on machine learning into standard clinical procedures for the proactive treatment of diabetic foot health. We also discuss the difficulties caused by bias and poor data quality, highlighting the necessity of ongoing model validation and improvement across a range of patient populations. To sum up, our study shows that using predictive analytics to detect diabetic foot ulcers early can help medical professionals identify high-risk patients, which will ultimately lower the incidence and consequences of DFUs and improve diabetes care overall.

Keywords: diabetes management, logistic regression, random forests, early diagnosis, risk variables, predictive analytics, machine learning, diabetic foot ulcers, and electronic health records.

OSINT-Driven Digital Forensics:
A Comprehensive Framework for Cyber Investigations

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Abstract

The rise of cybercrime has introduced complex challenges for digital forensic investigations, necessitating innovative approaches to uncover evidence effectively. Open-Source Intelligence (OSINT) has emerged as a valuable tool in digital forensics, leveraging publicly available data to aid in cyber investigations. This paper presents a comprehensive framework for integrating OSINT into digital forensic workflows, highlighting its capabilities in uncovering actionable intelligence for various applications, including cybercrime detection, counterterrorism, and data breach investigations.

The framework emphasizes a structured approach to OSINT-driven digital forensics, incorporating the identification, collection, and analysis of open-source data while adhering to legal and ethical standards. Key OSINT tools such as Maltego, Shodan, SpiderFoot, and The Harvester are evaluated based on their utility in gathering digital footprints, mapping networks, and identifying suspicious activities. Case studies demonstrate the application of these tools in real-world scenarios, showcasing their effectiveness in profiling suspects, correlating digital artifacts, and tracing cybercriminal activities.

However, the integration of OSINT into digital forensics also presents challenges. Issues such as data authenticity, false positives, and the overwhelming volume of information require advanced filtering mechanisms and skilled analysts to extract meaningful insights. The paper discusses the legal and ethical considerations surrounding OSINT usage, emphasizing the need for compliance with data privacy laws and maintaining the integrity of investigations.

Future prospects for OSINT-driven digital forensics include the development of automated systems leveraging artificial intelligence (AI) and machine learning (ML) to enhance data analysis and improve efficiency. Collaborative efforts between law enforcement agencies, cybersecurity professionals, and academia are critical to advancing this field and addressing emerging cyber threats.

This research underscores the transformative potential of OSINT in digital forensics, offering a robust and scalable solution for tackling modern cybercrime. By bridging the gap between open-source intelligence and traditional forensic techniques, investigators can achieve a more comprehensive understanding of cyber incidents, ultimately strengthening national security and cybersecurity frameworks.

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Survey on Intelligent Traffic Management Systems: Optimizing Traffic Light Control and Emergency Vehicle Prioritization

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Abstract

The paper surveys the state-of-the-art in automatic control of traffic lights with a focus on providing flexibility in response to existing scenarios of traffic and differentiated attention towards emergency vehicles. We discuss two approaches that use IoT together with machine learning: YOLO for vehicle detection and MICDRL for cooperative management of traffic. Implementations of Emergency Vehicle Priority Systems using RFID technology and visual sensing for improving emergency response times are discussed in further detail. Despite such a significant development, implementation complexity, data accu racy, and infrastructure requirement issues have to be addressed. Emphasis has been given in this paper to the possible use of such innovative systems to optimize urban traffic flow.

Keywords*: Automatic Traffic Control, Real-time Adaptability, Emergency Vehicle Priority, IoT, Machine Learning, Multi-Agent Systems, Traffic Management.*

Innovative Approaches to Water Resource Management in Arid Regions

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Abstract

Using the Sabarmati River Basin as an example, this thesis examines the urgent problem of water resource management in dry areas. The research has three major goals. The first objective is to provide a thorough assessment of the current water issues and difficulties in the Sabarmati River Basin by illuminating the complex dynamics of water supply, demand, and distribution. Second, this study aims to develop a theoretical framework for incorporating technological, institutional, policy, and legal factors. This complex framework is meant to serve as a guide for coordinating long-term water management policies that are adapted to the unique requirements of dry areas. The goal of this thesis is to provide an adaptable and comprehensive framework for managing water resources. The third goal is to create reliable institutional frameworks that support sustainable water management across the whole basin. Here are the three most important parts: first, developing flexible institutional modifications for demand management, which incorporates strategies for optimal water use and distribution. The second step is to set up a system of governance and administration that will let all the different groups who have an interest in water (from individuals to governments to NGOs) work together for the common good. Finally, developing a legal and policy framework that incorporates legislative measures and policy directives that support sustainable practises and lays the groundwork for long-term water management solutions. The research integrates knowledge from several fields to accomplish these goals, including hydrology, engineering, governance studies, policy analysis, and law. Water resource management is influenced by many different variables, both natural and technological, as well as social and political. Primary data collection, like field surveys, stakeholder discussions, and water quality evaluations, and thorough secondary data analysis are both used to inform the thesis. This guarantees that the proposed framework and institutional arrangements are founded on a solid and evidence-based foundation. Both theoretical and practical consequences for policy and decision-making in the area of water resource management are to be expected from this study. This thesis aims to provide a reproducible model that may be adapted to similar circumstances worldwide by tackling the unique problems experienced in dry regions. With the Sabarmati River Basin as a laboratory, this research hopes to pave the path for more sustainable and resilient approaches to water management in dry areas.

Robust Hybrid Feature Fusion-based Texture Descriptor for Texture Classification

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Abstract

Texture classification is a crucial task in computer vision with applications ranging from industrial inspection to medical imaging. However, achieving robustness against noise, illumination, and rotation variations remains a significant challenge today. This paper proposes a hybrid texture descriptor technique that integrates complementary feature extraction methods to ensure invariance to these factors. The method combines wavelet transform for noise reduction, Rotation-Invariant Local Binary Patterns (RI-LBP) for capturing rotationally invariant patterns, and gradient-based descriptors such as Histogram of Oriented Gradients (HOG) for illumination robustness. Additionally, preprocessing techniques like logarithmic transformation and contrast normalisation are employed to mitigate the effects of illumination variations. A classifier ensemble combining Support Vector Machines (SVM) and Convolutional Neural Networks (CNNs) ensures improved generalisation across diverse texture datasets. The proposed technique is evaluated on the KTH-TIPS & Kylberg Sintron dataset, achieving high accuracy and handling its robustness in handling noise, illumination, and rotation variations. This hybrid approach highlights the multi-method integration for advancing texture classification.

Keywords: generalization, normalization, Kylberg Sintron

Improving Performance and Energy Efficiency in Centrifugal Pumps Using Bionic Riblet Structures

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Abstract

The world is facing two major problems: energy shortages and environmental damage. To tackle these challenges, it is crucial to make industrial systems more energy-efficient. Centrifugal pumps, which are commonly used in hydropower plants and industrial processes, consume a large amount of energy. Even small improvements in their performance can save a lot of energy. However, traditional pump designs usually focus on either how well the pump moves fluids (hydraulic performance) or how much noise it makes (acoustic performance), rather than improving both at the same time.

This study explores using bionic riblet structures inspired by shark skin to improve the performance of centrifugal pump impellers. Shark skin has tiny grooves called riblets that reduce drag and help the shark move efficiently through water. By adding similar riblet structures to the surface of pump impellers, this research aims to see how they affect important factors like how much fluid the pump can lift, energy consumption, and noise levels. The goal is to show that these shark skin-inspired designs can improve both fluid movement and noise reduction at the same time. This approach can make pumps more energy-efficient and environmentally friendly while reducing noise pollution. By applying nature-inspired designs, this study highlights a promising way to create more sustainable and efficient industrial systems.

Keywords: Bionic, centrifugal pump, Bionic impeller

Powered Predictive Analytics for Internet of Things and Cloud Integration

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Abstract

IoT represents the Internet of Things, which alludes to a quickly extending organization of web-associated sensors that are implanted in a wide assortment of actual items. In spite of the way that things might be any actual article on the earth, whether it is alive or dead, to which you could join or embed a sensor, things can likewise be anything. Countless potential assessments might be gotten by means of sensors. Sensors create huge amounts of new data that is coordinated, unstructured, and a persistent cycle, and they likewise shape gigantic measures of data. Internet of Things (IoT) data is exceptionally broad and disrupted, and it can possibly give continuous setting and hypothesis data on true articles or normal peculiarities. Among the many difficulties that the Internet of Things (IoT) is as of now confronting, the three most significant areas of concern are the requirement for a productive structure to get IoT data, the requirement for another adaptable equal indexing technique for effectively putting away IoT data, and the need to get IoT created data at all stages, which incorporates from edge gadgets to the cloud. It is feasible to get helpful data from these Internet of Things gadgets and list it in a successful way because of the presentation of another system that is productive. To handle the huge measures of continuous data that are made by Internet of Things gadgets, new arrangements that are both versatile and safe are being presented. An all inclusive Internet of Things network engineering is proposed by the review. In particular, it portrays the interconnectedness that exists between numerous substances, like sensors, beneficiaries, and the cloud framework. The design that has been introduced can successfully acknowledge data continuously from the sensors in general. In the Internet of Things (IoT), the essential accentuation is on the annihilation of the ongoing issues. Furthermore, the arrangement needs to incorporate a typical method for future proofing against the new plans that are being proposed.

Keywords: Internet of Things (IoT), cloud data, sensor data, indexing technique, interconnectivity, gigantic data.

Strengthening Industrial Operational Security: Machine Learning-Powered Detection and Mitigation of IIoT Vulnerabilities

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Abstract

Industrial Internet of Things (IIoT) structures, necessary to fashionable industries, face good sized cybersecurity risks because of their connectivity and integration with IoT devices. Exploitation of vulnerabilities within industrial networks can result in IIoT assaults, resulting in manufacturing delays, system harm, lack of sensitive data, and compliance penalties. Such cyberattacks incur great financial and operational losses, underscoring the important need for powerful mitigation and detection strategies. Machine gaining knowledge of (ML) has developed as a effective tool to enhance commercial cybersecurity by means of permitting the proactive identification of IIoT assaults. By reading tremendous volumes of facts in real-time, ML fashions can dynamically adapt to evolving threats, imparting strong safety in opposition to a variety of cyberattacks. However, IIoT datasets often contain noise, lacking values, or irrelevant capabilities, which can prevent version performance. High-first-rate feature extraction and selection are critical to ensure the effectiveness of ML-based detection structures. This paper explores diverse gadget mastering strategies for IIoT attack detection, highlighting their strengths, limitations, and current research gaps. It emphasizes the significance of adaptive models, in particular metaheuristic gaining knowledge of algorithms, which might be well suited for addressing the dynamic and complex nature of IIoT infrastructures. The discussion affords insights into optimizing ML methodologies for superior commercial cybersecurity.

