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ICASEM

AI & ROBOTICS INNOVATION

Proceedings of the

ICARI - 2025

&

ICASEM - 2025

14th - 15th November, 2025

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Acknowledgement

ZEP Research is hosting the ICARI-2025: International Conference on AI & Robotics Innovation at Kuala Lumpur, Malaysia, on 14th - 15th November 2025. The main objective is to provide a comprehensive platform to explore cutting-edge innovations in Artificial Intelligence and Robotics, discuss emerging challenges and opportunities across various industries, and foster collaboration, research excellence, and professional development among participants.

The conference will offer continuous networking opportunities and enriching sessions led by respected experts in the field. These sessions are designed to deliver valuable insights and stimulate meaningful dialogue. Connecting with fellow professionals and sharing your institution or organization's success stories is a powerful way to build lasting relationships and position yourself as a thought leader in the industry.

I express my heartfelt gratitude to all my colleagues, staff, professors, reviewers, and members of the organizing committee for their dedicated support in making this conference a success. I am equally thankful to all our delegates for their commitment and effort in traveling from afar to participate in this event.

Priyanka Sahu

Mrs. Priyanka Sahu
Director,
ZEP Research, India

Editorial

Dear Readers,

The **International Conference on Artificial Intelligence and Robotics Innovation (ICARI-25)** aims to bring together leading researchers, academicians, and industry professionals to explore emerging trends and advancements in **Artificial Intelligence and Robotics**. Focused on promoting innovation and interdisciplinary collaboration, ICARI provides a dynamic platform to exchange ideas, present pioneering research, and discuss real-world applications that are shaping the future of intelligent technologies.

The conference will feature discussions on topics such as **autonomous systems, machine learning, deep learning, computer vision, natural language processing, human–robot interaction, and AI-driven automation**. By connecting experts from academia and industry, ICARI fosters meaningful dialogue to address the challenges and opportunities of integrating AI and robotics into modern life.

Through thought-provoking keynote speeches, technical paper presentations, and interactive panel discussions, the conference aims to **bridge the gap between academic research and industrial implementation**. It encourages participants to explore ethical dimensions, societal impacts, and future opportunities that AI and robotics present in the pursuit of human progress and global development.

We invite all participants to engage actively in this meaningful exchange of ideas. By fostering interdisciplinary collaboration and promoting responsible innovation, **ICARI-25** aspires to pave the way for a smarter, more connected, and sustainable world powered by **Artificial Intelligence and Robotics**.

Warm regards,



Dr. Aris Ignacio
Keynote Speaker,
ICARI, 2025

Preface

ZEP Research is proud to host the International Conference on AI & Robotics Innovation (ICARI 2025) in Kuala Lumpur, Malaysia, on 14th-15th November 2025. This edition is being conducted in both onsite and online modes, ensuring accessibility and convenience for participants worldwide.

It is our pleasure to have **Dr. Marjohn V. Anislag, PhD CAR, Dr. Luís Miguel Oliveira de Barros Cardoso, Dr. Jeba Ebenezer,** and **Pham Trung Kien** as our **Session Chair** and the **Keynote Speakers –Richard N. Monreal. DIT, Nastaran Nazar Zadeh, Aris Ignacio, Prof. Dr. Amiya Bhaumik, Prof. (Dr) Ipseeta Nanda, Dr. Mahmud Iwan Solihin, Marina Falasca, Dr S Sivanesan, CIA, CISA, CRISC**, **Dr. Amutha Navamoney, Dr. Zulkiflee Abdul-Samad, and Elenita M. Tiamzon. The ICARI Conference aims to bring together researchers, academicians, and industry experts to explore advancements in Artificial Intelligence and Robotics. Dedicated to fostering innovation and collaboration across disciplines, ICARI provides a dynamic platform to discuss cutting-edge research and real-world applications in areas such as intelligent automation, machine learning, robotics design, computer vision, human–robot interaction, and AI-driven solutions for global challenges.**

By bringing together thought leaders, researchers, and practitioners from around the world, the conference fosters dialogue that transcends traditional academic boundaries. Through keynote presentations, technical sessions, and hands-on workshops, participants will engage with the latest developments, critical issues, and future directions in multidisciplinary research with direct applications to tourism and hospitality.

We are honored to welcome a global community of researchers, innovators, and thought leaders, each bringing unique insights and expertise that will shape the future of intelligent, technology-driven innovation and transformative progress.

Our sincere gratitude goes to all participants, partners, and organizers whose commitment and collaboration have made this event possible. Together let us

inspire innovation, exchange ideas, and shape a smarter, more connected, and future-ready world.

Welcome to the ***International Conference on AI & Robotics Innovation.***

International Conference on AI & Robotics Innovation

Kuala Lumpur, Malaysia

14th - 15th November 2025

Organizer's Message



Mrs. Priyanka Sahu
Director,
ZEP Research, India

Dear All,

It is with great pleasure that we present the proceedings of the ***International Conference on Artificial Intelligence and Robotics Innovation (ICARI 2025)***. This collection of research papers and studies reflects the dedication and expertise of researchers, academicians, industry professionals, and practitioners committed to advancing the frontiers of **Artificial Intelligence, Robotics, and emerging intelligent technologies**.

The ICARI 2025 serves as a dynamic platform for the exchange of ideas, insightful discussions, and the dissemination of pioneering research that connects academia and industry. The papers featured in this volume highlight a diverse range of topics, including machine learning, autonomous systems, computer vision, natural language processing, robotics design, human–robot collaboration, and AI-driven innovations that address real-world challenges across multiple sectors.

We extend our heartfelt appreciation to all authors, reviewers, keynote speakers, and participants for their valuable contributions and engagement. Special recognition goes to the organizing committee, technical team, and advisory board for their tireless efforts in making ICARI 2025 a success.

As we look ahead, we hope the insights and innovations presented in these proceedings will inspire continued research, collaboration, and

technological advancement. We look forward to building upon this success in future editions of ICARI, fostering global dialogue and driving intelligent innovation for a smarter and more sustainable future.

Priyanka Sahu

Mrs. Priyanka Sahu
Director,
ZEP Research, India

Keynote Speakers



Aris Ignacio
Dean
Southville International School and Colleges,
Philippines

Hello everyone.

Welcome to Malaysia, and welcome to the International Conference on AI & Robotics Innovation.

It is a true honor to share this space with brilliant minds and passionate innovators at the ICARI Conference. This gathering stands as a testament to our collective pursuit of knowledge where creativity meets curiosity, and where ideas spark the technologies that redefine how we live, learn, and connect.

ICARI is more than a convergence of research and innovation; it is a celebration of purpose-driven progress. Every paper represents a step toward a world where artificial intelligence and robotics empower humanity, enhancing not just efficiency, but empathy; not just intelligence, but understanding.

As we exchange insights and experiences, may this conference remind us that innovation begins with inspiration and that the best technologies are those that serve, include, and uplift.

Thank you.

Aris Ignacio



Keynote Speaker,
ICARI-2025



Engr. Nastaran Nazar Zadeh,
Ph.D. ECE, MS. CpE
Mechatronics and Robotics Society of the Philippines

It is a true privilege to be part of ICAIR 2025, a gathering that not only showcases the brilliance of AI research but also brings together a community committed to shaping a better future through innovation, ethics, and collaboration. As we explore the transformative impact of AI on education, industry, and society, let us be reminded of the power we hold, not just to advance technology, but to uplift humanity through it. I commend the organizers for creating a space that fosters dialogue, insight, and hope, and I look forward to learning from the diverse voices and visions that make this conference so inspiring.

Warm Regards,



Engr. Nastaran Nazar Zadeh
Keynote Speaker,
ICARI-2025



Prof. Marina Falasca
Professor of Curriculum, Pedagogy and Didactics
I.E.S. en Lenguas Vivas J.R.F. | INSPT UTN
STAR Country Director, Argentina

It is a privilege to participate as a keynote speaker at the ICASEM Conference in Malaysia, a forum dedicated to advancing science, engineering, and education through global collaboration.

In my keynote address, "Transforming Higher Education through Global Collaboration: COIL and the SDGs as Catalysts for Innovation," I will explore how Collaborative Online International Learning (COIL) can serve as a blueprint for inclusive internationalization in higher education.

COIL provides a low-cost, scalable, and sustainable framework for connecting students and faculty across borders, enabling them to work together on real-world challenges aligned with the United Nations Sustainable Development Goals (SDGs).

Drawing on the experience of the COIL en Clave ODS program, which brought together educators from seven Ibero-American countries to design and implement SDG-focused projects, I will highlight the transformative potential of COIL in cultivating intercultural competencies, advancing digital pedagogies, and preparing future scientists, engineers, and professionals to collaborate effectively in global contexts.

By linking higher education innovation with the SDGs, COIL helps democratize access to international opportunities, ensuring that global engagement is not limited to a privileged few but extends to diverse institutions and communities worldwide. Aligning collaboration, equity, and sustainability is key to shaping the next generation of global problem-solvers across a wide range of disciplines and fields.

I look forward to engaging with colleagues from around the world, sharing experiences, and collectively envisioning new ways in which higher education can contribute to building a more just, sustainable, and interconnected future.

Warm regards,



Prof. Marina Falasca
Keynote Speaker,
ICASEM-2025



Dr. Elenita M. Tiamzon
Research Director
San Mateo Municipal College, Philippines

On behalf of the organizing committee, it is with great pride and joy that we welcome you to the International Conference on Applied Science, Engineering, and Management (ICASEM), a gathering of brilliant minds dedicated to advancing knowledge and innovation. This event serves as a platform to elaborate on the spirit of research, collaboration, and discovery.

We extend our heartfelt gratitude to all participants, speakers, and presenters who have made this conference possible. Your dedication to pushing the boundaries of science and technology inspires us all. May this event foster meaningful connections, speak new ideas, and pave the way for innovation.

Thank you for being part of this journey. Together, let us continue to shape a brighter future through research and innovation.

Warm regards,

Elenita M. Tiamzon PhD
Keynote Speaker,
ICETMR -2025



Dr. Zulkiflee Abdul-Samad
Faculty of Built Environment
Universiti Malaya (UM),
Malaysia

Dear respected distinguished guests, fellow researchers, academics, and innovators.

It is a great honor to welcome you to the 2nd International Conference on Applied Science, Engineering, and Management (ICASEM) from 14-15 November 2025 in Kuala Lumpur, Malaysia.

This gathering represents a remarkable platform for sharing knowledge, fostering collaboration, and exploring new frontiers that bridge science, technology, and management. Over the two days, let us exchange ideas that inspire sustainable progress and practical solutions for our rapidly evolving world.

I wish all participants a productive and enriching experience. As a keynote speaker, I welcome you once again and may ICASEM 2025 be a memorable success!

Warm regards,



Sr Ts. Dr. Zulkiflee Abdul-Samad
Keynote Speaker,
ICASEM-2025



Prof. (Dr) Ipseeta Nanda
Vice Chairperson and Director
Rourkela Institute of Technology, Kalunga, Odisha, India

My keynote address will explore a transformative frontier Quantum Computing and AI. This discussion will focus on moving beyond standardized educational models by harnessing these technologies to create dynamic, adaptable, and deeply personalized learning environments. I will illustrate how the problem-solving paradigms of quantum computing and the adaptive capabilities of artificial intelligence can fundamentally reshape our educational systems.

By leveraging AI's analytical power and the novel computational approaches of quantum mechanics, we can architect learning experiences that are profoundly responsive to each student's needs, pace, and potential. We will explore how these technologies enable hyper-personalized learning pathways, empower students through intelligent tutoring systems, and create complex, simulated experiential learning environments that were previously unimaginable.

This fusion of cutting-edge technology and pedagogy aims to cultivate the advanced cognitive skills and innovative mindsets that students need to navigate and shape a rapidly evolving, technology-driven world.

I am excited to discuss these groundbreaking ideas with all of you educators, researchers, and innovators as we collaborate to shape the future of learning.

Thank you, and I wish you a stimulating conference.

Warm regards,



Prof. (Dr) Ipseeta Nanda
Keynote Speaker,
ICARI-2025



Dr. Amutha Navamoney
Assistant Professor and Programme Leader MScITM
GlobalNxt University, Malaysia

It is a privilege to be part of the International Conference on Applied Science, Engineering and Management, a platform that supports the advancement of knowledge, innovation, and practical impact. The conference highlights the importance of technology integration, sustainable development, cross-disciplinary collaboration, and transformation in educational practice. These themes strongly connect with the focus of my keynote.

In this presentation, I will discuss Design-Based Research as a methodology that connects research with real practice through cycles of designing, testing, evaluating and improving solutions in authentic learning environments. I will share examples of how Design-Based Research has supported the development of Metaverse-based e-learning experiences in health science education, competency development for engineering professionals through continuous professional learning, and the use of innovative teaching approaches to strengthen mathematical thinking and learning performance among higher education students.

These areas reflect broader needs in education and industry today, including the necessity for flexible digital learning environments, professional skill development aligned with global standards, and deeper cognitive engagement that enables independent and critical thinking. Through Design-Based Research, we can co-create innovations that are sustainable, relevant and human-centred.

I hope that our discussion will spark ideas, inspire collaboration and encourage us to continue improving how we teach and how our learners grow. I look forward to meeting many of you and learning from your experiences as well.

Thank you, and wishing everyone a meaningful and engaging conference.



Dr. Amutha Navamoney
Keynote Speaker,
ICASEM-2025



Dr. Jebakumari Selvarani a/p Ebenezer
Senior Lecturer Universiti Teknologi Mara
Adjunct ProfessorUniversity
Malaysia

It is my privilege to contribute to the 2nd International Conference on Science and Engineering Management (ICASEM) 2025 proceedings. This volume represents the collective efforts and innovative research shared by renowned experts and emerging scholars alike. The diverse topics covered here reflect the dynamic developments in science and engineering management, serving as an important reference for researchers, practitioners, and policymakers. I commend the organizing committee for providing a world-class platform in Kuala Lumpur to foster knowledge exchange and collaboration.

This conference also makes a significant contribution to the education world by bridging theory and practice across applied sciences, engineering, and management disciplines. It provides educators, students, and researchers with access to the latest research findings, innovative methodologies, and industry insights. Through knowledge sharing and global networking, ICASEM 2025 empowers the academic community to enhance curricula, inspire groundbreaking research, and prepare the next generation of professionals for the complex challenges ahead.

Participants have the opportunity to explore a wide range of cutting-edge topics including sustainable engineering solutions, advanced management strategies, and interdisciplinary innovations. This approach not only deepens understanding but also promotes practical applications that can drive technological advancement and organizational excellence. By embracing these diverse perspectives, the conference fosters creative problem-solving and the development of impactful solutions that can transform industries and educational practices worldwide.

I look forward to the continued growth of collaboration and innovation sparked by ICASEM 2025. I hope that the connections made, ideas exchanged, and knowledge shared here will lead to significant advancements in science and engineering management, enriching both academic inquiry and real-world applications in the years to come.



Dr. Jebakumari Selvarani a/p Ebenezer
Session Chair,
ICASEM-2025

Keynote Speaker



Dr. Diksha Pahuja
Lecturer
GlobalNxt University, Malaysia

It's an honor to be part of the International Conference on Applied Science, Engineering & Management, where innovation, leadership, and purpose come together to shape the world we want to see.

We are living in a time when long standing traditions meet rapid transformation. Technology is rewriting the way we work, think, and connect, while sustainability challenges us to rethink how we grow and lead responsibly. In this space of change, effective leadership isn't about resisting disruption, it's about guiding it with vision, empathy, and courage.

The fusion of science, engineering, and management gives us powerful tools to turn complex challenges into opportunities. Through strategic thinking, innovative project management, and digital transformation leadership, we can build organizations that are both forward-looking and grounded in shared human values.

This conference is a celebration of that balance of learning from the past while creating the future. Together, let's continue to explore how thoughtful leadership and purposeful innovation can make progress truly sustainable.

I look forward to engaging in this exciting dialogue with fellow educators, researchers, and innovators, as we collectively seek to shape the future of learning.

Warm Regards

Dr Diksha Pahuja

Dr. Diksha Pahuja
Keynote Speaker,
ICASEM-2025

Conference Co-Chair



Dr. Daisy M. Galgana
Dean - School of Graduate Studies (DCLC)
Professorial Lecturer, Quezon City University
Phillipines

It is with immense pride and excitement to be part of the gathering of visionaries, trailblazers, and thought leaders united by a shared passion for advancing the frontiers of research and innovation. To be part of this prestigious event is to join a legacy of minds who dare to ask bold questions, challenge the status quo, and transform possibilities into realities.

Research and innovation are the twin engines of human progress. They fuel discovery, bridge gaps between imagination and application, and empower us to solve the most pressing challenges of our time. Our ideas, expertise, and curiosity contribute to a collective momentum that has the power to redefine industries, uplift communities, and shape the future.

The Power of Collaboration
Great breakthroughs rarely happen in isolation. They emerge at the intersection of diverse perspectives, scientists collaborating with policymakers, technologists learning from artists, and entrepreneurs partnering with educators. We engage with peers who inspire us to think differently and share our work openly, listen with intention, and embrace the unexpected connections that spark revolutionary ideas.

Innovation Thrives on Courage
Every innovation begins as a question; behind every revolutionary invention lies countless hours of perseverance, resilience in the face of uncertainty, and the courage to fail forward. As we present our collaborative research or absorb the insights of others, remember that progress is not linear. It is forged by those who refuse to settle, who see setbacks as stepping stones, and who persist even when the path is unclear.

Let this conference be more than an exchange of knowledge; let it be a call to action. Whether you're unveiling groundbreaking findings, exploring ethical implications of emerging technologies, or advocating for inclusive solutions, your voice matters. The world needs thinkers who lead with empathy, rigor, and a commitment to sustainability. Together, we can ensure that innovation serves humanity, leaving no one behind.

Let's be inspired, let's be empowered!

The future is not a destination; it is a journey we chart together. Let's make history.

Embrace the Future. Your Journey in Research and Innovation Begins Here. Every great leap forward begins with a question, "What if?" Research and innovation are the compass and fuel for humanity's voyage into the unknown which a journey where curiosity transforms into discovery, and imagination becomes a reality.



Dr. Daisy Galgana
Conference Co-Chair
ICARI-2025

Conference Co-Chair



Dr. Amila N.K.K. Gamage
Associate Professor
Signum Magnum College, Malta, Europe

It is an honor to serve as the Conference Co-Chair for the 2nd International Conference on Applied Science, Engineering & Management (ICASEM 2025), to be held on November 14–15, 2025, in Kuala Lumpur, Malaysia. This conference provides a vibrant platform for researchers, academics, and industry professionals to exchange ideas, share innovations, and shape the future of applied science, engineering, and management.

ICASEM 2025 embodies a shared vision — to foster innovation, collaboration, and meaningful dialogue that transcend disciplines and borders. Through research presentations, technical sessions, and industry partnerships, we aim to bridge the gap between theory and practice, inspiring practical and impactful solutions to global challenges.

On behalf of the Organizing Committee, I extend sincere appreciation to all contributors and delegates for their invaluable support. I look forward to a truly engaging experience and a successful conference for all.



Dr. Amila N.K.K. Gamage
Conference Co-Chair
ICASEM-2025

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International Conference on Emerging Trends in Multidisciplinary Research

ABSTRACT

Enhancing Trust in AI Predictions for Education: An Application of XAI with XGBoost

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Abstract

Artificial intelligence is increasingly shaping many sectors, and education is no exception. The increasing deployment of machine learning (ML) models in education has introduced unprecedented opportunities for personalized learning, predictive analytics, and data-informed decision-making. Machine learning has started to influence the way we design and deliver education, offering tools that adapt to students' needs and help institutions make decisions. Despite these opportunities, there are growing concerns about how such models actually make their predictions. However, the black-box nature of widely adopted models, such as XGBoost and deep learning, poses significant challenges to trust, transparency, and accountability. Black-box-type models do not provide explanations useful in high-stakes educational environments where placing or grading students on algorithmic outputs becomes a tangible reality. Educators often see the predictions but not the reasoning behind them, which makes it difficult to build trust or act confidently on the results. Explainable AI (XAI) offers a promising solution by enhancing the interpretability of AI-driven decisions, ensuring that educators can understand and trust model predictions. In this paper, we propose a framework that brings XGBoost together with SHAP (SHapley Additive exPlanations) to make its inner workings more transparent. Our aim is not only to improve performance but also to show why certain outcomes appear and how they can be understood in practice. The framework is developed with teachers and decision-makers in mind, since accuracy alone is rarely enough in real classrooms. We suggest that this approach can open the door to more responsible and practical uses of AI in education, while also giving researchers a clearer direction for future studies. Finally, the findings will contribute to the development of transparent, ethical, and trustworthy AI systems in education, bridging the gap between advanced ML techniques and practical educational applications.

Keywords: *Explainable AI, XGBoost, SHAP, Education, Interpretability*

Examining Urban Agriculture and Technology Management in Selected NCR Cities: Insights for Sustainable Development

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Abstract

This study examines the role of technology management in urban agriculture across selected cities in the National Capital Region (NCR), Philippines, and explores its potential for sustainable development. Using a mixed-methods approach, the research gathered data through surveys and interviews with urban farm leaders, local government units (LGUs), and other stakeholders. The study evaluates key management functions—planning, directing, coordinating, and controlling—within the context of urban farming. Results reveal that adopting advanced technologies such as hydroponics and aquaponics has significantly enhanced productivity, environmental sustainability, and cost-efficiency. However, challenges remain, including limited resources, insufficient technical knowledge, and the lack of comprehensive policy support. The research proposes a technology management framework aimed at improving the sustainability of urban agriculture by integrating innovative farming techniques with localized management strategies. This framework is crucial for addressing food security challenges in densely populated areas, fostering community resilience, and supporting sustainable urban development in Metro Manila. The findings offer practical insights for policymakers and urban planners seeking to enhance urban farming through better technology management and stakeholder collaboration.

Keywords:

AI and Robotics Innovation: Intelligent Future for Human-Centric Advancement

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Abstract

Artificial Intelligence (AI) and robotics are reshaping the global landscape of science, industry, and society. The conference "Intelligent Future: Advancing AI and Robotics for Human-Centric Innovation" addresses the foundational aspects of AI, advances in robotics technology, and their integration into intelligent systems. It explores how AI-driven robotics is accelerating innovation in healthcare, manufacturing, smart cities, agriculture, and autonomous systems, while ensuring adaptability in real-world applications.

The program emphasizes the critical importance of cross-disciplinary integration, enabling seamless interaction between AI models, robotic platforms, and human users. In parallel, the conference highlights ethical frameworks, governance models, and sustainability practices that are essential to maintaining trust and ensuring long-term societal benefit. By bringing together researchers, industry leaders, and policymakers, this event provides a platform to share breakthroughs, discuss challenges, and identify opportunities for collaboration. The ultimate goal is to design a roadmap for responsible, human-centric innovation that balances technological advancement with ethical responsibility, shaping an intelligent future that serves both industry and society.

Keywords: *Artificial Intelligence, Robotics Technology, Human-Centric Innovation, Intelligent Systems, Real-World Applications, Robotics Integration, Ethics and Governance, Sustainable AI, Emerging Technologies*

An Explainable Hybrid AI Model for Student Performance Prediction

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Abstract

This study proposes a model designed to predict student performance using a combination of deep learning and ensemble methods. The approach integrates an Attention-based BiLSTM (ATT-BiLSTM) for feature extraction with a cost-sensitive Random Forest (WCERF) for classification. The ATT-BiLSTM extract temporal patterns and the attention mechanism picks the most influential phases in a student's learning process, producing and interpretable features.

The model was evaluated against a representative student dataset to analyze its efficiency in predicting the underperforming students. Results show that the ATT-BiLSTM outperformed the baseline BiLSTM across all the metrics of evaluation, with accuracy rising from 57.3% to 90.0%, precision from 47.3% to 92.1%, recall from 41.2% to 48.6%, and F1-score from 36.7% to 63.6%. These findings confirm the viability of the proposed model and demonstrate how attention-augmented sequence modeling can improve performance prediction accuracy in educational data mining.