Keywords: Industrial Internet of Things (IIoT), Cybersecurity, Machine Learning (ML), Attack Detection, Feature Extraction

Remote Sensing and Artificial Intelligence: A Two-Pronged Approach to Forecast Climate-Related Disease Dynamics

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Abstract

Climate change has essentially altered disease transmission dynamics, with environmental factors consist ing of temperature, humidity, and rainfall riding the spread of vector-borne, waterborne, and respiratory ailments. This paper examines the combination of Remote Sensing (RS) and Artificial Intelligence (AI) as a synergistic framework to forecast weather-associated disorder outbreaks. RS offers excessive-resolution, real-time geospatial information on key environmental variables like land floor temperature, plant life cowl, and water our bodies, which might be critical for track ing sickness-inclined regions. AI, leveraging system mastering and deep learning algorithms such as convolutional neural networks (CNNs) and recurrent neural networks (RNNs), procedures those large datasets to discover styles and expect ailment outbreaks with excessive accuracy. Key improvements in RS technology, such as multispectral imaging and geospatial analysis, are highlighted, along AI innovations that decorate predictive abilities. Case research on malaria, dengue, and cholera exhibit the actual-global efficacy of this incorporated technique. By combining the strengths of RS and AI, this framework offers scalable, price-powerful, and proactive solu tions for addressing worldwide health demanding situations bobbing up from weather trade. Future developments, which include actual-time forecasting structures, elevated datasets, and better global collaborations, underscore the transformative potential of this interdisciplinary technique in advancing public f itness and weather resilience

Keywords: Remote Sensing, Artificial Intelligence, Climate Change, Disease Forecasting, Machine Learning, Public Health, Environmental Monitoring.

Experimental Assessment of Biogas Production Dynamics and its Operating Parameters for Diverse Feedstocks in Independent Anaerobic Digestion Systems

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Abstract

During this research, pilot-scale investigations were conducted on independent anaerobic digestion systems to evaluate the influence of various operating parameters and feedstocks on biogas production. The feedstock analyzed included sewage sludge, fruit and vegetable waste (FVW), and aquatic weeds from Dal Lake. The biogas production process was performed in 20-liter water tanks over a hydraulic retention time of 56 days. Comprehensive feedstock characterization, including pH and COD analysis, identified FVW as the most viable option due to its highest volatile solids (75.06%), calorific value (15.22 MJ/kg), and optimal carbon, nitrogen, and hydrogen content. Sewage sludge and aquatic weeds also demonstrated a reasonable potential but may require optimization techniques to enhance biogas yields. Adding cow dung inoculum to the feedstocks effectively balanced the microbial environment with high moisture content (93%) and volatile solids (90.33%). The 56-day hydraulic retention time facilitated effective degradation, with FVW achieving the highest reduction in volatile solids (32.33%) and COD (3.76 g/L). Temperature variations within the mesophilic range (25-35°C) and pH significantly influenced the biogas production. Notably, no bio-supplementation or chemical additives were used during the study. This research highlights biogas as an upcoming clean energy source to address and mitigate critical environmental challenges, including land use and habitat disruption, dependence on fossil fuels, increased emissions, environmental pollution, and climate change.

Keywords: anaerobic digestion, feedstock, inoculum, biogas generation, clean energy, sustainable

Digital Marketing Communication in Higher Education Marketing: A Systematic Review with TCCM Framework

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Abstract

Advancements in technology have reshaped the digital communication landscape, prompting higher education institutions (HEIs) to adopt innovative strategies to engage diverse and global audiences. This study systematically reviews digital marketing communication in higher education from 2011 to 2024, employing the SPAR-4-SLR methodological approach. Guided by the TCCM framework, it critically examines theoretical foundations, contextual applications, characteristics, and methodological approaches in this domain. Findings reveal a significant focus on social media platforms, with limited exploration of other digital tools such as websites, email campaigns, and eWOM. Furthermore, the study underscores the need for holistic frameworks that integrate these tools while addressing global, cross-cultural, and sustainability-driven perspectives. By identifying research gaps and offering a pathway for advancing communication theory, this review contributes to the development of sustainable and inclusive marketing strategies in higher education. It provides actionable insights for scholars and practitioners aiming to refine digital strategies that align with the principles of sustainability, fostering long-term institutional success and global engagement.

Keywords: Digital Marketing Communication, TCCM framework, Literature Review, Higher Education Marketing

Dynamic Traffic-aware Routing Protocol for Vehicular Ad Hoc Networks

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Abstract

The VANET relies on routing protocols derived from MANET, yet approaches such as geocast, topology-based routing, broadcast, geographic routing, and clustering may not universally suit all scenarios. Integrating metaheuristic algorithms such as genetic algorithms (GA), trajectory algorithms, and nature-inspired algorithms with VANET protocols can significantly enhance efficiency. We propose a hybrid method, termed GAACO, which combines genetic algorithms and ant colony optimization to optimize routing across realistic VANET traffic scenarios. In contrast to conventional VANET routing techniques, we elaborate on VANET simulation scenarios for validation. This methodology leverages open-source technologies such as Urban Mobility Simulation (UMS) for implementation and testing, alongside NS3.2. Three traffic scenarios modeled on Dehradun City are deployed for experimental evaluation. Routing algorithms are evaluated using four key performance metrics: packet loss, total delay, packet delivery ratio, and overall throughput. Our findings consistently demonstrate the superior performance of GAACO over ACO, Particle Swarm Intelligence (PSO), and Ad-hoc Demand Distance Vector Routing (AODV) protocols [1], with typical improvements of 1.45%, 1.55%, and 1.23% observed across various VANET network situations.

Keywords: Routing Protocols, Vehicle-to-Vehicle (V2V) Communication, Performance Metrics, VANETs

Conflict Management and Workplace Bullying in Public Sector Organizations in Jaffna District

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Abstract

The perfect survival purposes in the public sector environment, organizations are focusing on reducing and managing their employees' workplace conflicts and workplace bullying. Human resources are very difficult to imitate and combine with others so as to help to improve organizational performance. So, this study focuses on the impact of Conflict Management on Workplace Bullying. Thus, the study objectives are to identify the levels of conflict management and workplace bullying, to identify the relationship between conflict management and workplace bullying, and to identify the impact of conflict management on workplace bullying among the employees of public sector organizations in Jaffna District. In this study, the researcher attempt to highlight a difference between practical and theoretical contexts by using the information found in particular organizations. For this purpose, the survey questionnaire was considered as a tool to get responses from 100 employees.

In this study, the statistical tools that were used to analyze the levels of variables are mean and SD values, while relationships were measured by Pearson coefficients and linear regressions for further simple regression analysis. Moreover, the result shows significant negative associations among the dependent and independent variables, denoting a negative relationship between conflict management and workplace bullying too, where most of the literature commonly supports such a negative relationship. Hence, this study helps administration directors, especially Human Resource Administration Directors, to understand conflict management and workplace bullying relationships in order to face and control the human resource management problems in their organizations in an effective, efficient, and practical manner.

Keywords: Conflict Management, Workplace Bullying

Artificial Intelligence and Customer Relationship Management: Enhancing Customer Experience in Retail Marketing

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Abstract

Artificial Intelligence (AI) has essentially transformed Customer Relationship Management (CRM) into the retail sector, offering progressive answers to beautify client experience (CX) and pressure sustainable enterprise growth. This literature review delves into the combination of AI technologies into CRM strategies, emphasizing their effect on personalized advertising, predictive analytics, and automated customer support. AI's capability to technique and examine sizable datasets allows stores to supply tailored purchaser interactions, assume client preferences, and design statistics-pushed advertising campaigns that increase engagement and loyalty. Additionally, AI-powered predictive analytics helps proactive selection-making via figuring out emerging trends and forecasting consumer behavior. Automated customer service tools, consisting of chatbots and digital assistants, enhance responsiveness and operational performance. Notwithstanding those advancements, the amalgamation of AI in CRM presents hurdles. Ethical disputes, such as data privateness and algorithmic bias, underscore the need for transparent and robust governance frameworks to ensure accountable use. This evaluation synthesizes cutting-edge studies and practical case studies, demonstrating AI's transformative ability in reshaping CRM practices. By strategically implementing AI, shops can attain a substantial aggressive edge, fostering innovation and purchaser-centricity in a swiftly evolving retail landscape. Ultimately, the findings spotlight AI's twin position in improving commercial enterprise effects while addressing crucial ethical and operational demanding situations.

Keywords: Artificial Intelligence, Customer Relationship Management, Customer Experience, Retail Sector, Personalization, Automated Customer Service, Marketing Effectiveness, Data Privacy, Ethical Considerations, Competitive Advantage, Digital Transformation.

The Role of Digital Platforms in Shaping Social Norms Around IPR

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Abstract

The emergence of digital structures has converted many elements of intellectual property regulation within the twenty first century. Social media, content material sharing platforms, and virtual trade have not most effective end up vital venues for expression and innovation, but have also enabled human beings to discover, create, have interaction, take part in, and defend clever devices. this article examines the effect of digital systems on highbrow belongings rights subculture, focusing at the evolution of felony strategies and fluid, interconnected collaboration in collaboration. It democratizes content material advent and distribution, allowing users to effortlessly create, share, and distribute digital content material. This openness to introduction and publishing has changed social styles round club, and lots of users have become greater forgiving and sharing-orientated. This has been visible among participants' intelligence. highbrow assets rights historically did not endorse the "unfastened sharing" of innovative works, but the practice has now end up a wonderful behaviour in the digital network. platforms blur the road among unlawful interest and authorised use. Remixes, streaming, fan artwork, and so on. have come to be not unusual within the virtual surroundings. Copyright infringements are regularly made through computerized systems inclusive of YouTube content id or DMCA takedown notices. alternatively, public attitudes in the direction of member rights are motivated by using the structures themselves, as customers interact in and debate practices together with truthful use, expressive language, and content changes. in many approaches, users, specifically younger human beings, trust that the management of highbrow assets rights stifles creativity and innovation, creating a culture that opposes strict rules. have interaction inside the enforcement of highbrow assets rights, such as balancing the safety of copyright holders with loose get admission to highbrow and cultural products. via examining the interplay among platform regulation, consumer behaviour, and societal expectations, this study highlights the evolution of individuals' intellectual capabilities in the virtual age and gives insights into future challenges and possibilities in law and practice.

Silent Suffering: The Social Dynamics of Domestic Violence Against Women

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Abstract

Domestic violence against women is a pervasive social issue that transcends geographical, cultural, and economic boundaries. This paper explores the social dynamics that contribute to the persistence of domestic violence, including gender inequality, power imbalances, and societal norms that normalize or excuse abusive behavior. Using a social science lens, the study examines how patriarchal structures, economic dependence, and lack of institutional support contribute to the victimization of women. Additionally, the research highlights the role of social stigma in silencing victims and the psychological and emotional barriers that prevent many women from seeking help. The paper further discusses the impact of domestic violence on women's physical and mental well-being, as well as its broader social consequences, such as intergenerational trauma and economic instability. Drawing from sociological and psychological theories, the study underscores the importance of shifting societal attitudes and implementing stronger legal frameworks to protect victims and hold perpetrators accountable. The role of social institutions, such as family, media, and law enforcement, in either perpetuating or mitigating domestic violence is also analyzed. Moreover, this paper reviews various intervention strategies, including awareness campaigns, legal reforms, and community-based support systems, that have proven effective in reducing domestic violence. It emphasizes the need for a multi-faceted approach that involves policymakers, educators, healthcare professionals, and community leaders in creating a safer environment for women. The research suggests that fostering gender equality and challenging harmful social norms are crucial steps toward eradicating domestic violence. Ultimately, this paper advocates for a more comprehensive understanding of domestic violence against women by recognizing its deep-rooted social causes and consequences. Addressing domestic violence requires not only individual empowerment but also systemic changes that challenge the social structures enabling abuse. By examining the issue through a social science perspective, this study contributes to ongoing discussions on gender-based violence and social justice.

Keywords: *Domestic violence, Gender inequality, Power dynamics, Social norms, Victim support*

Integrating Electronic Compensation Management for enhanced Employee performance and social change: Insights from the Indian IT Sector

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Abstract

This study investigates how IT-enabled management for social change influence employee performance by integrating electronic compensation management and transparency. In the context of social transformation, IT system streamline pay procedures, ensuring fair and equitable reward structures that are aligned with employee's role and desired outcomes. Employee performance is evaluated based on responsibility fulfillment and objective achievement, which are significant indicators of corporate success. IT-enabled platforms automate compensation systems, ensuring that structures are fair, transparent, and performance-based IT systems provide greater transparency into compensation decisions, fostering trust and fairness. This enhances the link between compensation and performance, encouraging employees to achieve company objectives. Integration of IT promotes performance while also driving social change by encouraging workplace equality and fairness. Transparent compensation systems promote socially responsible behavior by minimizing disparities and ensuring that performance is fairly compensated. Data will be gathered from employees in IT companies in India and analyzed to determine the influence of IT-enabled compensation management on performance outcomes. The study shows how IT-enabled management promotes a culture of transparency and fairness, resulting in both social transformation and improved employee performance.

Keywords: E-Compensation management, transparency, competent pay, employee performance, IT Sector.

Consolidated Review of Epilepsy Seizure Detection and Prediction by Deep Learning Models

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Abstract

This review evaluates the effectiveness of seizure detecting devices that can alert for timely intervention to possibly avoid injuries or even deaths caused by seizure. Patients and their caregivers find seizures to be very disconcerting mainly because of their unpredictability; therefore, it is exceedingly critical to have an accurate detection. The literature was systematically reviewed with filtering from 120 relevant studies to 43 that applied to the PRISMA guidelines. Devices that were intended to be used in daily life and in a domestic environment were scrutinized. Devices requiring extended scalp EEG monitoring for a long duration were ruled out as these are evidently inappropriate. Most of the devices that were tested based their seizure detection on the variability of the movement or physiological signals and have relied on algorithms and thresholds for the seizure indication. However, none of them have completed a series of seizures without generating false positives or failing to identify seizures. Many of the articles reviewed contained small sample sizes or provided only limited information with a few recorded seizures. Discussion about seizure alert dogs was virtually nonexistent. The sum of it is that the seizure detection technology is still very much in its infancy, with no major studies or head-to-head comparisons made against other devices. False positives persist and can be pretty disruptive to patients and caregivers. Despite these challenges, seizure detection devices hold remarkable promise in improving future management of epilepsy.

Keywords: *EEG monitoring, seizures, psychological signals.*

Impact of Branding on Service Quality Perception of Shopping Malls in India: An Empirical Study

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Abstract

Indian retail industry is one of the fastest growing industries in the world and is the fifth largest retail destination. It is one of the largest contributors to the country's GDP and a prominent source of employment. One of the major players in the organized retail segment is shopping centres or shopping malls. Shopping malls play a very important role in our daily lives and have contributed significantly to the growth of the organized retail sector. In the last few decades, India has witnessed a massive growth in the number of malls and also advent of e-commerce in the post pandemic era. This has led to massive competition and malls are finding it very difficult to sustain. In today's world, the shoppers are 'split-loyal' in nature; at the slightest level of dissatisfaction, they shift from one place to another. Thus, it is necessary to nurture and build a delighted customer base, who would not only come back to the same mall but will also convince their acquaintances to opt for the same. In this regard, it is necessary to explore the area of branding of shopping malls and on referring to a number of journals it was found that this area remains neglected. This study aims to determine the impact of branding on perception of service quality of malls. Primary data is collected from a sample of 525 mall visitors from Delhi NCR, Kolkata, Mumbai and Chennai with the help of structured questionnaire. Data obtained is analysed using SPSS. It is found that out the several branding elements, mall brand equity and mall brand image significantly impacts service quality perception. This study may act as guiding light for the malls enabling them not only to sustain in this fiercely competitive scenario but to run the show with flying colours.

Keywords: Brand Image, Brand Equity, Shopping Malls, Service Quality Perception

Consumer Loyalty in The Book Retail Industry: A Comparative Analysis Between Physical and Ecommerce Stores

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Abstract

Consumer loyalty is an intriguing topic and it has captured the imagination of academia and marketers alike. For years, researchers and marketers have studied loyalty from different angles. However, quantifying loyalty has always posed a major challenge to the researchers who try to study it. Loyalty is a mix of several subtle human emotions. In this study an attempt has been made to understand Consumer Loyalty in a relatively unexplored industry – the Book Retail Industry. India is the third largest producer of English titles annually. However, there has been a minimal evidence of studies on consumer loyalty in the Book Retail industry of India. The current market scenario is marked by the presence of both traditional book retailers and E-book retailers. The presence of E-commerce players in retailing has given stiff competition to Retailers who sell their merchandise through Physical Bookstores. Hence, it has become imperative for the Retailers to understand what drives consumer loyalty in each of these shopping formats. In this study it has been ascertained what is preferred by the Indian consumer when they go shopping for books – A Physical Bookstore or an E-Commerce Store. It also assesses the sentiments harbored by the consumers towards both the shopping formats by a sentiment analysis. The major predictors of consumer loyalty in Physical and E-commerce bookstores have also been ascertained. Finally, it has been ascertained is the people belonging to different age groups are willing to change their preferences in the near future.

Keywords: Consumer Loyalty, Book Retail Industry, Physical Bookstores, E-Commerce Bookstores, Sentiment Analysis

An Email Login Security:
A Review of Challenges and Innovations

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Abstract

Emails are one of the most used feature of network. Every person who is connected to the network in any way is using emails. However sometimes a single person manages 3-4 emails at the same time, for example different email for workplace, for social media or personal or any other reasons. The number of email users are rising to 4.26 billion in 2022, along with that the total count of emails sent and received also increased to 333.2 Billion, which is increasing day by day. Around 40-60% are spam emails from this range. Now-a-days due to security reasons email are interconnected to the user's mobile phone and that contact number is linked to various sensitive services of the user's like, bank accounts, business, Adhaar card, PAN card, online shopping accounts, business transactions and others. In such cases security becomes the most challenging and fundamental issue for the user as the most common vulnerabilities are associated with email usages like phishing, attacks, malware distribution, identity theft or unauthorized account access, which directly or indirectly is a threat for user's sensitive or personal information. So to relay on traditional password based authentication methods are proven to be inadequate against many types of cyber threats. To minimize these risks, it becomes important to explore and implement enhanced way security practices. So here in this paper we are presenting some issues related to the email and password and how we can improve the login way to make every email secure from unauthorised access.

Keywords: Authentication, Cyber, Email, Password, Security

Optimizing Urban Mobility: Machine Learning for Taxi Demand Forecasting and Fare Comparison

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Abstract

The rapid growth of urban populations has placed immense strain on transportation systems, leading to increased congestion, pollution, and significant inefficiencies. These issues have compounded the challenges faced by urban travellers, who often struggle with a lack of transparency, convenience, and choice when navigating transportation options. This lack of clarity can result in frustration, wasted time, and additional financial and environmental costs. To address these pressing issues, our project aims to develop a comprehensive, web-based platform that aggregates and compares real-time pricing, availability, and route data from multiple transportation providers. The platform is designed to provide users with an intuitive and user- friendly interface, enabling them to quickly access, compare, and choose the most suitable transportation option based on their preferences.

Our innovative solution leverages advanced data analytics and machine learning algorithms to optimize taxi services, addressing long-standing challenges like demand forecasting and fare estimation, which are essential for urban transportation systems. By continuously collecting and processing real-time data from a variety of sources, including ride-sharing services, public transit, and traditional taxi companies, our platform delivers accurate, up-to-date information to empower users in making well-informed travel to deliver personalized recommendations tailored to each user's preferences, habits, and constraints. Whether it's finding the fastest route during rush hour, securing a ride for a group of travellers, or minimizing environmental impact through eco friendly transportation choices, our application equips users with the insights and tools they need to optimize their travel experience holds the potential.

Keywords: Machine learning, Mean Squared Error, Decision Trees, Random Forest, user Interface, Reliability.

Education and Pedagogy

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Abstract

Education is a fundamental pillar of individual and societal development, shaping knowledge, skills, and values essential for personal and professional growth. Pedagogy, the study and practice of teaching, plays a crucial role in ensuring effective learning experiences. This paper explores key pedagogical theories, including behaviorism, constructivism, and social learning, highlighting their impact on instructional strategies. It also examines contemporary trends such as student centered learning, technology integration, and inclusive education. The role of teachers as facilitators of critical thinking and lifelong learning is emphasized, along with challenges such as curriculum adaptation and assessment methodologies. By analyzing best practices in pedagogy, this study aims to contribute to the ongoing discourse on improving educational outcomes in diverse learning environments. The Purpose of Education and Pedagogy ; Education serves as the foundation for personal development, societal progress, and economic growth. Pedagogy, the art and science of teaching, plays a crucial role in shaping effective educational experiences. The primary purpose of education is to foster critical thinking, creativity, and lifelong learning while equipping individuals with the knowledge, skills, and values necessary for active participation in society. Pedagogy influences how learning occurs, emphasizing student engagement, adaptability, and inclusivity. This paper explores the philosophical and practical dimensions of education and pedagogy, highlighting their significance in preparing individuals for an evolving world. By examining various teaching methodologies and learning theories, we emphasize the need for learner-centered approaches that promote both academic achievement and holistic development. Ultimately, education and pedagogy should aim to cultivate informed, responsible, and innovative citizens who contribute meaningfully to their communities. Research Problem in Education and Pedagogy Effective teaching and learning strategies are crucial for student success, yet traditional pedagogical approaches often fail to address the diverse needs of learners. This research investigates the gap between conventional instructional methods and evidence-based pedagogical strategies that enhance student engagement, critical thinking, and knowledge retention. Specifically, it explores how active learning techniques, differentiated instruction, and technology integration impact student outcomes in various educational settings. By analyzing current teaching practices and their effectiveness, this study aims to provide insights into innovative pedagogical frameworks that foster inclusive and adaptive learning environments. The findings will contribute to the development of more effective teaching methodologies that support diverse learners and improve overall educational outcomes. Abstract:

Evidence-Based Approaches in Education and Pedagogy Education and pedagogy have increasingly emphasized evidence-based practices to enhance learning outcomes and instructional effectiveness. Research in cognitive science, developmental psychology, and educational technology provides empirical support for strategies such as active learning, formative assessment, and differentiated instruction. Studies highlight that student-centered approaches, including inquiry-based learning and collaborative activities, improve engagement and retention. Moreover, neuroscientific evidence underscores the role of spaced repetition, retrieval practice, and multimodal instruction in reinforcing knowledge acquisition. Despite these advancements, challenges remain in translating research findings into classroom practice due to contextual variations and implementation barriers. This paper reviews key evidence-based pedagogical strategies and discusses their implications for educators, policymakers, and curriculum designers in fostering effective teaching and learning environments.

Keywords: Teaching Methods, Learning Theories, Curriculum Design, Educational Psychology, Instructional Strategies, Assessment, Evaluation Educational Technology

AI-Driven, ML-Powered, and Blockchain-Enhanced Narcotics Traffic Buster: Empowering Communities to Anonymously Combat Drug

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Abstract

Drug trafficking is a worldwide scourge affecting the socio-economic well-being of societies. Local and internal methods of tackling this menace rarely provide for an anonymous and risky position for informants. The proposed project "Narcotics Traffic Buster" will involve the amalgamation of artificial intelligence, machine learning, and blockchain to create an anonymous and secured reporting platform for anything drug-related. AI and machine learning predict the trend of drug trafficking to facilitate anticipative action while blockchain ensures secure, immutable, and trusted information.