Keywords: *Student performance prediction; Educational data mining; Class imbalance; Attention-based BiLSTM; Random Forest; Cost-sensitive learning; Interpretability*

Enhancing Software Reliability Prediction Using NN, GP, ACOT, and PSO

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Abstract

Software reliability prediction is required to build software systems of good quality. In this paper, the performance of evolutionary computing models, Neural Networks (NN), Genetic Programming (GP), Ant Colony Optimization Technique (ACOT), and Particle Swarm Optimization (PSO), for software reliability prediction is compared. Randomness and variance of software behaviors do not make it possible for conventional methods to estimate its reliability. There is enough evidence that evolutionary models such as Neural Networks (NN), Genetic Programming (GP), Ant Colony Optimization Technique (ACOT), and Particle Swarm Optimization (PSO) can be utilized to solve the issues. NN, GP, ACOT, and single PSO are single models under consideration in this paper for possible utilization to software reliability prediction. The performance of the models is compared with a benchmark dataset. Each of the models is compared according to prediction accuracy, convergence rate, and autocorrelation values. To observe how well they are performing, their accuracy, convergence rate, and autocorrelation effect is examined. From the outcomes, although all four models are good predictors, NN and PSO are better in terms of convergence rate and accuracy. Hybrid systems utilizing multiple techniques provide a better accuracy-computational cost trade-off from the outcomes. This suggests that model combination is a good area to improve the performance of software reliability prediction.

Keywords: *Software reliability, Neural Networks, Genetic Programming, Ant Colony Optimization, Particle Swarm Optimization, Evolutionary Algorithms, Optimization, Autocorrelation*

Agile-Driven Transformer-Based Foundational Architectures for Efficient Multimodal Perception and Prediction in Robotics, Healthcare, and Enterprise AI

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Abstract

Recent advances in machine learning (ML) and deep learning (DL) architectures have shifted focus from task-specific models to scalable foundation models capable of multimodal perception and generalized prediction. This paper investigates the evolution of foundational ML architectures across the perception-to-prediction spectrum, integrating Agile principles to enable iterative development, rapid prototyping, and adaptive deployment in real-world scenarios. By analyzing core paradigms—convolutional neural networks (CNNs), transformers, and modular foundation models—and synthesizing performance metrics with Agile workflow evaluations, this work addresses challenges in computational efficiency, multimodal fusion, and ethical AI governance. Empirical comparisons across robotics, healthcare, and enterprise domains demonstrate substantive improvements in accuracy, fairness, and deployment speed, highlighting the effectiveness of combining advanced architectures with Agile methodologies for reliable, interpretable, and scalable AI systems.

Keywords: *Machine Learning, Deep Learning, Agile Principles, Perception Models, Predictive Analytics, Foundation Models, Multimodal Intelligence, Iterative Development*

Pre-disaster Response and Emergency Planning System (prep): Predictive and Prescriptive Analytics for Flood and Typhoon

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Abstract

The Pre-Disaster Response and Emergency Planning System (PREP) was developed to address recurring flooding and typhoon challenges in San Juan City, Metro Manila, where preparedness is hindered by fragmented communication and inefficient resource allocation. PREP integrates predictive and prescriptive analytics to strengthen the City Disaster Risk Reduction and Management Office's (CDRRMO) capacity for data-driven decision-making, resource deployment, and community engagement. Its predictive module employs CatBoost, LightGBM, and XGBoost to forecast water levels in major waterways using hazard maps, historical data, rainfall, and wind speed, with CatBoost yielding the most accurate results (Test RMSE = 0.229, R^2 = 0.9165). Forecasts feed into NDRRMC-standard risk scores, which the prescriptive module translates into rule-based strategies aligned with CDRRMO protocols, offering deployment options under CHARLIE, BRAVO, ALPHA, or STANDBY categories. Complementary features include mobile alerts, hazard maps, evacuation routes, and a monitoring dashboard. Evaluation using SUS and OWASP ZAP confirmed PREP's usability, reliability, and security, demonstrating a scalable framework for urban resilience.

Keywords: *Predictive, Prescriptive, XGBoost, LightGBM, Catboost, Heuristic, Rule-Based Prescriptive, Pre-disaster, Disaster Planning.*

Outreach and Extension Services: A Decision Support System for Community Development Office of José Rizal University

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Abstract

Community development Offices (CDO) often struggle with manual processes that cause delays, poor documentation, and ineffective allocation of resources. This study introduced the Outreach and Extension Services Decision Support System (OES-DSS) for the Community Development Office of José Rizal University to address these issues. The system integrated three main components: a Community Profiling module for collecting resident demographic and socio-economic information, a Budget Monitoring module for tracking allocations and disbursements, and an Automated Certification module for issuing and verifying outreach participation certificates. Together, these modules aimed to create a unified platform that promotes efficiency, accountability, and transparency in program management.

The system also incorporated predictive analytics through the Random Forest Decision Tree algorithm. Historical and needs assessment data from partner barangays were used to generate recommendations on which outreach programs—such as Kalikasan, Kalusugan, Kabuhayan, and Kaalaman—would be most suitable for specific communities. These predictions were displayed alongside descriptive statistics and visualizations, supporting data-driven decisions at both the administrative and barangay levels. System development followed a descriptive-developmental approach, combining document analysis, surveys, and interviews with stakeholders. Evaluation was conducted using the ISO/IEC 25010 framework, measuring qualities such as usability, functionality, and reliability.

The findings showed that while the system effectively streamlined workflows and provided clear visual insights, prediction accuracy was limited. This was mainly due to the small and incomplete dataset available during testing, which reduced the reliability of the machine learning outputs. Nonetheless, the integration of profiling, financial monitoring, and documentation demonstrated significant improvement over previous manual methods. The study concludes that even with modest predictive performance, the OES-DSS can serve as a foundation for more advanced, data-driven community planning once larger datasets become available. Future work should focus on expanding data collection, retraining models for higher accuracy, and strengthening the system's integration with real-time survey inputs.

Keywords: *Decision Support System, Predictive Analytics, Random Forest,*

Community Profiling, Outreach Automation, Budget Monitoring, Automated Certification, ISO 25010, Sustainable Development Goals.

Integrating Self-Supervised Learning and Reinforcement Learning for Adaptive Decision-Making in Intelligent Autonomous Systems

Abstract

Intelligent autonomous systems operating in complex, real-world environments require adaptive decision-making capabilities that are often hampered by the data inefficiency and generalization limitations of traditional Reinforcement Learning (RL). This paper introduces a novel framework that synergistically integrates Self-Supervised Learning (SSL) with RL to address these challenges. The SSL component learns rich, task-agnostic, intrinsic representations from high-dimensional sensory data, such as images or raw sensor readings, without relying on extrinsic reward signals. These representations act as a robust, low-dimensional state space that filters out irrelevant noise, enabling the subsequent RL agent to focus purely on efficient policy optimization. Specifically, we employ a contrastive learning architecture to maximize the information content of the learned state embeddings. Empirical evaluations across various challenging, non-stationary simulation domains demonstrate that this integrated SSL-RL approach significantly improves sample efficiency, accelerates policy convergence, and enhances the agent's generalization capability to novel environmental states compared to purely reward-driven RL baseline methods. This work establishes a promising paradigm for deploying highly adaptable and resource-efficient autonomous agents.

Keywords:

EduSense: An AI-Driven Emotional Support and Monitoring System for Student Mental Wellnesst

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Abstract

This study developed and evaluated EduSense, an artificial intelligence–driven emotional support and monitoring system designed to assist students in maintaining mental well-being and academic balance. The primary objective was to assess the system's effectiveness in providing timely emotional interventions, tracking emotional trends, delivering digital emotional support, and enhancing peer collaboration among junior high school students.

The research employed a developmental-descriptive design and was conducted at St. Paul University Philippines with 15 Grade 8 students from the Junior High School Department who voluntarily participated. Data were gathered through one month of system use, which included daily mood tracking, chatbot interactions, and automated intervention logs. Quantitative data were collected through evaluation surveys measuring ease of interaction, comfort level, and perceived usefulness, while qualitative feedback identified additional feature suggestions.

Findings revealed that EduSense was highly effective in promoting emotional well-being through its adaptive features such as AI chatbot support, mindfulness reminders, breathing exercises, and counselor alerts. Students reported significant mood improvements following system interventions, with strong agreement on usability (M=4.28), comfort (M=4.20), and usefulness (M=4.43). Moreover, the emotional trend data indicated positive emotional progression and increased engagement throughout the monitoring period.

The study concludes that EduSense demonstrates strong potential as a digital companion for emotional and academic support, bridging the gap between traditional counseling and AI-assisted care. Its findings contribute to the growing body of knowledge on AI-integrated mental health systems, emphasizing their role in early emotional detection, proactive intervention, and school-based mental health innovation.

Keywords: *AI mental health support, emotional monitoring, mood tracking, student wellness, digital counseling*.

Gesture-Controlled Robot: A Step Towards Smart Robotics of the Future

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Abstract

The article describes the complete design, build, and testing of an inexpensive, gesture- controlled robot that is stable. The system makes use of an MPU6050 Inertial Measurement Unit (IMU) to capture hand gestures, which are then translated by an Arduino Nano microcontroller. Control signals that have been processed are sent wirelessly using nRF24L01 2.4GHz transceiver modules to a receiver module mounted on a mobile robot. The Arduino receiver converts these signals and drives DC geared motors through an L298N motor driver for contactless and intuitive robot motion control. The system provides an invaluable advantage over traditional control systems by facilitating natural and interactive human-robot interaction (HRI) experience. Possible applications include assistive technology for mobility-impaired persons, surveillance in hazardous environments, interactive learning of science, technology, engineering, and mathematics (STEM), and advanced gaming. The work delves into existing methodologies, provides a detailed account of the proposed system architecture and its deployment, presents an in-depth analysis of experimental results, and outlines a future-improvement roadmap. The future-improvement plans consist of AI-based gesture recognition for complex command sets, ultrasonic sensors for self-implemented obstacle detection, GPS for out-of-office navigation, and voice command integration to create a multimodal control system. The findings confirm that gesture control based on inertial sensors is an achievable, efficient, and affordable paradigm for the next generation of intelligent robots.

Keywords: *Human-Robot Interaction (HRI), Gesture Recognition, Inertial Measurement Unit (IMU), Arduino, Wireless Communication, nRF24L01, Robotics, Assistive Technology.*

Sustainable AI for Inclusive Development: A Sociological Perspective

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Abstract

The emergence of Artificial Intelligence (AI) as a transformative technological paradigm has redefined processes of governance, economy, and social interaction in contemporary societies. However, as AI systems increasingly shape human lives, the challenge of ensuring their sustainability and inclusivity becomes central to sociological inquiry. This paper, titled "Sustainable AI for Inclusive Development: A Sociological Perspective, "explores how AI can be harnessed to promote equitable social development while mitigating risks of exclusion, bias, and inequality. Drawing on sociological theories of technology, social justice, and development, the study examines the intersection of digital innovation and social structures in the Global South, particularly in the Indian context. The paper argues that sustainability in AI is not limited to environmental efficiency but extends to ethical design, accessibility, and long-term social well-being. Through a critical review of existing literature and policy frameworks such as India's National Strategy for Artificial Intelligence and the Sustainable Development Goals (SDGs), it assesses the potential of AI to support inclusive education, healthcare, and governance. At the same time, it interrogates how algorithmic biases, digital divides, and data capitalism reinforce existing hierarchies of class, caste, and gender. Employing a sociological lens, the study advocates for a "human-centered and community-oriented" AI ecosystem that aligns technological innovation with democratic values and social equity. It emphasizes participatory governance, interdisciplinary collaboration, and ethical regulation as prerequisites for sustainable AI development. The paper concludes that only by embedding social responsibility and cultural sensitivity into AI systems can societies ensure that technological progress becomes a catalyst for inclusive and sustainable human development, rather than a reproducer of systemic inequalities.