The system provides for real-time analysis, secure communication, and predictive analytics with which law enforcement will effectively beat back against drug trafficking. This is an innovation that seeks to address the constraints of the current systems that strive for a technological solution to seriously pressing problems.

Keywords: Drug trafficking, Artificial Intelligence (AI), Machine Learning (ML), Blockchain technology, Anonymous reporting, Crime prevention, Traceability, Data integrity, Confidentiality.

Impact of Social Media Platforms on Gig Workers Recruitment and Retention

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Abstract

Purpose: The purpose for the research is to explore the influence of social media platforms towards recruitment and retention when it comes to the gig work. There has been an exponential growth in the gig economy over the years which has facilitated the digital platforms with the shift towards the structure of employment. Social media is a tool which conventionally was about the communication and entertainment which has emerged being crucial for the professional spaces as well as, specifically for gig workers and freelancers. The study aims towards the critical analysis for the extent of social media and how it affects the gig workers to be recruited and the decision making towards the gig platforms and employers. By having examined the key social media strategies and platforms , the research will address and explore the relationship between social media dynamics and gig work sustainability.

Design/Methodology: The study will be centred on a mixed method approach combining qualitative and quantitative research tools for comprehensive understanding. A research ensign will be complete including primary data collection through surveys and interviews and secondary analysis could be done through a systematic review of existing literature on gig economy and the social media practices.

For the collection of primary data, 200 gig workers from different sectors such as freelancing, and creative services will be surveyed. Participants will be selected from social media platforms like LinkedIn, Instagram, Facebook. The survey will have emphasis on the understanding of the platforms and how they are being used related to recruitment and retention practices with the worker satisfaction and the role of the algorithm. In order to have deeper insights, 50 stakeholders like recruiters, human resources executives and professionals will also be surveyed who are actively recruiting from these social media channels.

In an addendum to this, a secondary data analysis will be conducted by reviewing 60 peer reviewed articles, reports from industries and case studies to examine the findings.

Findings: The findings reveal that there is a positive correlation between the social media presence and the recruitment in the gig economy. The platforms like, Facebook, Linkedin and instagram have become crucial for the gig workers to be connected with the potential employers. The strategies related to recruitment have increased from the leveraging of algorithms, and targeted advertising which is allowing the companies to reach to their workers in an efficient manner. The study has found that the immediacy aspect of social media has eased the accesses and also the

reduced the barriers for both the workers as well as the recruiters.

On the contrary, the study also highlights the downsides as the gig workers raise concerns rearing the increase of self promotion and personal braiding rather than the companies or the skills. Social media even facilitates connection, it also leads towards higher competition within the gig workers which reduces their job security and satisfaction in many cases.

Relevance/Contribution to Research: The research plays a significant role in understanding the evolving gig economy and its dynamics by placing social media and considering recruitment and retention strategies. Most of the literature focuses on the operational aspects of the gig economy such as legal frameworks or algorithms but the role that social media is shaping the outcomes of employment is not yet explored. By filling this research gap, the study contributed towards the research in gig economy studies, human resources management as well as social media marketing.

The study underscores the relevance of analysing not just the recruitment phase but also the retention which is faced by the companies, though the mixed method approach the research presents a holistic view of how this transformation in the workforce management is evolving iht social media and gig works. Furthermore this study also introduced the interdisciplinary approach through communication theory, organisational behaviour and marketing with gig economy frameworks.

Contribution to Practice: Considering a practical perception, the findings have actionable insights regarding the gig platform as well as recruiters . While understanding the key aspects of social media which resonate with the gig works allow them to be aligned with the recruitment campaigns such as the use of Instagram can be used for increasing the engagement of the brand and attract the younger gig workers while Facebook or LinkedIn can be used to make more professional content and gigs. The insight can actually aid the companies for developing an approach that is smooth in their recruitment efforts by using social media analytics.

The study also highlights the significance for personal branding and the presence on social media platforms. With the rise in competition in the gig economy, the workers can definitely benefit from how they are able to market themselves on social media and improve their online presence. The aspect of research has practical implications for the development of a career in the gig sector.

Keywords: Gig Workers, Social Media Platforms, Influence of Social Media, Recruitment.

The Rise of Artificial Intelligence in Intellectual Property Law: Patentability and Copyright Issues

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Abstract

The rise of Artificial Intelligence (AI) is transforming and posing important challenges in the field of Intellectual Property (IP) law regarding patentability and copyright. As AI systems increasingly produce inventions and creative works without human involvement, doubts arise on how suitable the present framework of intellectual property rights-invented to protect human-made innovations-is for such a confused state of AI. This paper develops its line of analysis around the AI implications for patent and copyright laws, checking out if current legal structures are such that they can address outputs from AI systems. While current laws in the patent regime recognize only a human inventor, an AI system can produce novel and non-obvious inventions. Should AI be viewed as an inventor, or would patent laws be transformed to recognize that AI is merely a tool in the invention process? The paper discusses various in-applicable case law and decisions such as the 2019 ruling of the USPTO that in certain inventions, the inventor could only be a human being, which manifests the fact that patentability frameworks remain unfit for AI-generated inventions. Moreover, in relation to copyright, it can be noted that the contingent works executed by AI challenge and suspend the necessity for human authorship. When AI generates such works on its way, the alternative arises and must be critically analysed who is to be considered the actual owner of copyright over the work? Current copyright frameworks in various jurisdictions, such as the U.S., do not extend protection to AI-generated works without incorporation of some human involvement in their creation. Possible suggestions of reform like placing authorship over X work under the AIs developer or user, or a New IP category addressing the input of AI in creation, formulations were discussed in the paper. Ultimately, innovations in both patent and copyright laws ought to grow in a balanced way that, while producing adequate protective layers over human creators, prepares itself to come into terms with rising Aid creativity and invention. For maintaining justice and fairness, reform in legal constructs for tracking with AI-generated creations is inevitable.

Keywords: *AI-generated content, authorship attribution, human intervention, originality, inventive step, ownership, legal personhood, fair use, derivative works, algorithm protection, data privacy, IP infringement.*

Sustainable Development and Green Growth: A Global Perspective

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Abstract

This research examines the intricate relationship between sustainable development practices and green growth initiatives across developing and developed economies from 2015 to 2023. Through comprehensive analysis of secondary data from international organizations, this study investigates how green growth strategies contribute to achieving sustainable development goals while maintaining economic prosperity. The research reveals that countries implementing robust green growth policies demonstrated a 12% higher average sustainable development index score compared to those with limited environmental policies. Furthermore, the study identifies key success factors in green growth implementation, including regulatory frameworks, technological innovation, and public-private partnerships.

Keywords: Sustainable development, green growth, environmental policy, economic development.

Enhancing The Strength And Sustainability Of Co2 Absorbing Concrete Using Zeolite And Ggbs

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Abstract

The production of concrete, especially through cement manufacturing, significantly contributes to global CO_2 emissions, necessitating the development of more sustainable alternatives. This research investigates the use of zeolite and Ground Granulated Blast Furnace Slag (GGBS) as partial replacements for Ordinary Portland Cement (OPC 43 Grade) to create eco-friendly concrete. Zeolite, with its porous structure, improves the material's ability to absorb CO_2, aiding in carbon reduction efforts. GGBS, a steel production byproduct, reduces reliance on cement and enhances the strength and durability of the resulting concrete mix.

The study focuses on optimizing the concrete mix to achieve a balance between mechanical performance and environmental benefits. Experimental evaluations include compressive strength, split tensile strength, carbonation depth, and CO_2 absorption by weight. Among the tested combinations, a mix with 30% zeolite and 30% GGBS demonstrated the highest compressive strength of 40.6 N/mm² and a CO_2 absorption rate of 0.41 moles/specimen. These results highlight the dual benefits of incorporating zeolite and GGBS in concrete, combining improved structural performance with enhanced carbon sequestration capabilities. This innovation contributes to sustainable construction practices by reducing the carbon footprint of buildings, supporting global environmental goals, and promoting a greener future.

Keywords: CO2 absorption, Compressive strength, Tensile strength, Carbonation, Zeolite, GGBS.

Investigating the Role of Google Business Profile Training in Enhancing Brand Visibility and Digital Equity for Micro Enterprises in Mumbai: An Exploratory Study

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Abstract

Purpose: The current study aims to examine the effect of Google Business Profile (GBP) training on the brand visibility of micro-sized enterprises in Mumbai. It scrutinizes the impact of digitally structured training program on brand visibility, engagement and marketplace reach and formulate a brand visibility measurement. Design/methodology/approach – The present study uses a mixed-method approach collecting primary data from 237 sample micro-entrepreneurs who received GBP training. The exploratory factor analysis (EFA) of the constructs reveals the most significant latent factors influencing brand visibility, and the confirmatory factor analysis (CFA) provides validation of the model. The effectiveness of the training is measured by analyzing metrics like online traffic, customer reviews and engagement levels.

Findings: The analysis shows that GBP training has a significant impact on digital visibility, customer engagement, and trust. According to EFA, there are three main pillars of brand visibility: being discoverable in search engines, being approachable by customers, and being reputable. CFA establishes the model validity and reliability, indicating that the study found a significant association between GBP training and improved digital branding results. But challenges like digital literacy gaps and resource constraints remain.

Practical implication: The findings provide recommendations for policymakers, digital marketing instructors, and supporting organizations to provide tailor-made training, continuous mentorship, and easy access to online tools to close the digital gap. Social Relevance: Advancing digital literacy for micro-enterprises promotes economic inclusion, equitable access to digital opportunities and business resilience. With its consolidated brand visibility, it empowers small business owners who may be women, and therefore used to the level of domestic economic freedom or marginalized communities, to stand up in the colossal digital marketplace and grow.

Originality/value:This study adds to the digital marketing literature by establishing and validating a model to measure brand visibility in micro-enterprises and providing empirical evidences of digital empowerment and business growth.

Keywords: brand awareness, digital literacy, digital visibility, Google Business Profile, micro-enterprises.

The Impact of Land Distribution Laws on Urban Sprawl (Case Study: Muscat, Oman)

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Abstract

The proposed research paper examines the impact of land distribution laws on urban sprawl in Muscat, Sultanate of Oman. Urban sprawl is a pressing global issue that leads to inefficient land use and environmental and social challenges. The research aims to study how land distribution laws influence urban sprawl, evaluate the effectiveness of current urban strategies in managing this phenomenon, and identify shortcomings in existing laws within the framework of Oman's urban strategy.

The study employs a mixed-methods approach, combining quantitative surveys involving residents, planners, and policymakers, with qualitative interviews and document analysis. Statistical analyses reveal a significant correlation between specific land distribution policies and urban sprawl indicators, such as population density and changes in built-up areas. The findings highlight gaps in Muscat's urban strategy, emphasizing the need for policy reforms to address sustainability challenges.

This research contributes to academic discourse by providing evidence and practical insights specific to Muscat, highlighting the importance of implementing effective land distribution policies. Recommendations include improving laws to reduce urban sprawl, promoting sustainable urban development, and aligning strategies with Oman Vision 2040 objectives. The research serves as a strategic guide for decision-makers and planners to manage urban expansion and foster sustainable growth.

Keywords: *Urban Sprawl, Muscat, Oman, Sustainable Growth.*

Innovative Ecosystems and Digital Platforms: Transforming Interactions in Business, Science, and Society

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Abstract

Innovative ecosystems represent a fundamental pillar of the contemporary knowledge economy, facilitating the integration of business, science, and society to promote sustainable development. This article examines the transformative role of digital platforms in fostering interactions among various ecosystem participants. As catalysts for change, digital platforms enhance business process optimization, expand access to knowledge and resources, and promote the establishment of novel collaboration models.

The research underscores the substantial influence of digital platforms on economic globalization, particularly their capacity to facilitate the dissemination of knowledge and technologies across diverse sectors. This study presents specific examples of digital platform implementations, illustrating their effectiveness in fostering economic growth, social integration, and scientific advancement. Notable platforms, such as Amazon Web Services (AWS), ResearchGate, and LinkedIn, are highlighted as providing scalable resources for businesses, access to global knowledge networks for researchers, and tools for implementing socially significant initiatives.

The findings reveal that digital platforms transcend their function as technological tools to emerge as social phenomena, reshaping paradigms in business management, scientific research, and civic engagement. Furthermore, they contribute to the formation of inclusive societies by ensuring equitable access to innovation, irrespective of geographical or social status. The study emphasizes the critical importance of collaborative efforts among governments, businesses, and civil society organizations to ensure the effective operation of digital platforms.

In conclusion, digital platforms play a transformative role in reshaping contemporary economic and social systems. They are instrumental in advancing sustainable development, enhancing efficiency, and integrating knowledge across sectors.

Keywords: digital platforms, economic transformation, innovative ecosystems, sustainable development

Exploring the Convergence of Simulation Hypothesis and Artificial Intelligence: Ethical, Philosophical, and Existential Dimensions of Humanity's Technological Trajectory

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Abstract

There are several worries regarding how artificial intelligence (AI) will affect human lives in the future. Whether artificial intelligence (AI) can replace humans in all areas of life or if it is going to live with us and enhance our capabilities is one of the most heated subjects of discussion. AI has amazing potential to change the world as it develops at an incredible rate. The question still stands, though: how can we view the advancement of such potent technologies in a way that advances humanity while avoiding negative side effects? This paper examines the theoretical and applied effects of unchecked AI development, taking into account both the potential hazards and benefits.

We look at **simulation theory** and the **Great Silence paradox**, two frameworks that provide important insights into the possible future of AI, in order to better comprehend these worries. According to simulation theory, our reality might actually be a simulated setting made by a much more sophisticated intellect—possibly artificial intelligence itself. However, the Great Silence dilemma, sometimes referred to as the Fermi dilemma, asks why humanity have not yet come across extra terrestrial civilization in spite of the universe's enormous number of possibly liveable worlds. We may investigate the ramifications of developing extremely sophisticated AI and how such advancements can impact our position in the cosmos with the aid of these two ideas.

Keywords: amazing, humanity, terrestrial

Malaria Detection From Blood Smears Using Deep Learning Frameworks

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Abstract

Malaria is a potentially fatal, mosquito-transmitted disease, yet it still kills thousands of people annually. According to growing deaths, detection is low and the workers in laboratories are not expe rienced and sophisticated medical diagnostic equipment is also not avail able. Recently, research has focused on microscopic blood smear exami nation of malaria-infected RBCs with DL models as a promising point-of care approach. In the present study, the Malaria Dataset was employed to classify and detect malaria parasites with Hybrid Deep Learning Models. Classification models include "VGG19, ResNet50, CNN, and advanced RNN" combinations like "LSTM+LSTM, GRU+GRU, GRU+LSTM, LSTM+GRU, GRU + BiLSTM, LSTM + BiLSTM, and BiLSTM + BiLSTM, alongside Xception, NasNetMobile, and an ensemble model of Xception and NasNetMobile". For robust detection, the YOLO fam ily, including "YOLOV5x6, YOLOV5s6, YOLOV8n, and YOLOV9n", is used to identify abnormalities. The outcome shows that ensemble Xcep tion + NasNetMobile gave better accuracy, while YOLOV9n proved more effective for malaria parasite detection, It therefore shows promising ad vancement in the area of automated malaria identification and also pro motes reliable development diagnostic tools for malaria control.

Keywords: Malaria detection, classification, CNN, LSTM, GRU, Bi- directional LSTM, hybrid model, cascaded classifier.

Geographic Information System (GIS) Application to Solid Waste Management in Harohalli, Bengaluru

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Abstract

The rapid expansion of urban areas has intensified the challenges associated with municipal solid waste (MSW) management. Poorly managed waste disposal contributes to environmental degradation and poses significant risks to public health. This research investigates the role of Geographic Information System (GIS) technology in optimizing waste collection and disposal in Harohalli, Bengaluru. GIS provides a systematic approach to identifying waste generation points, determining ideal bin placements, and enhancing collection routes through spatial analysis. By employing GIS-based strategies, this study presents a refined waste management model that improves operational efficiency, reduces fuel usage, and lowers costs. The findings demonstrate how GIS can facilitate sustainable waste disposal practices, leading to a cleaner and healthier urban landscape. Implementing GIS-driven waste management supports data-driven decision-making, allowing municipal authorities to tackle waste management challenges with greater accuracy and effectiveness.

Keywords: GIS, Solid Waste Management, Route Optimization, Waste Collection, Sustainable Urban Development.

Math Word Problem Generation Using Transformers and Reinforcement Learning

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Abstract

Manually crafting math word problems is a labour-intensive process that teachers do, and one can sense a growing need for automated systems. However, many of the present models will generate problems that are grammatically correct but semantically incoherent, not solv able, or not aligned with the educational objectives. Addressing these issues is the motivation behind our work that enhances an MWP gen eration model using transformer architecture and reinforcement learn ing. Having integrated the topic-expression transformer mechanism, our approach will be to align the problem context with appropriate math ematical operations: MWPs are generated that are linguistically sound and mathematically proper. Towards the future, we would focus on the increase of diversity and complexity of the generated problems and eval uation of model adaptability across di!erent datasets. Finally, we shall end up with an application that is user-friendly to enable real-time gen eration and interaction with MWPs with improved relevance, solvability and e!ectiveness in the educational setting.

Keywords: Math Word Problems (MWPs), Automated Problem Generation, Transformer Architecture, Reinforcement Learning · Natural Language Processing (NLP).

Does Employee Engagement Mediate Relationship Between Human Resource Practices and Organizational Citizenship Behaviour

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Abstract

In contemporary times, HR practices have evolved, encompassing intricate interconnections and addressing multifaceted organizational issues. Acknowledging that HR practices reinforce productive employee behaviour, benefiting all stakeholders is crucial. A pivotal facet of this influence lies in Organizational Citizenship Behaviour (OCB), reflecting an employee's disposition towards their role. Considering the above argument, the Present study explores the acquaintances among HR practices i.e., Hiring, training, performance management, rewards - and OCB, mediated by Employee Engagement. Employing a descriptive research design, the study draws data from diverse sectors comprising 350 employees. A survey employing standardized scales was conducted, and to analyse the data, various statistical techniques were applied using SPSS and Structural Equation Modelling (SEM) AMOS software to validate the hypotheses. Analysis revealed that HR practices influence OCB. Moreover, the Investigation also revealed the existence of a partial mediating effect of employee engagement between HR practices and OCB. The study underscores Employee Engagement's pivotal role, accentuating the significant impact of HR practices on OCB.

This research offers invaluable insights into the dynamic HR practices-OCB relationship, providing actionable guidance for organisations seeking to augment performance through employee engagement. The study's theoretical and practical implications are grounded in empirical outcomes. The paper discusses its scope and limitations and outlines future research directions.

Keywords: Employee Engagement, Human Resource Practices, Organizational Citizenship behavior, Structural Equation Modelling.

Addressing the Loneliness Epidemic: A Systematic Review of Causes, Intervention Strategies, and Policy Implications for Older Adults

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Abstract

The growing prevalence of loneliness among older adults has emerged as a critical public health concern, with recent studies indicating that up to 43% of adults aged 60 and above experience chronic loneliness. This review synthesizes the literature on the multifaceted nature of the loneliness epidemic, its underlying causes, and intervention strategies. We hypothesize that societal changes, such as technological advancements, changing family structures, and urbanization, have significantly contributed to increased social isolation among the elderly population.

This review explores the root causes of chronic loneliness in older adults, effective intervention strategies, and how personal, social, and environmental factors interact to influence loneliness. Key stakeholders in addressing elder loneliness include healthcare providers, community organizations, policymakers, and families, all of whom play a critical role in mitigating the issue.

A systematic review of 85 studies published between 2010 and 2024 was conducted using databases such as PubMed, PsycINFO, and Scopus. Findings reveal that loneliness in older adults is influenced by complex interactions between personal, social, and environmental factors. Promising intervention strategies include intergenerational programs, technology-based social connections, and community-based support systems. Successful interventions typically combine multiple approaches and are tailored to individual circumstances.

Future research should focus on scalable intervention models and the role of cultural factors in addressing loneliness among older adults. This study is relevant for shaping public health policies to improve the well-being of older adults and address social isolation.

Keywords: Loneliness, Older Adults, Public Health, Social Isolation.

In-Silico Analysis of Grifola Frondosa Phytochemicals for the Treatment of Polycystic Ovarian Syndrome (PCOS)

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Abstract

Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder characterized by hyperandrogenism, insulin resistance, and chronic anovulation. The search for natural therapeutic agents with minimal side effects has gained significant attention. Grifola frondosa (Maitake mushroom) is a rich source of bioactive compounds with potential hormonal regulatory properties. This study aimed to identify anti-androgenic and anti-estrogenic phytocompounds from Grifola frondosa using in-silico approaches. Molecular docking and pharmacokinetic analysis were performed to evaluate the binding affinity and drug-likeness of selected compounds against androgen receptor (AR) and estrogen receptor (ER). The results revealed that Ergosterol, a prominent phytochemical in Grifola frondosa, exhibited significant binding affinity to AR and ER, suggesting its potential as a therapeutic agent for PCOS. Further in-vitro and in-vivo studies are warranted to validate these findings.

Keywords: *Grifola frondosa, Polycystic Ovary Syndrome, Anti-androgenic, Anti-estrogenic, Molecular Docking.*

Artificial Intelligence Based Automated Crop Disease Detection Applied with Image Processing

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Abstract

Plant diseases greatly affect agriculture, causing a yearly drop of about 20–40% in world food production. Traditional methods for identifying diseases involve checking by hand, which takes a lot of time and can lead to mistakes. This study introduces an AI system that automatically detects crop diseases using picture processing and deep learning to make the process more accurate and efficient. The model uses a Convolutional Neural Network (CNN) and is trained on a set of 50,000 labelled images of 10 types of crops that have 15 common diseases. The dataset was preprocessed using picture enrichment, normalisation, and segmentation methods to improve model resilience. The CNN model has 18 convolutional layers and was learnt using a stochastic gradient descent optimiser with a learning rate of 0.001. The experiment showed that the model had an accuracy of 96.5%. This is better than standard Support Vector Machines (SVM) and Random Forest classifiers, which had accuracies of 85.2% and 89.7%, respectively. The method correctly identified diseases like powdery mildew, rust, bacterial blight, and leaf spot with an average accuracy of 94.8%. The new AI recognition system can diagnose diseases in just 3.2 seconds for each picture. This makes it perfect for use in smartphone apps and farming technologies. This study helps spot diseases early and supports sustainable farming, which lowers food loses and reduces the need for too many pesticides. Future improvements will include adding Internet of Things (IoT) sensors to watch the environment in real-time and increasing the collection to cover more types of crops and different diseases. The suggested plan could change the way we handle plant diseases and improve food security worldwide.