Keywords: *Sustainable AI, Inclusive Development, Sociology of Technology, Social Justice, Digital Inequality, India.*

Implementation of a Retrieval-Augmented Generation (RAG) Chatbot Using n8n and Supabase Vector Store for PDF-based Question Answering

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Abstract

The advancement of information technology and artificial intelligence has driven the development of chatbots as intelligent communication solutions across various sectors. However, the implementation of Large Language Models (LLMs) often leads to hallucination issues, where information is generated without a factual basis. To address this problem, this study imple-ments Retrieval-Augmented Generation (RAG), which combines the natural language generation capabilities of LLMs with vector-based document retrieval to produce more accurate, relevant, and traceable responses. The pro-totype system was developed using n8n as a workflow automation platform and Supabase Vector Store for storing and retrieving PDF document embed-dings. The testing methods included black-box testing, cosine similarity, latency measurement, and LLM Judge to evaluate the accuracy and quality of responses. The evaluation results showed an average cosine similarity score of 0.87 and an LLM Judge score of 4.9 out of 5, demonstrating RAG's effectiveness in delivering factual, document-based answers. This approach can be adapted to various domains, such as education, business documenta-tion, and public services based on digital archives.

Keywords: *Retrieval-Augmented Generation, Chatbot, Question Answering, Vector Database, n8n, Supabase..*

Exploring Students' Experiences in AI-Assisted Learning Environments: A Qualitative Descriptive Study

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Abstract

This study explores students' experiences in AI-assisted learning environments, emphasizing how artificial intelligence (AI) tools shape engagement, motivation, and learning autonomy. Using a qualitative descriptive approach, the research investigates students' interactions with AI-based educational platforms that provide adaptive feedback and personalized learning pathways. Data were collected through semi-structured interviews and classroom observations involving undergraduate students enrolled in AI-integrated courses. Thematic analysis was employed to identify recurring patterns, perceptions, and challenges related to the integration of AI into everyday learning activities.

Findings indicate that students generally perceive AI-assisted learning as beneficial in improving learning efficiency, accessibility, and self-regulated learning. The use of intelligent systems allows learners to progress at their own pace while receiving immediate, data-driven feedback. Students appreciated the adaptability of AI tools that personalize materials according to individual needs and performance levels. However, several participants expressed concerns about potential over-reliance on technology, the absence of emotional connection, and the diminishing role of teachers in facilitating human-centered learning. These findings underline that while AI contributes to cognitive advancement and individualized learning, it must coexist with meaningful human interaction to maintain the emotional and ethical dimensions of education.

This research highlights the importance of balancing technological innovation with pedagogical empathy in designing AI-driven educational environments. It contributes to the growing body of literature on AI in education by providing qualitative insights into how students perceive, experience, and adapt to intelligent learning systems. The study also offers practical recommendations for educators and developers to design learning environments that are responsive, ethical, and centered on human values, ensuring that AI serves as a complementary rather than substitutive force in future educational innovation.

Keywords: *artificial intelligence, education, qualitative descriptive study, student experience*

CNN-Based Model for Visual Identification of Giant Clam (Tridacna spp.) Species for Marine Monitoring in UP MSI

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Abstract

This ongoing research aims to develop a Convolutional Neural Network (CNN)-based model for the visual identification of giant clam (Tridacna spp.) species to support marine biodiversity monitoring in the Philippines. The primary objective is to leverage AI tools, specifically CNN, to automate the identification process, improving the accuracy and efficiency of species monitoring across large marine areas. The study is being conducted in collaboration with the University of the Philippines Marine Science Institute (UP MSI) Bolinao Marine Laboratory, where image datasets of giant clams are sourced. The model is being developed using CiRA CORE and trained in Google Colab, with testing conducted using DeepDetect in CiRA CORE. YOLOv7, the most advanced version of the YOLO (You Only Look Once) architecture, will be utilized for object detection due to its high speed and accuracy in real-time applications. The research follows a methodology that includes data preprocessing, augmentation, annotation, and model training, with a focus on optimizing the model's performance with an accuracy target of ≥85%. The CNN model will be evaluated based on key performance metrics such as accuracy, precision, recall, and F1-score. Preliminary findings suggest that AI-driven systems like CNN have the potential to significantly enhance the efficiency of biodiversity monitoring, reducing the reliance on manual, labor-intensive methods. This research addresses the pressing issue of giant clam conservation by providing a scalable, automated solution to the challenges of monitoring the species. The significance of the study lies in its potential to facilitate more effective conservation efforts, contribute to marine biodiversity management, and provide an accessible tool for both researchers and conservationists. As the study progresses, it aims to support long-term monitoring, improve data accuracy, and contribute to sustainable marine conservation practices in the Philippines.

Keywords: *Artificial Intelligence, Convolutional Neural Networks, Giant Clam Species, Marine Biodiversity Monitoring.*

The Invisible Censor: Examining Algorithmic Bias and Shadow Banning in Automated Moderation Systems

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Abstract

The rapid integration of artificial intelligence (AI) into online content moderation has transformed how digital platforms regulate user expression. Yet, as algorithms increasingly determine what is visible or suppressed, subtle forms of algorithmic bias—such as shadow banning—have emerged as critical ethical concerns. While prior studies have explored fairness and transparency in AI moderation, few have examined how linguistic and socio-cultural variations contribute to hidden suppression mechanisms.

This paper addresses that gap by proposing a conceptual framework for detecting and mitigating bias within automated moderation systems. The research adopts a hybrid methodology that combines literature-based synthesis with comparative discourse analysis, supported by secondary data drawn from documented moderation policies and case studies on major social media platforms. This framework maps the relationship between linguistic ambiguity, contextual misclassification, and decision-threshold optimization, revealing how data labeling and model design reinforce systemic bias.

Findings indicate that bias in automated moderation is not a technical anomaly but a structural consequence of biased training data and insufficient human oversight. The study introduces a human-centered ethical model emphasizing transparency, fairness metrics, and human-in-the-loop evaluation to ensure accountability in AI governance. Unlike prior research that centers on algorithmic accuracy, this work redefines fairness through the lens of digital rights and freedom of expression, contributing a novel ethical perspective to the discourse on responsible AI.

Keywords: *algorithmic bias, automated moderation, shadow banning, ethical AI, NLP fairness.*

Smart IoT Based Agricultural Monitoring System Integrated with AI for Precision Decision Support

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Abstract

Agricultural productivity, especially in developing countries such as Indonesia, remains constrained by the limited literacy among farmers, particularly in identifying appropriate fertilizers, pesticides, and cultivation methods according to specific environmental conditions. This research proposes a Smart Agricultural Monitoring System that integrates Internet of Things (IoT) and Artificial Intelligence (AI) technologies to enhance precision agriculture practices. The system utilizes a network of sensors, including soil moisture, pH (Potential of Hydrogen), nutrient (NPK), temperature, and multispectral imaging sensors, to monitor soil, plant, and environmental parameters in real time. The collected data is transferred to a cloud-based platform via LoRa and Wi-Fi communication modules, where AI algorithms analyze the data to provide actionable insights, such as fertilizer and pesticide recommendations, irrigation scheduling, plant health diagnostics, and harvest timing. Additionally, the system features a mobile-based user interface that delivers intuitive information to farmers, enabling them to make data-driven decisions. Field implementation in small-scale farms demonstrates that this integrated IoT-AI system can reduce resource misuse by up to 30%, improve yield prediction accuracy by up to 25%, and enhance early detection of pests and diseases. The proposed model presents a scalable and cost effecient approach toward sustainable and smart agriculture, contributing to the digital transformation of the agricultural sector through advanced data analytics and intelligent decision support capabilities.

Keywords: *IoT, Artificial Intelligence, Smart Agriculture, Precision Farming, Sustainable Agriculture*

Smart Disease Prediction System using Machine Learning for Enhanced Healthcare Accessibility

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Abstract

This research paper presents a smart disease prediction system utilizing Machine Learning (ML) and Artificial Intelligence (AI) to predict diseases based on symptoms provided by users. In today's fast-paced world, individuals often overlook minor health concerns, which can escalate into serious problems if left unaddressed. The primary objective of this project is to empower individuals by assisting them in identifying potential health issues at an early stage, thereby reducing the immediate need for a doctor's visit. We employed supervised learning techniques, specifically Decision Tree and Random Forest algorithms, to train the system on a comprehensive medical dataset. Our experimental results demonstrate that the developed model can predict common diseases such as flu, diabetes, and malaria with a commendable accuracy of up to 94%. This innovative system holds the potential to function as a virtual doctor's assistant, significantly bridging the gap in healthcare access for the general populace.

Keywords: *Disease prediction, Machine Learning, Random Forest, Healthcare, AI.*

Legacy Sync Asset Distribution Framework

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Abstract

Current NFT marketplaces provide users with platforms to buy, sell, and trade digital assets without considering the long-term management of these assets after user inactivity or death. The effectiveness of asset preservation and inheritance is limited when users become inactive, leading to potential loss of valuable digital assets and complications for legal heirs. This drawback can be overcome by implementing an automated digital asset inheritance system integrated within the NFT marketplace. This work proposes a novel NFT marketplace architecture that incorporates inactivity detection mechanisms and automated asset distribution protocols. The system monitors user activity patterns and implements a four-way asset distribution strategy after a predetermined inactivity period: (1) charitable donation of selected assets, (2) automated sale of assets with proceeds transferred to next of kin, (3) direct transfer of assets to designated next of kin, and (4) transfer of assets to legal representatives. The experimental implementation demonstrates that the proposed automated inheritance system effectively manages digital asset succession while maintaining blockchain security and transparency. The system utilizes smart contracts to ensure tamper-proof execution of user-defined inheritance preferences, providing a comprehensive solution for digital asset management beyond the user's active participation.

Keywords: *NFT marketplace, digital asset inheritance, blockchain automation, smart contracts, inactivity detection.*

Face Detection and Emotion Recognition Using Conventional Neural Network

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Abstract

Face detection and emotion recognition have gained significant attention in the context of human-computer interaction and intelligent systems. This paper presents a Convolutional Neural Network (CNN)-based approach to automatic facial emotion recognition using a publicly available dataset of facial expressions. Images were preprocessed to a uniform resolution of 48 × 48 pixels and augmented to enhance model robustness. The CNN architecture integrates convolutional, pooling, batch normalization, and fully connected layers with dropout to enhance generalization. The model achieved a training accuracy of 87% and a validation accuracy of approximately 70%, highlighting both the promise and limitations of CNNs for this task. Results indicate effective capture of discriminative facial features but also highlight challenges in handling subtle and overlapping emotions such as fear and surprise. The findings provide a foundation for future work aimed at improving accuracy through deeper networks, attention mechanisms, and multimodal data integration.

Keywords: *Face detection, emotion recognition, CNN, deep learning, facial expression*

Integrating Near-Infrared Spectroscopy and Machine Learning for Non-Invasive, Continuous Blood Glucose Monitoring

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Abstract

Diabetes mellitus is a chronic disease for which continuous monitoring of blood glucose is essential. Conventional methods, although precise, are invasive and may prove to be a hassle for patients. This study deals with the development of a proof-of-concept non-invasive blood glucose monitoring system, titled Glucoband, based on Near-Infrared (NIR) spectroscopy and machine learning. The system was constructed and developed as a modular pipeline, emphasizing the ability to prove the feasibility of employing low-cost hardware and open-source software. The hardware prototype relies on an ESP32

microcontroller and NIR sensors to capture spectral data. A backend based on Python was created to handle these signals and estimate glucose concentration with the help of different machine learning techniques. For data management, a MySQL database was employed for structured storage and retrieval. An interactive web interface, developed with Streamlit, was developed to show real-time glucose readings and history, proving an end-to-end solution. The results of this study propose to indicate a method which is suitable replacement for older invasive techniques, providing a basis for future development of continuous painless monitoring devices. The theoretical framework for a Flutter- based mobile app was also laid to detail future development of a portable version of the system.