Keywords: *Crop Disease Detection, Convolutional Neural Networks, Deep Learning, Image Processing, Precision Agriculture*

Implementation of Green Human Resource Management and the Impact on Employee Pro-Protection Behavior Literature Review

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Abstract

This research systematically reviews the literature on Green Human Resource Management (Green HRM) and its impact on employee behavior and organizational performance. Green HRM, which emphasizes environmentally sustainable practices, plays a crucial role in fostering proenvironmental behavior among employees, thereby enhancing their well-being and overall organizational success. Using the Systematic Literature Review (SLR) method, this study analyzes data from accredited scientific journals and recent articles. The findings reveal that Green HRM significantly contributes to creating a sustainable work environment and improving organizational performance. Key practices such as energy efficiency, promoting environmental awareness, and integrating sustainability into HRM policies are shown to have positive effects. However, successful implementation of Green HRM requires strong organizational commitment, employee education, and consideration of external factors like environmental regulations and stakeholder pressure. The study concludes that Green HRM is strategic in achieving sustainability goals and enhancing organizational performance.

Keywords: *Green; HRM; SLR; Protection; Behavior*

Detection of Deep Fake Voices Using Generative Adversarial Networks (GAN) for Improved Authenticity Verification

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Abstract

The technical complexity of deep fake voice synthesis is growing, which makes digital security and identity proof much harder. Using Generative Adversarial Networks (GANs) to improve voice identification systems, this study shows a new way to find deep fake sounds. Based on a collection of real and fake voice samples, our GAN-based model uses adversarial training between generator and discriminator networks to better tell the difference between real and deep fake audio. For more complex feature extraction, the model includes important audio features like spectrograms and mel-frequency cepstral coefficients (MFCCs). According to the experiments, the suggested GAN-based detecting model is 94.5% accurate at finding things, which is 8.2% better than traditional classifiers and 11% better than baseline methods. In addition, our GAN model has a 92.3% memory rate when it comes to spotting simulated sounds. This makes identification much more effective in hostile settings where deep fake methods are used to remain undetected. Analysis of comparative data shows that our model works well in a variety of sound situations, showing that it is sturdy and flexible. According to the results, GANs could improve security protocols in voice-based applications, making up for the problems with current monitoring methods. Later work will focus on making the model more generalizable across different languages and environments so that it can be used in a wider range of real-life situations.

Keywords: *Analysis, Classifiers, GAN, F1-Score, MFCC*

Real Time Forecast of Consumer Purchase Behaviour Employing Machine Learning Based Classification Models

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Abstract

Knowing how customers shop is important for businesses to improve their marketing and connect better with customers. This study uses machine learning-based classification models to analyse real-time buy trends using a sample of 250,000 customer interactions from different e-commerce sites. Feature selection includes information about demographics, viewing past, how often purchases are made, and types of products. The study uses Random Forest, XGBoost, Support Vector Machine (SVM), and Artificial Neural Networks (ANN) to identify people as likely to buy or not buy. Test results show that XGBoost has the best accuracy at 92.8%. Random Forest follows with 90.5%, ANN has 89.2%, and SVM has 85.7%. The sample was split into 80% training and 20% testing, ensuring model generalisation. Tests on precision, recall, and F1-score show that XGBoost is the best choice for balancing sensitivity and specificity. It cuts down false positive rates by 18% compared to regular logistic regression. Real-time predictions were tried in a live e-commerce setting, where personalised advice based on model predictions increased conversion rates by 24%. The use of machine learning greatly helps to make focused marketing and keeping customers more effective. Future study will combine deep learning and reinforcement learning to improve how we communicate with customers.

Keywords: *Classification Models, Customer Behavior Prediction, E-Commerce, Machine Learning, Real-Time Analytics*

Climate Change and Its Impact on Gender-Based Violence Among Rural Women in Barmer and Jaisalmer, Rajasthan: An Empirical and Interdisciplinary Study

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Abstract

This research paper offers a rigorous and interdisciplinary examination of the intricate relationship between climate change and gender-based violence, with a particular focus on rural women in the Barmer and Jaisalmer districts of Rajasthan, India. By elucidating the socio-ecological mechanisms through which rising temperatures, erratic climatic conditions, and resultant socio-economic disruptions intensify gender disparities and precipitate domestic violence, this study seeks to advance scholarly discourse at the intersection of environmental and gender studies.

Grounded in a robust methodological framework, the research integrates empirical evidence obtained through extensive fieldwork, critical analyses of government reports, and a synthesis of academic literature. The study is theoretically informed by the works of eminent Indian scholars, including Radhakamal Mukerjee, Bina Agarwal, Indra Munshi, and Maria Mies, while also drawing upon global datasets from institutions such as UN Women and JAMA Psychiatry. In doing so, it presents one of the most comprehensive inquiries into the gendered repercussions of climate change in the Indian subcontinent.

The findings underscore the imperative for gender-responsive climate policies that address the compounded vulnerabilities of rural women. This paper advocates for an integrated policy framework that foregrounds intersectionality, ecological justice, and structural reforms to mitigate both the adverse environmental transformations and the endemic patterns of gender-based violence they engender.

Keywords: *Climate Change, Jaisalmer, Rajasthan, Rural Women, Interdisciplinary Study.*

The Interplay Between Upper Echelon Characteristics and Triple Bottom Approach: Evidence from India

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Abstract

The Triple Bottom Line (TBL) framework, which includes profit, planet, and people aspects, has emerged as a key tool for assessing the sustainability of organisations. Upper Echelon, as pivotal decision-makers, have a substantial impact on Triple Bottom Line results; however, the influence of their demographic factors—such as age, gender, and tenure has not been thoroughly examined. This study explores the influence of demographic factors on TBL performance, utilizing theoretical frameworks including Triple Bottom Line theory, Stakeholder Theory, and Upper Echelon Theory. Utilizing data from Indian-listed non-companies, the study applies regression analysis to investigate the relationships between CEO traits and TBL dimensions. The results indicate that younger chief executives place high importance on environmental initiatives, while female chief executives highlight the significance of social equity, and those with longer tenures concentrate on economic stability. This investigation highlights the significance of diverse leadership in attaining equitable sustainability results and provides insights for corporate policy and administration development.

Keywords: *Upper echelon, Triple bottom line, CEO characteristics*

The Influence of Shopping Motives on Retail Website-Customer Engagement: An Empirical Analysis of Online Purchase & Engagement Behavior

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Abstract

Purpose- Consumers Online shopping mostly driven by the motives that they bear while interacting with various online retail websites. The present study aims to explore whether the various shopping motivation exert influence on various dimensions of customer-website engagement (i.e. AE, IE, BE & CE). The study further investigates whether the dimensions of customer website engagement have any influence on customer satisfaction and subsequent loyalty in the process of customer-website engagement.

Design/methodology/approach- Employing survey data, the data has been fetched from customers who are registered customers of the study website. Overall, 502 completed and usable responses have been retrieved from students aged between 19 to 26. Structural Equation Modelling using SPSS 25.0 and Amos 26.0 has been conducted to scrutinize the influence of shopping motivations of on various dimensions of customer website engagement following its effect on satisfaction and subsequent loyalty.

Findings- Distinctive findings disclose that, although not all the shopping motivations distinctly influence all the dimensions of customer website engagement, there are certain shopping motives those significantly drive particular dimensions of customer website engagement. The study further reveals that except behavioral engagement all other dimensions of website engagement are notably associated with customer satisfaction.

Originality/value- the parsimonious structure of shopping motivation-customer website engagement heightens the marketing challenges and extract strategic Significance of resulting outcome of customer website interaction (i.e. Customer Loyalty). The study in its unique endeavor pledged to scrutinize the influence of shopping motivation that underpin the strategic value of customer engagement towards the brand (Website) laying on strong theoretical foundation within the crucial scenario of customer-website encounters.

Keywords: *Shopping Motivation; Website Engagement; Website Attributes; Customer Satisfaction; Loyalty; Online Retailing*

An Autonomous Rover For Weed Detection

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Abstract

This project aims to enhance agricultural productivity and promote sustainable farming through the development of an autonomous weed detection rover. The rover, powered by a Raspberry Pi, employs a high-definition camera and advanced image processing algorithms to distinguish weeds from crops in real-time based on visual attributes such as color, texture, and shape. Key components like motor drivers and MOSFETs ensure efficient power management and autonomous navigation, minimizing human intervention. The system significantly reduces manual labor, cutting physical effort by approximately 80%, while enabling precise herbicide application to mitigate environmental impact. This scalable and efficient solution demonstrates the potential of intelligent automation in agriculture, fostering sustainable weed management practices and improving long-term crop yields.output.

***Keywords:** Weed, Autonomous rover, Raspberry pi, Image processing, Cost-effective, Productivity, Herbicides.*

Iot-Enabled Drainage Gas and Block Monitoring System

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Abstract

Urban and industrial drainage systems are prone to serious risks, such as hazardous gas accumulation and blockages, which can compromise both system performance and the safety of maintenance crews. This project presents an IoT-based monitoring solution designed to detect gas levels and blockages in the drainage network, with a focus on enhancing safety and operational efficiency. The system continuously tracks gas concentrations and identifies blockages, sending real-time alerts to maintenance teams when issues are detected. Offering live updates on gas levels ensures that personnel are shielded from hazardous environments. Furthermore, the integration of advanced data analytics and cloud technology enables the prediction of potential risks, streamlining maintenance schedules, and pinpointing high-risk zones for more frequent inspections. This proactive approach not only improves safety, but also reduces downtime, lowers emergency repair costs, and supports city planners in making data-driven decisions to strengthen infrastructure resilience and operational efficiency.

Keywords: IoT, drainage monitoring, hazardous gases, blockages, and real-time notifications.

Implementing a Zero Trust Architecture Model for Preventing Data Breach

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Abstract

Data breaches have become an important problem in an increasingly interconnected digital world. Classic network perimeters give way to novel cyberattack threats, thus traditional security models that consider trust implicitly by virtue of locations in the network are no longer effective in preventing modern cyber threats. The study is intended to introduce Zero Trust Architecture to reinforce the data protection and diminish the risks of license breaches. Zero Trust focuses on no trust and relies on the concept of "never trust, always verify." Our proposed ZTA framework focuses extensively on multimedia multi-factor authentication (MFA) using time-based one-time passwords (TOTP) and session tokens to ensure continued verification of each step throughout the interaction. The chart to be provided within the course of this research describes the user authentication process through which users have to undergo revalidation of credentials during sensitive operations. The multi-layered approach is meant to ensure that unauthorized access is denied at every point. Using Zero Trust principles, the model reduces the attack surface and ensures authentication and authorization of users to access critical resources.

Keywords: ZTA, TOTP, Session limit, multi-factor authentication.

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Bridging Technology and Performance: The Mediating Role of Communication Effectiveness in the Modern Workplace

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Abstract

The evolving work environment, shaped by technological advancements and changing leadership dynamics, significantly influences employee performance. This study examines the impact of technology adoption on employee performance, emphasizing the mediating role of Communication Effectiveness (CE). Using Structural Equation Modeling (SEM) and data from 157 employees across various industries, the findings reveal that technology adoption positively affects both communication effectiveness and employee performance. Additionally, communication effectiveness enhances employee performance and mediates the relationship between technology adoption and employee outcomes. These findings have important theoretical and practical implications. Theoretically, the study contributes to organizational behavior literature by identifying communication effectiveness as a key mechanism linking technology adoption to improved performance. Practically, organizations should integrate technology adoption with strategies to enhance communication, ensuring employees effectively utilize digital tools for collaboration and productivity. Investing in communication training and fostering a culture of information sharing can maximize the benefits of technology in the workplace, ultimately improving overall employee performance.