Keywords: *Random forest classifier, Glucoband, Streamlite,ESP32 RasberryPi.*

Enhancing Operational Excellence in Power Generation: A Comprehensive Analysis of Maintenance Strategies and Efficiency Drivers

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Abstract

The power industry is utilizing more and more modern technologies in its maintenance, placing a strong emphasis on proactive maintenance and high-quality assessments. Better understanding of processes and more fact-based, logical decisions than just intuitive ones are made feasible by predictive process digitization and transformation. Furthermore, by applying knowledge obtained from advanced analytics and connected data sources, new maintenance strategies, better work and inventory planning, increased production efficiency, and greater safety standards may all be put into practice. Finding the efficiency parameters that are critical to understanding the functioning of power generation facilities is the aim of the research. This research aims to bridge the gap by conducting an extensive quantitative investigation that deviates from standard procedures and examines the nuanced aspects of operational efficiency inside power generating facilities. This study used a quantitative methodology, focusing on power industry personnel through email queries and utilising an online survey method with convenience and random selection strategy. To determine significant differences and examine suggested hypotheses, the gathered data—which included operational efficiency, predictive maintenance, and important factors—were analysed using t-tests, ANOVA, and matrix analysis. The importance of operational effectiveness, complex maintenance strategies, and the interconnectedness of several elements impacting maintenance outcomes in power plants have all been highlighted by thorough statistical analysis. Investigating the revolutionary effects of emerging technologies like big data analytics and artificial intelligence on power plant maintenance efficiency and reliability should be done in tandem with the exploration of tailored maintenance procedures.

Keywords: *Power generation, operational efficiency, maintenance strategies, predictive analytics, efficiency drivers.*

Level Up Learning: Gamification and Interactive Tools Transforming Higher Education

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Abstract

The rapid evolution of higher education demands innovative strategies to enhance student engagement, motivation, and learning outcomes. This paper examines the role of gamification and interactive learning tools in transforming higher education, with a specific focus on Oman. A thematic synthesis of 28 peer-reviewed studies, conference proceedings, and official reports published between 2020 and 2025 was conducted, highlighting four key themes: student engagement, motivation, learning outcomes, and challenges/opportunities. Globally and across the GCC, gamified learning environments demonstrate improved participation, motivation, and academic performance, while in Oman, pilot implementations at universities such as UTAS and Sultan Qaboos University show promising but limited adoption. Findings underscore the importance of pedagogical design, faculty capacity, cultural adaptation, and technology infrastructure to maximize the effectiveness of gamification. The study also identifies gaps in empirical research, recommending future studies on cross-disciplinary applications, long-term impacts, and scalable implementation strategies. Overall, gamification and interactive tools hold substantial potential to support Oman's Vision 2040 objectives, fostering technology-enabled, engaging, and effective learning experiences.

Keywords: *Gamification, Interactive Learning Tools, Higher Education, Student Engagement, Oman*

Narratives Of Public School Teachers On The E-Gamification Method

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Abstract

This study explored the narratives of public high school English teachers about using e-gamification methods in their teaching strategies. Utilizing a qualitative research approach and a narrative research design to understand the teachers' experiences and perceptions. Ten public high school English teachers with more than ten years of teaching experience from San Mateo, Montalban, and Quezon City were selected through purposive sampling based on relevant characteristics. Data was collected through in-depth interviews and analyzed using thematic analysis. The findings revealed several themes: a comprehensive exploration of e-gamification in educational settings and the integration of e-gamification methods for enhancing learning outcomes. Educators viewed e-gamification as a novel teaching technique that employed game-like elements to motivate and engage students. They experienced both positive and negative aspects, including increased student participation and satisfaction, along with challenges such as internet connection issues and the effort required to prepare gamified activities. Despite these problems, they found e-gamification more effective than traditional methods, especially in promoting active learning and better letter outcomes. Researchers also discovered that seasoned teachers utilized various e-gamification tools aside from Kahoot and Quizizz. They used Quizalize, Wheel of Names, and Duck Race. In addition, they customized their gamified activities using PowerPoint Presentations, adapting themes such as Super Mario, Alien and Spacecraft, and 4 Pics and 1 Word. The study also found that teachers utilized voice modulation and performative techniques to make gamified activities more engaging; some pretended to be a game master. The study concluded that e-gamification enhanced learning participation, resulting in longer class and better academic performance. The findings showed the significance of balancing traditional and gamified teaching methods to meet the diverse needs of students and suggested that the continuous implementation of e-gamification can improve new practices in teaching.

Keywords: *E-gamification; Elements; Class participation; Learning outcomes; Online Games; PPT*

Cultural Intelligence Practices In The Classroom Of The Teachers In San Mateo Municipal College: Basis For Faculty Awareness Forum

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Abstract

The aim of this study is to assess the Cultural Intelligence Practices of the teachers of San Mateo Municipal College. As teachers continue with an increasingly culturally and linguistically diverse (CLD) student population, their roles have become more complex in dressing not only the academic and institutional demands of their work, but also the interpersonal and intrapersonal demands in meeting the needs of all learners. Teacher preparations programs are continuing to emphasize the importance of understanding and valuing student cultures to inform teaching practice. It is in this context that the researcher decided to indulge in this particular inquiry in which the findings will serve as basis for faculty awareness forum. The descriptive method of research was used in this study with the researcher's made questionnaire as the data gathering instrument. This was validated by the head of the English Department of San Mateo Municipal College and principal of a prestigious school. Random sampling was utilized in this study. Overall, the cognizance level of the teachers of San Mateo Municipal College about their Cultural Intelligence Practices revealed the mean average of 3.98 with a verbal interpretation of Often Practiced. The researcher also found out that there is a significant relationship between the profile and the level of cognizance of the respondents in their cultural intelligence practices. The findings of this study will benefit the students, the faculty of instruction, and the institution. Further enhancement of the cultural practices and program may be looked into in accordance with the school goals and a faculty awareness forum is recommended as channel for improvement.

Keywords: *cultural intelligence, cognizance, diverse learners, enhancement, forum*

Application of technology in earthquake response in Thailand

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Abstract

The 8.2 Richter scale earthquake in Thailand, which originated in Burma and reached Thailand from March 28, 2025, to April 1, 2025, caused unexpected damage to some buildings. There are two main types of earthquake technology: early warning systems, which detect P waves to send out warnings before damaging S waves arrive. Studies have shown that most people are not informed and unaware of the risks and dangers. Building protection technologies, including resistive design and ground-based isolation to reduce direct vibration, are still underutilized in Thailand, as the country has not experienced such severe earthquakes in the past 150 years. This article analyzes Objective 1: To study Thailand's current earthquake early warning system and Objective 2: To study the current state of earthquake protection technology in buildings in Thailand. The study design utilizes research on relevant documents and data from public disaster management agencies and national disaster prevention academics.

The study found that: 1. Thailand currently lacks a complete real-time earthquake early warning system, but is continuously developing it, including post-event detection and reporting systems. and is accelerating the development of an advance warning system along with the development of a Cell Broadcast Service system, which is expected to begin testing nationwide in the first quarter of 2025. 2. The use of earthquake prevention technology in buildings in Thailand currently involves designing structures that emphasize strength and flexibility according to standards, using vibration reduction systems in important buildings, and developing warning systems and assessing damage after earthquakes. However, overall, the use of advanced vibration reduction technology is still limited by cost, making designing structures that are strong according to standards the preferred prevention method at present.

Keywords: *Application of technology, earthquake response, Thailand*

Economic Diversification in GCC Countries as a Mean of Sustainable Development: The Lessons Learned from International Experiences

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Abstract

The economies of the Gulf Cooperation Council (GCC) countries, heavily reliant on oil and gas face growing challenges from fluctuating oil prices, global market instability, and the finite nature of hydrocarbon resources. Economic diversification has, therefore, become a strategic priority for sustainable development across the region. This paper examines the evolution, strategies, and current realities of economic diversification efforts in GCC countries and explores international models that can inform these transitions. By analysing the diversification experiences of South Africa, India, and Malaysia, the study identifies key policy lessons applicable to the Gulf context, particularly in promoting non-oil sectors such as manufacturing, services, tourism, and renewable energy. The research highlights that effective diversification requires robust institutional frameworks, visionary leadership, public-private collaboration, and long-term investment in human capital and innovation. It also underscores the pivotal role of sovereign wealth funds, infrastructure development, and foreign direct investment in accelerating structural transformation. Despite progress under national visions such as Saudi Vision 2030, Oman Vision 2040, and UAE Vision 2050, GCC economies continue to exhibit limited diversification, constrained by rentier state dynamics and labour market dependencies. The study concludes that achieving sustainable and resilient economic growth in the Gulf depends on deep structural reforms, economic openness, and governance mechanisms that foster innovation and productivity beyond the hydrocarbon sector.

Keywords: *Economic Diversification, Gulf Cooperation Council (GCC), Sustainable Development, Non- Oil Economy, Structural Reform*

Generative AI in the Multimedia Workflow: A Midjourney Case Study for Concept Art

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Abstract

The rapid proliferation of Generative AI (GenAI) tools presents a paradigm shift for creative industries. This paper investigates the integration of GenAI into the modern multimedia workflow, specifically through an applied case study on concept art creation using the Midjourney platform. The objective is to analyze how this tool alters traditional design processes and redefines the role of the creative artist in a human-AI collaborative model. A comparative case study methodology contrasted the traditional concept art workflow (ideation, reference gathering, sketching) with a novel "AI- Integrated Workflow" centered on Midjourney. This new process utilizes prompt engineering for rapid visual exploration, AI-generated images as a creative base, and artist-led refinement. This refinement stage includes technical overpainting, correction of logical inconsistencies, and digital "kitbashing" to achieve a bespoke final artwork. Findings indicate the AI-Integrated Workflow significantly accelerates ideation, reducing development time from days to hours and yielding a high volume of high-fidelity concepts. However, challenges were identified, primarily a lack of fine grained control over specific visual elements (anatomy, logos) and common logical inconsistencies. These challenges highlight the indispensable role of the artist, not as a mere operator, but as a guide responsible for curation, correction, and narrative integration. This research concludes that GenAI tools like Midjourney are not a replacement for human designers but a powerful collaborative partner. The artist's role is evolving from "creator" to "art director" or "curator" who leverages AI for greater efficiency. The findings underscore the need for academic programs in creative multimedia to adapt their curricula to include AI literacy and human-AI collaboration skills.

Keywords: *Concept Art, Generative AI, Human-AI Collaboration, Midjourney.*

Adaptive, Mindful, and Data-Driven Leadership in Implementing Inclusive Technology: A Comprehensive Approach to Diversity, Equity, and Inclusion (DEI)

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Abstract

Leadership in the 21st century is characterized by rapid digitalization and the widespread adoption of artificial intelligence (AI). The primary challenge lies in ensuring that technology, particularly AI algorithms, operates fairly, free from bias, and supports diversity, equity, and inclusion (DEI). This article analyzes a new paradigm of leadership that is adaptive, mindful, data-driven, and inclusive, emphasizing the importance of inclusive technology in advancing algorithmic fairness. The research adopts a systematic literature review and critical analysis of

DEI practices in a global context. The findings reveal that mindful and data-driven leadership can reduce structural biases, strengthen organizational legitimacy, and pave the way for a revolution of inclusive leadership in the digital era. This study explores modern leadership paradigms that integrate adaptive, mindful, and data- driven approaches in the implementation of inclusive technologies. The main focus is on how leaders can apply DEI principles in the development of bias-free artificial intelligence (AI) and fair algorithms. Through a comprehensive analysis of recent literature and case studies, this research identifies a strategic framework for creating a revolution in inclusive and sustainable technology.

Keywords: *Inclusive Leadership, Artificial Intelligence (AI), Algorithmic Fairness, Diversity, Equity, and Inclusion (DEI), Mindful and Data-Driven Leadership, Digital Transformation*

Building Adaptive and Resilient Teams

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Abstract

Today's business world is always changing and full of surprises. We are living in a time of constant new challenges, where what worked yesterday might not work today. The old ways of leading, where one person is in charge of everything and tells everyone exactly what to do, just aren't working anymore. These old-fashioned methods make companies slow and unable to handle unexpected problems. This paper is about a new kind of leadership that is urgently needed to build teams that are tough and can bounce back from anything. It's a completely different way of thinking: instead of just giving orders, today's leaders need to create strong, flexible teams that can handle change on their own, finding new solutions and staying productive no matter what happens.

We have a simple plan with three main ideas to help teams become tough and strong. The first and most important idea is **making sure people feel safe**. This means creating a work environment where everyone feels comfortable speaking up, sharing their honest thoughts, and even admitting when they've made a mistake. When a team feels safe, they can try out new ideas and take smart risks without the fear of getting in trouble. This trust allows for honest feedback and helps the team learn faster. The second big idea is **giving them freedom to act**. When leaders trust their teams and give them the power to make their own decisions, good things happen. The team can react to problems much more quickly and come up with clever ideas on their own. Instead of waiting for a single boss to approve every small step, the team can find the best way forward themselves. This freedom unleashes creativity and makes work feel more meaningful because everyone has a stake in the success.

The last key idea is **helping them never stop learning**. A strong team is always looking for new knowledge. This means leaders should encourage everyone to see challenges not as scary threats, but as great chances to learn and grow. When a project doesn't go as planned, a learning team doesn't look for someone to blame; they look at what they can learn to do better next time. This continuous learning mindset keeps the team's skills sharp and their minds open to new possibilities.

This presentation will show how putting these three ideas together helps leaders change from being a boss who manages a group of workers into a leader who builds a powerful, living system. Our research shows that this new kind of leadership turns teams from simply reacting to change into leading the way forward, becoming a source of new ideas and energy. In the end, building teams that can handle anything isn't just a quick fix for today's problems—it's the most important thing a company can do to stay strong, successful, and relevant for a long, long time. It’s about creating a foundation of trust, freedom, and learning that can support a company through any

storm.

Keywords: *Modern Leadership, Strong Teams, Adapting to Change, Feeling Safe at Work, Organizational Health*

GIS-Based Multicriteria Site Selection for Flood Retention:A Case Study in Rembau, Negeri Sembilan, Malaysia

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Abstract

Urban flooding is a growing concern in Malaysia, particularly in vulnerable districts like Rembau, Negeri Sembilan. This study identifies optimal locations for flood retention ponds by integrating a Multi-Criteria Decision Analysis (MCDA) framework with Geographic Information System (GIS). Criteria considered include land use, slope, soil permeability, hydrological factors, proximity to river networks, and existing drainage infrastructure. The Analytic Hierarchy Process (AHP) was applied to derive weights for each parameter based on expert judgment and stakeholder input. Weighted overlay analysis generated suitability maps highlighting priority zones, especially in moderately sloped areas near natural waterways. Field validation confirmed site feasibility. Findings demonstrate the practical value of GIS–MCDA integration for flood mitigation and provide a replicable model for other flood-prone regions.

Keywords: *Flood retention, MCDA, AHP, GIS, site suitability, Rembau*

Morphological Awareness in Alternative Learning System (ALS) Learners: Basis for Intervention and Instructional Material (IM) Development

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Abstract

This study highlights the urgent need to improve literacy among [1] Alternative Learning System (ALS) learners, focusing on morphological awareness, a skill critical for vocabulary, reading, and spelling. The research was driven by the goal of [2] promoting equitable educational outcomes and sought to both assess learners' morphological awareness and identify any gender-specific performance patterns. The insights gained from this would then be used to create targeted, gender-sensitive interventions and teaching materials.

Employing a descriptive-survey research design, the study involved a total of 70 ALS learners (51 female, 19 male) from Mabinay, Negros Oriental. A carefully designed, self-made instrument was used to evaluate their vocabulary knowledge, reading comprehension, and spelling skills. This tool was rigorously validated and tested for reliability to ensure the accuracy of the results.

[3] The findings revealed that most learners possessed only a basic level of morphological awareness. [4] This deficiency significantly contributed to their notable struggles in both vocabulary and reading comprehension. Interestingly, [5] while the participants' spelling skills were comparatively stronger, their overall literacy development was still being held back by a fundamental lack of morphological understanding.

A key discovery was the emergence of distinct gender-specific patterns. [6] Male students demonstrated a higher performance level in reading comprehension, whereas female students showed greater proficiency in spelling. These crucial findings emphasize the need for instructional approaches that are not one-size-fits-all.

In conclusion, [7] the study emphasizes the importance of developing tailored, gender-sensitive interventions and instructional material to address the unique learning requirements of male and female ALS learners. By providing empirical data on the intersection of gender and education, this research strongly advocates for incorporating explicit morphological awareness instruction into ALS curricula. This will not only improve literacy outcomes but also empower all learners to achieve their full potential.

Keywords: *morphological awareness, ALS learners, gender-sensitive interventions, educational equity, literacy, empowerment*

Challenges Faced by Female Entrepreneurs in The Township of Umlazi in South Africa

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Abstract

Female entrepreneurs in townships face challenges including limited financial access (due to collateral requirements and discriminatory practices), inadequate infrastructure and resources (like lack of stable electricity, roads, and suitable business premises), social and cultural biases (gender stereotypes, family responsibilities), lack of education and training, and limited access to markets, technology, and formal support networks. These intersecting barriers hinder their ability to grow and sustain their businesses. In the heart of our townships lies a wellspring of innovation and determination. Yet, far too often, the ambitions of small and medium enterprises (SMEs) within these communities face insurmountable challenges, leading to the all-too-familiar narrative of struggle and closure. Navigating these challenges and reasons for business failures necessitates a comprehensive strategy encompassing governmental policies, community empowerment, educational initiatives, financial access, and infrastructural enhancements. By addressing these issues, a fertile ground for township entrepreneurs to thrive and bolster local economies can be cultivated. Empowered by education, collaboration, and unwavering dedication, we can chart a transformative course for township economies. This study sheds light on the crucial issues that plague township businesses and provides a roadmap to transformative change. South Africa's townships, particularly in Umlazi, are often seen as vibrant hubs of potential and creativity. However, many businesses in these areas struggle to survive, with a significant number failing within the first few years. Understanding the reasons behind this phenomenon requires a closer look at the motivations for starting businesses, the types of enterprises that dominate, funding challenges, and the broader economic context. There is considerable policy interest in supporting township economies currently. This is vital considering their history of marginalization and the extent of unemployment and poverty. However, the short-term injection of added resources could simply leak out unless more favourable conditions are created for enterprises to grow and develop locally. This paper examines the background of government laws, regulations and administrative measures that impede township economic development. Inappropriate standards and burdensome approval systems make it difficult for firms with growth ambitions and potential to formalize their operations and develop. The current situation wavers between laissez-faire neglect and enforcement of punitive regulations, which creates ambiguity and prospects for abuse. The paper concludes with some recommendations to create a more enabling environment, highlighting the need for local investigation and learning from reforms to diverse elements of the regulatory framework. The paper draws on a careful review

of existing evidence, an analysis of key policy documents and 18 semi-structured interviews with relevant stakeholders (NGOs, local government officials, academics, consultants, informal trading associations). The purpose of the interviews was to identify major regulatory obstacles to informal and township enterprises in cities and to discuss options for policy reform. A series of workshops was also held with city, provincial and national officials and other well-placed informants to discuss ways of strengthening township economies.

Keywords: *Entrepreneurship, female entrepreneurs, township, small medium enterprises, empowerment.*

Charting Iraq's Journey toward Health-Related SDGs: Evaluating Progress and Future Direction (Health Equity and Equality)

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Abstract

To accomplish additional health-related objectives, it is imperative to attain sustainable goals (SDG 3). A review is being conducted to monitor progress toward these goals within specific time frames by scrutinizing national data. The report considers publications from United Nations health agencies related to sustainable frameworks (UNSDCF), strategic frameworks (UNSF), country analysis and strategies (CCA, CCS), as well as country teams' submissions(UNCT). Despite facing numerous challenges and obstacles proposed in this document that focused on various healthcare areas, significant advancements were observed over a short period. Consequently, effective tools are suggested that can help overcome current/future barriers while enhancing implementation rates. The data compilation process combined statistical analyses with review examinations, methodologically enforced principles/procedures for guidance throughout all evaluation phases, leading to integrity evaluation level

Keywords: *Sustainable Development Goals (SDG 3), Health Monitoring and Evaluation, UN Health Frameworks (UNSDCF, UNSF), Country Health Strategies (CCA, CCS, UNCT), Implementation Barriers and Solutions, Data Analysis and Methodology Integrity*

Promoting Gender Equality, Women's Empowerment, and Entrepreneurship in Iraq: Current Challenges and Future Opportunities

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Abstract

This paper examines the state of gender equality, women's empowerment, and entrepreneurship in Iraq, analyzing their interconnected roles in fostering sustainable development. Gender inequality poses a significant barrier to women's participation in economic activities, particularly entrepreneurship. Using a combination of literature review and statistical analysis, this study identifies key challenges and opportunities for empowering Iraqi women to become equal contributors to the national economy. The findings reveal systemic barriers, including cultural norms, limited access to education, financial constraints, and policy shortcomings. Recommendations are proposed to address these barriers and unlock the potential of women entrepreneurs in Iraq.

Keywords: *Gender equality, women's empowerment, entrepreneurship, sustainable development, economic participation, systemic barriers*

Undertones of Pessimistic Existentialism in the Conceptualization of Homosexuality: A Critical Analysis of the 1986 Catholic Pastoral Letter Homosexualitatis Problema

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Abstract

This philosophical study clarified the multiple concepts of "homosexuality" as described in the 1986 Catholic Pastoral Letter (CPL): "On the Pastoral Care of Homosexual Persons" also known as "Homosexualitatis Problema". The study determined how it conceptualizes homosexuality, and how these concepts signify to pessimistic existentialism. The philosophical methods of conceptual analysis and critical analysis were employed. A total of 31 distinct statements of conceptual definition (SCD) of homosexuality were drawn from the source literature. A rereading of the SCDs resulted in the formulation of different themes. It also revealed that the Church's conceptualization of homosexuality. although multifaceted, is more emphatic on the attitude on how to treat homosexuals and homosexuality as a behavioral orientation. Further critical analysis of the SCDs revealed that most (68%) of them depict homosexuality as a negative existential. The latter bears implications on the type of moral instruction accorded by the Church in its pastoral approach towards homosexuals, which is anchored on "negative instruction" rather than "positive instruction", which is psychologically detrimental to homosexual persons. Findings in this study raise the moral exigency for the Church to reconsider its teachings on homosexuality and its overall framework of pastoral care for homosexual persons.

Keywords: *LGBT / Queer Studies; Religious views on homosexuality; Philosophical Pessimism Critical Analysis; Conceptual analysis; Critical analysis; Roman Catholic Church*

Perceived Risk for Depression and Coping Skills of Adolescents in a Private Higher Education Institution: Basis for Mental Health Education Program

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Abstract

Adolescent mental health is a pressing global concern, exacerbated by the COVID-19 pandemic. In the Philippines, mental illness is the third most frequent disability, yet only 3–5% of the health budget is allocated to mental health services. This study perceived risk for depression and coping skills among senior high school students in Cavite, Philippines, to inform school-based interventions. Anchored in Erikson's Psychosocial Development Theory, a quantitative descriptive design was employed, with 365 participants (61.4% female; 84.1% aged 18) selected via Raosoft sampling. Validated tools—the Kutcher Adolescent Depression Scale-6 (KADS-6, α=0.80) and Brief-COPE inventory (α=0.60)—were administered online.

Results revealed 67.67% (n=247) scored ≥6 on KADS-6, indicating possible depression, with symptoms like low energy (mean=2.50) and diminished enjoyment (mean=2.45). Coping strategies were predominantly problem-focused (mean=2.89), with active coping (mean=3.08) most utilized, while avoidant strategies were least employed (mean=2.10). No significant correlation was found between depression severity and coping styles (avoidant: p=0.474; problem-focused: p=0.128), suggesting external factors (e.g., family dynamics) may influence perceived risk for depression.

These findings highlight high post-pandemic depression risks but also resilience through adaptive coping. Schools are pivotal for early intervention, and this study recommends: (1) institutionalizing routine mental health screenings using KADS-6 and Brief-COPE; (2) training school staff to facilitate peer support groups and self-reflection programs; and (3) advocating for increased mental health funding and stigma reduction. By leveraging schools as hubs for mental health support, this research contributes to global efforts to address adolescent mental health in low-resource settings.