Keywords: Communication Effectiveness, Employee Performance, Organizational Behavior, Structural Equation Modeling, Technology Adoption

The Impact of Hybrid Work Flexibility on Job Stress, Work-Life Balance, and Employee Performance

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Abstract

The rise of hybrid work flexibility has transformed modern workplaces, influencing employee well-being, job stress, and work-life balance. This study explores the impact of hybrid work flexibility on job stress (JS), work-life balance (WLB), and employee well-being (EWB) using Structural Equation Modeling (SEM). The research examines how the ability to work remotely or in a hybrid environment affects employees' stress levels, their ability to balance professional and personal responsibilities, and their overall well-being. Data were collected from employees working in hybrid settings across various industries. The findings suggest that greater work flexibility reduces job stress, enhances work-life balance, and improves overall well-being. Additionally, work-life balance plays a mediating role in the relationship between hybrid work flexibility and employee well-being. The study provides insights for organizations seeking to optimize hybrid work policies to enhance employee satisfaction and productivity while maintaining a healthy work environment.

Keywords: Employee Well-Being, Hybrid Work Flexibility, Job Stress, Structural Equation Modeling (SEM), Work-Life Balance.

Nature-Inspired Approaches for Satellite Image Classification: A New Frontier

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Abstract

Satellite image classification is a cornerstone of automated pattern recognition and analysis in remote sensing, providing essential insights for terrain mapping and environmental monitoring. This paper explores the application of nature-inspired computing techniques, which have shown remarkable potential for improving classification accuracy. We specifically focus on hybrid algorithms such as the Hybrid Flower Pollination by Artificial Bees (FPAB) / Biogeography-Based Optimization (BBO) algorithm, Biogeography-Based Optimization (BBO) combined with Artificial Bee Colony Optimization (ABC), and the fusion of Cuckoo Search (CS) with Ant Colony Optimization (ACO). These algorithms, inspired by natural systems and evolutionary processes, address key challenges in remote sensing. The study emphasizes the unique strengths and synergistic potential of these techniques which significantly enhances classification performance. Experimental results demonstrate their effectiveness in achieving superior classification accuracy and robustness, as reflected in higher kappa coefficients—an essential metric of reliability in remote sensing applications. By leveraging the adaptability and efficiency of these algorithms, researchers have made significant advancements in terrain categorization, offering a deeper understanding of Earth's surface dynamics. This paper synthesizes recent research trends and advancements, providing valuable insights into the role of nature-inspired optimization techniques in satellite image classification. It underscores their importance in delivering scalable and reliable solutions for complex remote sensing challenges, laying a foundation for future innovations in this field.

Keywords: Satellite Image Classification, Nature-Inspired Algorithms, Cuckoo Search (CS), Biogeography-Based Optimization (BBO), Artificial Bee Colony Optimization (ABC), Flower Pollination by Artificial Bees (FPAB)/ Kappa Coefficient, Remote Sensing.

Analysis of Water Quality Using Physico- Chemical Parameters of Asan River in District Dehradun, Uttrakhand, India

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Abstract

To assess the magnitude of the water quality of Asan River flowing in Dehradun district, Uttrakhand, India, during post monsoon season. This study examined the post monsoon seasonal variation on the quality of Asan River water with physical and chemical parameters, with which identified the potential of pollution sources with similar characteristics. Where examination of Physico-chemical parameters such as pH, EC, BOD, COD, TSS, TDS, Total Hardness, Calcium, Magnesium, Sodium, Potassium, Alkalinity were performed during post monsoon season to evaluate concentration of pollution level in samples that were collected from five different station of the same river. Analytic results showed that all parameters in water quality index were within the permissible limit parameters like Alkalinity, total hardness, sodium, COD, TDS and TSS were measured to be higher than the required standards suggested by different agencies such as WHO and ISI during post monsoon seasons. Analysis showed seasonal changes in river water quality, which is usually an indicator of pollution from rainfall or other sources. However, the values of various physical chemical properties vary with seasons.

Keywords: Water pollution, Environment monitoring, waste management, waste treatment, environment management.

Deep Learning Techniques Applied for Automated Lung Cancer Detection Based on Chest X Ray Images

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Abstract

Lung cancer is one of the top causes of cancer deaths around the world. The chance of recovery is less than 20% because it is often found at a late stage. Early discovery using medical imaging, especially chest X-rays, is important for better patient care. This study shows how to use deep learning methods to automatically identify lung cancer from chest X-ray pictures. It focusses on using Convolutional Neural Networks (CNNs) and transfer learning techniques. We used a collection of 50,000 chest X-ray pictures, with 25,000 images showing lung cancer and 25,000 images that are normal, for training and assessment. The deep learning model used ResNet-50, DenseNet-121, and EfficientNet-B3. It reached an average accuracy of 96.5%, with a sensitivity of 94.8% and specificity of 97.2% in identifying lung cancer from chest X-rays. The preprocessing process included using CLAHE to improve picture quality, segmenting images with U-Net, and applying methods to exclude bone shadows for better feature extraction. The tried model was evaluated using a separate set of 10,000 pictures. It showed a false positive rate of 2.8% and a false negative rate of 5.2%, which is a big improvement compared to the results from standard physician assessments. The classification results were confirmed using Grad-CAM visualizations, which helped explain the findings by showing important areas that indicate cancer. The system was set up on a cloud-based TensorFlow Serving API, allowing it to make real-time forecasts in just 0.5 seconds for each picture. A comparison of deep learning models with standard methods like Random Forest and Support Vector Machines (SVM) found that deep learning was 15-20% more accurate. This study shows that using deep learning for automatic lung cancer diagnosis is possible. It can lessen the amount of work doctors have to do, help find cancer earlier, and possibly boost patient life rates by 30% with quick treatments.

Keywords: Automated Medical Diagnosis, Chest X-Ray Imaging, Convolutional Neural Networks (CNNs), Deep Learning, Lung Cancer Detection.

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Enhanced Deep Fake Voice Detection Using Attention Mechanisms in Transformer Models

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Abstract

Fake voice generation is one of the upcoming challenges for forensics sciences. The detection and prevention are one of the biggest challenges as it is generated using AI. Current aims to find models and gives perspectives on identifying and detecting fake voices, often referred as synthetic voice. This paper describes a better way to find deep fake voices by adding attention mechanisms to transformer models. These mechanisms are meant to focus on complex audio traits and make classification more accurate. This model uses a dataset of 20,000 voice samples, with 10,000 real and 10,000 deep fake audio samples. It achieves an accuracy of 96.8%, which is much better than other methods like Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs), which are about 12% better in accuracy and 15% better in F1-score. Multi-head self-attention layers and location encoding are two important parts of the transformer design that let the model flexibly prioritise minor spectral and temporal features that are needed to tell the difference between fake and real sounds. The test results show that the model is very good at finding deep fakes, with a precision of 94.7% and a recall of 93.6%, giving it an F1-score of 0.941. An ablation study shows that taking out attention layers lowers recognition accuracy by 9%. This shows how important attention mechanisms are for making features more sensitive. These results show that transformers with attention methods could make speech-based deep fake detection a lot better. This could have useful uses in voice authentication systems and digital security solutions.

Keywords: Deep fake detection, Transformer model, Attention mechanism, Voice authentication, Digital security

Enhancing Cybersecurity Threat Detection Using Deep Learning Based Intrusion Detection Systems

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Abstract

The growing complexity of cyber dangers requires the use of better security measures to effectively identify intrusions. Traditional Intrusion Detection Systems (IDS) that use rules and statistics often have trouble detecting attacks in real time and cannot easily adjust to new types of attacks. This study uses a deep learning-based IDS to improve cybersecurity threat detection, combining Convolutional Neural Networks (CNN) and Long Short-Term Memory (LSTM) networks for feature extraction and sequential anomaly detection. The model was trained using 80% of the NSL-KDD dataset and tested on the remaining 20%. It achieved a detecting accuracy of 98.6% for attacks. The deep learning model greatly improves recognition rates compared to standard Machine Learning models like Random Forest (92.3%) and Support Vector Machine (89.7%). The system can correctly identify five main types of attacks: Denial of Service (DoS), Probe, User-to-Root (U2R), Remote-to-Local (R2L), and Normal Traffic. It has an F1-score of 97.2%, which shows its accuracy. The new system reduces false positives by 42% compared to standard IDS systems. Also, using a cloud-based server, we can handle 15,000 network bits every second in real-time. This makes it easy to grow and work efficiently for business apps. Deep learning helps the IDS to keep up with new threats by learning from new attack trends all the time. Test results show that this system offers a strong and adaptable answer for today's protection needs. Future work will aim to improve the model for faster performance and to include shared learning for security apps across different locations.

Keywords: Cybersecurity, Deep Learning, Intrusion Detection System, Network Security Threat Detection.

Survey on Healthcare Analytics for Symptom Analysis and Medical Guidance

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Abstract

The paper presents a healthcare assistance system using NLP and Name entity recognition, enabling human-system interaction to resolve basic health related queries before consulting a doctor. The main objective is to analyze users symptoms and provide medical suggestions to reduce the time and cost involved in healthcare consultation. This system communicates with users using NLP, allowing for interaction through natural language inputs. It processes the input, extracts relevant keywords, and provides appropriate responses to users queries. Incorporating machine learning techniques, the system leverages an ADR database to offer solutions regarding users' healthcare concerns. Additionally, users can create profiles to specify their symptoms, receive doctor suggestions, and set dosage reminders. The system can assist users in recognizing potential diseases based on provided symptoms. The system uses Neural networks, specifically deep learning models such as CNN or RNNs, are integrated into the text classification and decision-making process. These networks are trained on vast medical datasets, enabling the system to understand complex medical language and detect patterns in user input. Through these neural networks, the system can accurately interpret symptoms, match them to potential diseases, and suggest appropriate next steps.

Keywords: Healthcare assistance system, NLP (Natural Language Processing), Name Entity Recognition (NER), Humansystem interaction, Health-related queries, Medical suggestions, Reduce time and cost, Consultation.

Effect Of Adaptive Learning Systems and Gamification on Differentiated Instruction in AI-Integrated Classrooms

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Abstract

This study critically examines the impact of adaptive learning systems and gamification on student performance and the differentiation of instruction in AI-integrated classrooms. The research employed a pretest-posttest design with a sample of 80 eighth-grade students in Bangalore, incorporating standardized tests, student engagement surveys, and formative assessments to evaluate academic performance, engagement levels, and differentiated instruction. Quantitative analysis utilized paired sample t-tests and Bayesian Linear Regression which revealed significant improvements in standardized test scores ($p < 0.01$) and heightened student engagement within the experimental group. Bayesian Linear Regression identified adaptive learning, gamification, and gender as significant predictors of test scores, with a Bayes factor of 5.5980 for the model including all variables. The results indicate that adaptive learning and gamification enhance academic performance, engagement, and differentiated instruction. While the findings highlight the potential of adaptive learning and gamification to address diverse learner needs and foster equitable engagement, they also underscore critical challenges, including the digital divide, educator readiness and preparedness, and ethical concerns surrounding data-driven systems. This study advocates for utilisation of AI-driven educational interventions through an intersectional approach that prioritizes inclusivity, learner agency, and sustainable implementation. Future research may explore the longitudinal effects of such AI-integrated interventions, their scalability across diverse educational contexts, and alignment with broader pedagogical goals.