Keywords: *Perceived Risk for Depression, Coping Skills, Adolescent Students, KADS 6, Brief-COPE, Adolescent mental health, Adolescent mental health Philippines, Student mental health assessment, Coping skills students, KADS-6 assessment tool, Brief-COPE questionnaire, School mental health programs, coping mechanisms high school students.*

Preserving the Past for the Future: Leveraging Technology to Protect the Osun Oshogbo Groove, a Sacred Site in Nigeria

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Abstract

Sacred sites like the Osun-Osogbo Sacred Grove in Nigeria are vital cultural and spiritual landmarks, preserving the legacy of past civilisations and embodying humanity's connection to nature and the divine. However, these invaluable heritage sites are increasingly threatened by urbanisation, environmental degradation, unchecked tourism, and human neglect. Traditional preservation efforts, while essential, are often insufficient in the face of modern challenges. TThis study explores how modern technology can complement traditional conservation methods to safeguard the Osun-Osogbo Grove. It highlights the role of digital tools such as 3D scanning, drone mapping, GIS, and digital archiving in documenting, monitoring, and protecting sacred spaces. These technologies enhance the accuracy and efficiency of preservation efforts, offering new possibilities for data-driven conservation, educational outreach, and sustainable tourism management. The study also considers the challenges of integrating technology into heritage preservation, including ethical concerns, costs, and the need for community involvement. Emphasis is placed on collaboration between technologists, conservation experts, and local custodians to ensure culturally sensitive and inclusive approaches. By showcasing innovative strategies and successful applications, the chapter underscores the transformative potential of technology in protecting sacred heritage for future generations. The study is an exploratory review of the role of Technology in the preservation of heritage sites.

Keywords: *Sacred sites, technology, conservation, drones, 3D scanning, digital archiving, cultural heritage, spiritual heritage, preservation, tourism management.*

Teacher-Turnover in the Archdiocesan School System: A Basis for Faculty Retention Program

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Abstract

This paper explored the teachers' turnover among the nineteen member schools of the Tuguegarao Archdiocesan School System (TASS). Descriptive – correlational design was utilized and data were gathered with the survey-questionnaire. The participants were comprised of 139 teachers who either resigned or transferred from TASS to public schools during the school years 2020-2021, 2021-2022, and 2022-2023. Frequency, percentage and mean were used to describe the profile of the participants and weighted mean was used to describe the participants' turnover in relation to motivation and hygiene factors. Pearson-r was used to determine the relationship between and among the respondents' profile, motivation factors and hygiene factors. Findings revealed that the teachers are generally motivated and satisfied with various aspects such as job fulfillment, recognition, and professional development opportunities. Moreover, TASS schools perform relatively well in terms of hygiene factors, which include aspects like working conditions, administrative policies, and interpersonal relations. However, there are areas needing improvement, particularly concerning salary and benefits. Enhancing these hygiene factors can further increase teacher satisfaction and decrease turnover rates, contributing to a more stable and committed workforce. The study also found that significant positive correlation exists between motivation factors and hygiene factors which indicates that improvements in hygiene factors can positively influence motivation levels. Recommendations for a Proposed Faculty Retention Program are given to address the prevailing causes of teacher turnover from TASS.

Keywords: *turnover, motivation factors, hygiene factors, archdiocesan school system, retention*

Addressing Academic, Behavioral, and Psychosocial Challenges of College Students: An Evaluation of Guidance and Counseling Interventions at Saint Joseph's College of Baggao

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Abstract

This study examines the prevalent academic, behavioral, and psychosocial challenges faced by students and evaluates the effectiveness of guidance and counseling interventions implemented by the Guidance Office of Saint Joseph's College of Baggao. Using a mixed- methods design, the research draws on survey responses, counseling reports, and neuro-psychological evaluations to identify the most pressing student concerns, including academic stress, exam anxiety, financial struggles, low self-esteem, and time management difficulties. The findings reveal that individualized counseling, group therapy, multiple intelligence assessments, and structured psycho-therapeutic sessions significantly contributed to students' emotional stability, coping strategies, and academic engagement. Moreover, students reported improved resilience, self-awareness, and positive outlook after participating in these interventions. The study concludes that a holistic and proactive guidance program is essential in fostering student well-being, retention, and academic success. Recommendations are provided to strengthen future mental health initiatives and institutional support mechanisms.

Keywords: *Academic Stress, Psychosocial Challenges, Guidance and Counseling, Neuro-Psychological Evaluation, Student Well-being.*

Parents' Involvement to Schools' Programs and Activities Among Select Archdiocesan Schools: A Basis for an

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Abstract

This study explores parental involvement in school programs and activities within Archdiocesan schools (academic year 2023-2024) to inform the development of an enhanced PTA program.

Employing a descriptive-correlational design with 192 participants, the research examines how PTAs collaborate in various roles (financier, observer, etc.) to improve school initiatives.

The results show a relatively high degree of parental participation and a relationship between degrees of involvement and employment position.

The findings likely reveal a well-rounded participation across various roles. Parents might contribute financially to school programs, actively observe their children's progress, and volunteer their time and skills. Additionally, some might hold decision- making power, while others stay informed as interested observers.

Recommendations for parents, school administrators, and the TASS superintendent are provided to strengthen program implementation through an improved PTA program.

The study emphasizes the importance of a strong parent-teacher partnership in fostering well-rounded, socially responsible citizens.

Keywords*: Collaboration, Parental involvement, School programs and activities, Archdiocesan schools, PTA program.*

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*

Preservation of Indigenous Cultural Heritage Among Dumagat Residents in Barangay Dibut, San Luis, Aurora: A Mixed Methods Analysis

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Abstract

This study employs a convergent parallel mixed-methods approach (Creswell and Plano Clark 2018) to explore the preservation of Indigenous cultural heritage among Dumagat residents in Barangay Dibut, San Luis, Aurora, Philippines. Quantitative data were collected through structured surveys of 30 community members to assess their awareness, participation, and attitudes toward cultural heritage. Simultaneously, qualitative data from semi-structured interviews with 30 respondents provided deeper insight into lived experiences and perceptions. Thematic analysis revealed five key themes: cultural identity, intergenerational knowledge transfer, culturally embedded livelihoods, institutional support, and inclusivity. The integration of both data strands demonstrated strong cultural resilience despite limited formal educational exposure to heritage concepts. The study recommends inclusive, community-driven education and policy support to enhance cultural sustainability.

Keywords: *Indigenous Peoples, cultural heritage, Dumagat, mixed methods, Aurora Province, preservation, participatory development*

Potential Staining Ability of *Beta Vulgaris (Beet Root) Flesh* and *Caesalpinia Sappan Linn. (Sappan Wood)* Wood Dye Extract Mixture as an Alternative Dye to Eosin-Nigrosin in Sperm Viability

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Abstract

Sperm viability assessment determines whether immotile sperm cells are alive or dead when sperm motility is low. Eosin-Nigrosin stain is the standard method used for sperm viability assessment, serving as the control for the study. This comparative experimental study investigated the staining capabilities of two combined plants, *Beta vulgaris* (beetroot) and *Caesalpinia sappan L.* (sappan wood) as an alternative staining agent to eosin in the Eosin-Nigrosin stain. The plant extract mixture was prepared into concentrations of 25%, 50%, and 75%. The results revealed that the 25% concentration of the dye extract mixture with Nigrosin demonstrated a staining uptake capacity comparable to the control stain. 25% concentration achieved an average staining rating of 3.0, which signifies effective moderate staining of dead sperm cells. Furthermore, the 25% concentration generated an average sperm viability result notably higher than the control group stained with Eosin-Nigrosin. All three experimental extract concentrations with Nigrosin led to interpretations of normal sperm viability results, consistent with the results obtained using the control Eosin-Nigrosin stain. The study suggests that a 25% concentration of the dye extract mixture from *Beta vulgaris* flesh and *Caesalpinia sappan L.* wood offers a promising combination of stain uptake with Nigrosin for the assessment of sperm viability.

Keywords*: Stain, Beta vulgaris (Beetroot), Caesalpinia sappan Linn. (Sappan wood), Extract, Sperm viability, Eosin-Nigrosin*

Distance Learning in the Post-Pandemic Era: Adaptive Models for Educational Evaluation

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Abstract

This study examines the transformations in theological education and biblical engagement that emerged in the aftermath of the COVID-19 pandemic, proposing adaptive models for evaluating distance learning in religious education. The pandemic accelerated the shift from traditional face-to-face instruction to technology-enhanced, learner-centered, and community-oriented pedagogies. Based on the findings, five key developments were identified: (1) proactive engagement with biblical texts through digital platforms and technological resources; (2) a renewed emphasis on the interpretive process through inquiry-based curricular design; (3) the mitigation of socioeconomic disparities via community–academic partnerships; (4) the active involvement of children and adolescents in faith formation through web-based mental health services and context-sensitive strategies; and (5) the cultivation of resilience through collaborative recovery initiatives. These findings highlight adaptive teaching models that promote critical and active engagement with Scripture, fostering spiritual transformation across age groups. More broadly, this research extends the discourse on theology and education by emphasizing the intersection of digital pedagogy, contextual relevance, and social responsibility in post-pandemic distance learning.

Keywords: *Distance Learning; Post-Pandemic Pedagogy; Digital Engagement; Community-Based Learning*

The Impact of Enterprise Resource Planning (ERP) System Implementation on Operational and Environmental Sustainability in Indonesia's Palm Oil Plantation Industry

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Abstract

Indonesia's palm oil industry contributes 4.5% to GDP and supplies 54% of the global market. However, it faces operational inefficiencies and environmental pressures, including deforestation and the European Union Deforestation Regulation (EUDR). This study examines the impact of Enterprise Resource Planning (ERP) implementation on sustainability. It addresses gaps in AI-enhanced tools for agribusiness.

We used a quantitative survey of 200 respondents from palm oil firms. Structural equation modeling (SEM) in SmartPLS tested hypotheses on direct effects, mediation by employee perceptions (via Technology Acceptance Model, TAM), and moderation by technological literacy and firm scale. Data analysis (n=200, 100% usable post-cleaning) supported all hypotheses: ERP positively influenced operational (β=.43, $p<.001$) and environmental sustainability (β=.40, $p<.001$). Partial mediation occurred (indirect β=.24–.26), with significant moderation.

Findings highlight ERP's role in optimizing yields and compliance. We recommend subsidized training for smallholders to achieve Indonesian Sustainable Palm Oil (ISPO) targets by 2025.

Keywords: *ERP implementation, palm oil industry, operational sustainability, environmental sustainability, SEM, Technology Acceptance Model, AI integration, Indonesia.*

Artificial Intelligence and Social Media Algorithms as Central Forces in Political Stability and Legal Order towards Smart e-Governance

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Abstract

Artificial intelligence and social media algorithms have become central forces in shaping the stability of political systems and legal order in the dynamics of modern politics. Both often serve as miniature models in influencing the political landscape, becoming a significant force for nations and politicians in building political existence. Based on the interconnectedness of algorithms with individual data, AI can process data on what individuals like and dislike, including their opinions on public figures. Similarly, algorithms are adept at sorting posts and are believed to possess powerful data manipulation capabilities, making them part of the solution in addressing individual problems, even within the realm of urban politics.

This research focuses on the dynamics of city politics, which are rich in actual and rapidly changing information, and examines the dual role of AI and algorithms in supporting political stability through a qualitative-descriptive approach. The findings of this research are expected to have significant implications for understanding the influence of AI and algorithms in emphasizing political education as a form of decentralized "touchless" political system towards digital e-governance.

The political system and governance, particularly the dual role of AI and algorithms as subjects of political maneuvering, are expected to play a significant role in building e-governance at the national level and shaping regulations that are not limited to Law No. 11 of 2008 on Electronic Information and Transactions (ITE Law). Furthermore, it is hoped that the government will comprehensively overhaul the management of Electronic-Based Government Systems (e-government) or we can attend on the international countries.