Keywords: *adaptive learning, gamification, differentiated instruction, AI-integrated classrooms*

Globalization and Its Impact on the Education System: A Sociological Analysis

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Abstract

This research paper presents a comprehensive sociological analysis of the impact of globalization on the education system. In an increasingly interconnected world, globalization shapes educational policies, curricula, and access to education in multifaceted ways. Through a thorough examination of global trends and local manifestations, this study investigates the transformative effects of globalization on education, exploring themes such as standardisation, marketisation, cultural hybridisation, and technological innovation. Utilising a mixed-methods approach, including qualitative interviews, surveys, and quantitative data analysis, the research unpacks the complex dynamics at play within the global education landscape. Findings highlight the challenges of ensuring equitable access to education amidst globalization's socio-cultural and economic forces, while also shedding light on the roles of international organisations and corporations in shaping educational agendas. Ultimately, the paper underscores the importance of adopting inclusive and culturally responsive approaches to education in navigating the complexities of a globalised world.

Keywords: Globalization, Education System, Standardization, Sociological Analysis, Cultural diversity, Technological integration

Learning Through AI: Impact of Second-Brain AI Tools in Collaborative Learning

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Abstract

This study critically explores the role of second-brain AI tools in transforming collaborative learning environments among postgraduate students in Kerala through a qualitative lens. The concept of "second brain" is described as knowledge management systems leveraging AI algorithms to offer personalized recommendations, facilitates knowledge synthesis, and fosters deeper connections between learners. Through the employment of focus group discussions and document analysis, this research examines how second-brain AI tools influence cognitive, emotional, and social dimensions of collaborative learning. Findings reveal that second-brain AI tools foster meaningful engagement, improve knowledge organization, and enhance group task efficiency, while also reshaping peer interactions and collaborative dynamics. Participants reported initial challenges, such as apprehension toward technology, accessibility barriers, and skill gaps, but gradually recognized the tools' potential to promote equitable participation and cognitive support. The study highlights critical considerations, including advocating for targeted training, tool customization, contextualisation, and policy interventions addressing existing digital inequities to ensure meaningful integration. These insights contribute to the discourse on leveraging AI technologies in education and pedagogy, emphasizing their potential to support inclusive and learner-centered environments. Future research should critically assess the long-term implications of second-brain AI tools on collaborative learning practices and their scalability across diverse educational contexts.

Keywords: second-brain AI tools, collaborative learning, pedagogical strategy, equitable education

Enhancing Code Generation Models through Crowd sourced Programming Repositories

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Abstract

Code generation has emerged as a transformative tool in software development, significantly enhancing productivity by automating repetitive tasks and enabling developers to concentrate on more complex and innovative challenges. While existing models have achieved notable success, their training datasets often lack sufficient real-world context and a comprehensive variety of coding examples. This paper presents a novel approach to code generation that leverages the rich contextual insights of Stack Overflow answers and the problem-specific solutions available in GitHub Gists. Stack Overflow provides extensive discussions and detailed explanations surrounding code snippets, whereas Gists serve as a curated repository of concise and practical implementations. We propose that integrating these complementary data sources can enable models to produce code that is more human-like, task-specific, and efficient. Our experimental results demonstrate that this hybrid dataset approach outperforms baseline models trained exclusively on traditional code repositories, delivering marked improvements across critical evaluation metrics. Furthermore, an in-depth analysis of the generated code reveals enhanced readability, maintainability, and suitability for addressing specific programming tasks. The paper also discusses the challenges encountered during this research and outlines potential directions for future work, aiming to contribute to the development of more advanced and applicable code generation models.

Keywords: code generation, neural networks, stack overflow, github gists, training datasets

AI-Powered Weed Classification and Crop Prediction: Towards Enhanced Soil Nutrient Utilization

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Abstract

There are several worries regarding how artificial intelligence (AI) will affect human lives in the future. Whether artificial intelligence (AI) can replace humans in all areas of life or if it is going to live with us and enhance our capabilities is one of the most heated subjects of discussion. AI has amazing potential to change the world as it develops at an incredible rate. The question still stands, though: how can we view the advancement of such potent technologies in a way that advances humanity while avoiding negative side effects? This paper examines the theoretical and applied effects of unchecked AI development, taking into account both the potential hazards and benefits. We look at simulation theory and the Great Silence paradox, two frameworks that provide important insights into the possible future of AI, in order to better comprehend these worries. According to simulation theory, our reality might actually be a simulated setting made by a much more sophisticated intellect—possibly artificial intelligence itself. However, the Great Silence dilemma, sometimes referred to as the Fermi dilemma, asks why humanity have not yet come across extra terrestrial civilization in spite of the universe's enormous number of possibly liveable worlds. We may investigate the ramifications of developing extremely sophisticated AI and how such advancements can impact our position in the cosmos with the aid of these two ideas.

Keywords: Artificial intelligence (AI), simulation theory, Great Silence paradox

Enhanced Vehicle Trajectory Prediction Using Deep Learning

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Abstract

Accurate vehicle trajectory prediction is essential for autonomous driving systems to navigate safely and efficiently, especially in complex traffic environments. This approach introduces an enhanced method for predicting vehicle movement by using interaction zones and a temporal-spatial attention mechanism. The system divides the traffic around a vehicle into two zones: a vision zone for vehicles directly in front and a neighborhood zone for those nearby. By accounting for how these surrounding vehicles influence each other, the model can more precisely predict future movements. The prediction method uses a combination of Convolutional Neural Networks (CNNs) to analyze spatial patterns and Long Short-Term Memory (LSTM) networks to understand how vehicle movement changes over time. A key innovation is the use of spatial temporal attention, which helps the system focus on the most important interactions between vehicles and their movement histories, leading to more accurate predictions. Tested on real-world traffic data, this system significantly improves the accuracy of trajectory predictions compared to traditional methods. By providing more reliable forecasts, this enhanced model helps autonomous vehicles make better decisions, improving safety and efficiency in dynamic traffic. Moving forward, this approach will be adapted for more complex urban driving scenarios.

Keywords: *Convolution Neural Network · Long Short-Term Memory · Spatial-temporal attention.*

Women Empowerment – A Reference to Kiran Bedi: An Evergreen Hero in the IPS

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Abstract

Women's empowerment is about enabling women to make independent choices that shape their lives and future. It involves breaking barriers, creating opportunities, and challenging stereotypes that have traditionally restricted their progress.

One of the key aspects of women's empowerment is the continuation of their careers despite societal pressures.

Kiran Bedi is a symbol of fearlessness and determination. Throughout history, India has witnessed the rise of many strong women who defied norms and left an indelible mark on society. Notable examples include:

- Rani Lakshmibai of Jhansi, who fought valiantly against British rule.
- Rajmata Jijabai, the mother of Shivaji, who played a crucial role in shaping the Maratha Empire.
- Rani Chennamma was a queen who led a rebellion against the British in 1824 in Kittur, a small kingdom in present-day Belagavi. She died in 1829.
- Rani Rudrama Devi, the Kakatiya queen who successfully ruled parts of present-day Telangana and Andhra Pradesh, demonstrating exceptional leadership in medieval India.

Kiran Bedi, India's first woman IPS officer, is a modern icon of women's empowerment. She has tirelessly worked for gender equality, speaking against discrimination and gender-based violence. Through various programs, she has championed women's safety, education, and economic independence, inspiring countless women to pursue their dreams despite obstacles.

Women like Kiran Bedi prove that empowerment is not just about achieving success but also about creating a path for others to follow. The fight for equal opportunities continues, and every woman who chooses to stand firm in her career is contributing to this larger movement.

Keywords: Women, Women Empowerment, Kiran Bedi, Independent choices

Corporate Social Responsibility (CSR): How Social Movements Influence Business Strategies

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Abstract

Corporate Social Responsibility (CSR) has evolved from a voluntary ethical practice to a key component of business strategy, driven in part by the influence of social movements. Social movements, ranging from environmental activism to human rights campaigns, exert pressure on businesses to adopt more responsible and sustainable practices, influencing their CSR strategies. This paper investigates the nexus between CSR and social movements, and how the latter influence business strategies. The study analyses both theoretical constructs (e.g., the stakeholder and legitimacy theories), as well as case studies to demonstrate how social movements affect corporate behaviour. Drawing on case studies in environmental, labour rights, and social justice movements, the paper shows how businesses respond to pressure by society, in ways ranging from sustainability efforts, responsible labour standards, to inclusion goals. It also deals with the difficulties companies encounter, including the risks of greenwashing or of implementing CSR for marketing purposes rather than for social change. This paper contends that although social movements have been able to bring corporations to implement socially responsible behaviour more generally, both the success and genuineness of these activities are dubious. The results indicate that in order for CSR to be truly effective, business is no longer merely in good faith gestures, but it must take on substantive, enduring, and relevant mobilized action, in accordance with what the social movements to which it responds aspire to achieve. Through merging management and social science thinking, the paper makes a step toward a more nuanced understanding of how social movements influence the CSR landscape and provides input for companies seeking to contribute to a better social world.

Keywords: gestures, behavior, greenwashing

Role of On- Demand Logistics Model in Building Profitable Business Venture: With special reference to Blinkit

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Abstract

With the due course of time, India has become a land of many unicorn start-ups. The big business magnets are seeing start-ups as a best opportunity for investments. These start-ups are adapting a particular business model which can bring better functioning and growth to their businesses. One of the most significant types of business model, which is being adapted by many quick commerce start-ups, is On-Demand business model. This model primarily based upon speed, customer needs and accessibility. On- demand business model is a type of model which majorly prioritizes on the factors like consumer needs, demands, on- time technology, speed and consumer acknowledgement. It works according to the customer preferences and the biggest example to this on- demand style of model is blinkit which is a quick-commerce type of business model and works to provide customers demands on-time and giving them a sense of satisfaction from online shopping. Under this project, a research will be conducted to focus upon the benefits of applying on-demand type model as a business building strategy and how it affects the customer relations and business growth with special focus upon an example of quick commerce type business i.e. Blinkit. The data on the aforementioned area will be collected from the secondary sources such as Internet, Magazines, Articles and Books and will be presented in detail with the help of tables and graphs. The research will be majorly highlighting the role of real- time delivery, technological up gradation, customer- driven concepts in building businesses and the impact of promises made by the companies to their customers and strengthening the loyalty of the customers towards the concerned brand. The brand which has been focused in this research is blinkit. The strategies, rebranding and the constructive decisions of this grocery app has been accentuated in this research. Precisely, the particular model that has been applied in the case of blinkit grocery app is On- Demand Logistics delivery model. At the end of the research a proper explanation will be given in the conclusion area to focus on the application of this logistics model and the impact it created in the business development and revenue building of blinkit.

Keywords: Start-Ups, On- Demand model, Strategies, Quick Commerce, Instant delivery

Using Intelligent Algorithms to Select Crops and Predicts Yields

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Abstract

Crop selection and yield prediction are crucial for successful agriculture, enabling farmers to make informed decisions and increase crop production. It comprises determining crops per given area based on parameters such as soil type, weather, and crop management strategies. Yield prediction is an important feature of modern agriculture since it allows farmers to maximize resource allocation, plan for probable pest and disease outbreaks, and improve overall farm efficiency. Crop yield prediction models can provide good estimates of yield, but state-of-the-art algorithms still have room for improvement. Several machine learning algorithms (ML) have been used to support crop prediction studies, including random forest, linear regression, deep learning, and CNN. These predictions help in producing greater yields and improving q. These predictions contribute to higher crop yields and improved crop quality.

Keywords: *Start-Ups, On- Demand model, Strategies, Quick Commerce, Instant delivery*

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