Keywords: *AI, Politics, Smart Governance*

The Relationship of E-Wallet Adoption and Sales Motivation on Selected Coffee Shops: Basis for Enhanced Financial Strategies Innovation

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Abstract

The rapid growth of digital payment has transformed business operations in the food and beverage sectors. E-wallets have emerged as a convenient and efficient payment method for customers. This study aims to assess the impact of e-wallet adaptation, focusing on crucial factors such as benefits, challenges, customer demand, and competition of coffee shops. Using a quantitative approach, employing descriptive-correlation to analyze the data that collected from 50 coffee shop owners in the Fifth District of Manila. This approach enables a broader understanding of the relationship between e-wallet adaptation and business performance, providing insight into the factors that influence digital payment adaptation. The findings indicate that the primary benefits of e-wallet adaptation include faster transactions, reduced cash errors, improved sales tracking, and enhanced customer satisfaction. However, despite challenges such as internet reliability and user adaptation, digital payments were found to enhance customer satisfaction and smooth sales processes. The study concludes that e-wallet adaptation has a significant impact on the sales performance and operational efficiency of coffee shop businesses. The findings indicate that e-wallet usage is highly valued for its speed, competitive advantage, and ability to enhance revenue, reflecting its importance in modern businesses. Benefits ($r=.669$, $p<.01$), challenges ($r=.579$, $p<.01$), and competition ($r=.849$, $p<.01$) all have high influence in influencing e-wallet adoption with positive correlation, leading to improvements in performance, Coffee shop owners who have integrated e-payments or digital wallets within the previous 2 years recognize the usefulness of these technologies in improving transaction efficiency, enhancing customer satisfaction, and staying competitive. The researchers hope that the findings contribute to a deeper understanding of digital payment and their role in enhancing sales performance, in terms of transaction efficiency, an increase in revenue, and business growth.

Keywords: *E-wallet, Digital Payment, Business Performance, Coffee Shops, Customer Satisfaction.*

Empowering Women Entrepreneurs for the SDGs: Equity, Inclusion, and Family Business Continuity.

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Abstract

Empowering women entrepreneurs is crucial for driving innovation, economic growth, and sustainable development. Women entrepreneurs bring diverse perspectives and creative solutions to the business landscape, often addressing unmet needs and fostering social change. Despite their potential, women face significant barriers, including limited access to capital, entrenched social and cultural biases, and inadequate support systems. Overcoming these challenges requires a multifaceted approach that includes targeted financial initiatives, education and skill development programs, and the creation of robust networks for collaboration and support. This paper addresses these challenges by reviewing and synthesizing recent empirical and conceptual scholarship to provide a comprehensive understanding of women's entrepreneurship in relation to the Sustainable Development Goals (SDGs). Enhancing access to financial resources is essential, as systemic biases often prevent women from obtaining the capital necessary to grow their businesses. Providing grants, loans, and investment opportunities specifically for women-led enterprises can help bridge this gap. Education and skill development are equally important, with accessible training programs that build business acumen, leadership, and technological literacy playing a key role in empowering women. Mentorship and networking opportunities further strengthen women entrepreneurs by offering guidance, shared experiences, and a sense of community. By investing in women entrepreneurs, we not only enable their individual success but also contribute to broader societal goals, such as achieving gender equality, reducing inequalities, and promoting sustainable development. By mapping existing strategies and exposing critical research gaps, the paper offers actionable insights for policymakers, educators, and practitioners.Empowering women in entrepreneurship is a strategic imperative that can lead to a more inclusive, equitable, and innovative world, aligning with the Sustainable Development Goals (SDGs) and driving positive change across economies and societies. The collective efforts of governments, businesses, and civil society are necessary to create an environment where women entrepreneurs can thrive, transforming their potential into tangible economic and social impacts.

Keywords: *Women Entrepreneurs, Empowerment, Innovation, Economic Growth, Sustainable Development*

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.

Keywords: *SchemaLinking,Chain-of-Thought Prompting, Masked Lan guage Modeling (MLM), Electronic Medical Records (EMRs), Retrieval Augmented Generation (RAG), Abstract Syntax Trees (ASTs), Dual Instruction Tuning, Stepwise SQL Parsing, Complex Query Decompo sition, Spider Benchmark, Named Entity Recognition (NER), Schema Pruning, MIMICSQL Dataset.*

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.

Keywords: *OSINT, Digital Forensics, Cybercrime Investigation, Open-Source Intelligence Tools, Cybersecurity, Artificial Intelligence, Data Privacy, Counterterrorism, Cyber Threat Analysis.*

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.

Keywords: *Water Resource Management, Sabarmati River Basin, Dry Areas, Water Supply and Demand, Institutional Frameworks, Policy and Governance, Sustainable Water Management, Legal Framework, Hydrology, Stakeholder Engagement, Technological Integration, Field Surveys, Policy Analysis, Water Distribution, Resilient Water Strategies.*

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*

AI 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.

Keywords: *Intellectual Property Rights (IPR), Digital Platforms, User-Generated Content (UGC), Copyright Law, Remix Culture, Social Norms, Content Creation, Blockchain Technology, Non-Fungible Tokens (NFTs), Artificial Intelligence (AI), Copyright Enforcement, Digital Ownership, Fair Use, Open Access, Platform Governance, Digital Rights Management (DRM)*

The Impact of Digital Transformation on the Socio-Economic Development of the Country

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Abstract

The trends of change in the new society inextricably contribute to the development of the interregional connectivity of the world and connect it with the global challenges of digital technology, climate change and the transition to a green economy. The introduction of digital technologies (for example, artificial intelligence) provides human resources with the opportunity to focus creatively and solve problems faster, and economic growth is expressed in increasing the production of goods and services and improving the quality of production in the economic system. Economic phenomena and processes formalize digital globalization, network economy, process intellectualization and globalization. And with globalization, leadership is shifting from one civilization to another. According to forecasts, the GDP of Asian countries in the near future will amount to about 50% of global GDP. The number of Internet-connected facilities will grow to 35 billion in 2028. The total annual revenue from IoT technologies in 2025 will amount to 445.3 billion US dollars, and in 2030 it will exceed 741.9 billion US dollars, which will increase 3.4 times over ten years. Over the period 2000-2030, the number of devices connected to the Internet of Things in the world will increase by 4.09 times. The author has calculated that in 2010-2023 the growth trends of investments and GDP in Azerbaijan will be positive.

Keywords: *Digital Transformation, The İmpact, Social-Economic Development, Economic Growth*

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*

Creating Carbon Credits: Unveiling the Dynamics of the Asean and East Asian Market

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Abstract

This study aims to explore the dynamics of carbon credit markets within the ASEAN and East Asian regions, focusing on their development, challenges, and potential for sustainability. Utilizing a mixed-methods approach, we conducted quantitative analyses of carbon credit transaction data alongside qualitative interviews with key stakeholders, including policymakers, industry leaders, and environmental experts. The results reveal a growing interest in carbon credits as a tool for mitigating climate change, yet significant barriers remain, including regulatory inconsistencies and market volatility. The findings underscore the importance of harmonizing regulations and fostering collaboration among countries to enhance market efficiency. This research contributes to the understanding of carbon credit mechanisms in Southeast Asia and East Asia, providing insights that could inform future policies and initiatives aimed at achieving regional sustainability goals.

Keywords: *Carbon Credits, ASEAN, East Asia, Climate Change, Sustainability*

Analysis of Green Viability Assessment System in Philippine Government Hospitals Towards Climate-Resilient Health Facilities

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Abstract

Health facilities contribute to greenhouse gas emissions, such emissions can be mitigated by using renewable, sustainable, and clean energy. As the health sector is significantly affected by the circumstances brought about by climate change, the Department of Health as the nation's leader in health is challenged to respond to this phenomenon by minimizing the carbon footprint of health facilities while delivering quality health care.

In line with the Department of Health's (DOH's) vision towards achieving universal healthcare for all, health facilities must be responsive in reducing vulnerability to climate change and disaster impacts by improving people's access to healthcare. The DOH through the Health Facility Development Bureau (HFDB) developed the technical standards for green and safe health facilities accompanied by a green viability assessment (GVA) tool for hospitals to comply with its eight (8) performance standards such as Governance; Energy Efficiency; Water Efficiency, Sanitation, and Hygiene; Health Care Waste Management; Environmental Resilience; Site Sustainability; Materials Sustainability, and Indoor Environmental Quality.

To achieve climate-resilient and environmentally sustainable health facilities by 2040, the DOH has included the strategic thrust Agenda #4: Handa sa Krisis (Ready for Health Crises) within the 8-Point Action Agenda. The analysis focuses on GVA tool submissions that have undergone field assessment and subsequent desk validation from 2022-2024. In 2024, a total of 176 government hospitals garnered three (3) to five (5) Green Star Ratings under the Green Viability Assessment System with an initial 32 government hospitals recognized in 2022.

With the implementation of the GVA System, the management of hospital and local government units shows support for the objective to ensure that hospitals provide quality health and safety to people while minimizing the carbon footprint of the health facilities.

Keywords: *DOH, Green and Safe Hospital, GVA tool, greenhouse gas emission*

Investigating the Effects of Solanum nigrum Linn. against Spodoptera frugiperda found in Nicotiana tabacum

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Abstract

Control, management, and eradication of *Spodoptera frugiperda* or Fall armyworm (FAW) was challenging without the extensive use of inorganic pesticides. However, extensive application of inorganic pesticides threatens human health, animals, and environment. Hence, natural and organic pesticides are eco-friendly substance needed to control the proliferation of FAW. The main objective of this study was to determine the effects of *Solanum nigrum Linn*. or Black nightshade or Am-amsi leaf and fruit aqueous extract to FAW found in *Nicotiana tabacum* or Burley tobacco plants. Field experimental method using completely randomized design was employed. Data gathered were analyzed through descriptive statistics such as mean and ANOVA. Phytochemical analysis revealed that Black nightshade contains flavonoids, saponins, steroids, and terpenoids. Secondly, FAWs were irritable upon application of Am-amsi aqueous extract and became immobile after 12 hours of application. Moreover, there was an increasing mortality of FAW in the four treatments after 24 to 72 hours of application. In addition, there was a significant difference between T1 or 25% concentration and T4 or 100% concentration after 36 hours; there was a significant difference between T2 or 50% concentration and T4 after 60 hours; and there was a significant difference between T1 and T4 after 72 hours. Finally, Post Hoc analysis showed that T3 or 75% concentration was comparable to T4 when compared to a synthetic insecticide. It has been demonstrated that T4 of the aqueous extract was the most effective against FAW while T3 was comparable to T4 concentration. The phytochemical components of Black nightshade or Am-amsi contributed to the irritability, immobility, and mortality of FAW. The findings suggest that Black nightshade or Am-amsi is a potential natural and organic larvicide against FAW. Through the use of leaf and fruit extract of Black nightshade or Am-amsi, tobacco farmers may control FAW which is safer, more cost-effective, and more eco-friendly pesticide.

Keywords: *Burley tobacco, organic pesticides, phytochemical analysis, Solanum nigrum Linn, Spodoptera frugiperda*

Potential of Enhanced Probiotic (Provet) as Dietary Supplement for Growing-Finishing Pigs

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Abstract

The study entitled: Potential of Enhanced (Provet) Probiotic as Dietary Supplement for Growing-Finishing Pigs" was conducted at Agriculture Instructional, Research, and Production Units aims to evaluate its potential as dietary supplement for growing-finishing pigs in terms of body weight, gain in weight, average daily gain (ADG), Feed Consumption, and Feed Conversion Ratio, and the Return on Investment (ROI). The study was laid out using the Completely Randomized Designed (CRD). The least significance difference (LSD) was used for the comparison of means, if the result is significant. The treatments as basis of comparison were Treatment 1- Control (No Probiotic), Treatment 2. Commercial Probiotic, Treatment 3. 20ml of Enhanced (Provet) Probiotic, Treatment 4. 30ml of Enhanced (Provet) Probiotic. Highly significant ($P< 0.01$) result were observed on the growth parameters of growing-finishing pigs such as body weight, gain in weight, and the average daily gain (ADG) wherein, animals treated with 20ml provet probiotic took advantaged with the control treatment and the animals treated with 5 grams commercial probiotic. With the body weigh advantage of animals treated with 20ml provet probiotic, the Return On Investment (ROI) was significantly advantage compared with the pigs in other treatments. In is therefore concluded that the 20ml provet probiotic has something to do on the growth parameters of growing-finishing pigs, its utilization significantly affecting the return on investment, and safe to use for animal consumption. Therefore, it is recommended to use the 20ml provet probiotic and best to mixed with feeds and be utilized by pigs in the morning. Further study on provet probiotic be conducted for early and post weaned piglets, and gestating sow.

Keywords: *probiotic, dietary supplement, potential, growth*

Cytotoxicity of Native Fruit Trees and Ethnomedicinal Tress

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Abstract

This study was conducted in the selected municaplities of Apayao, province namely Municipality of Luna, Pudtol, Flora, Conner, Kabugao and Calanasan. It aimed to characterize the native fruit and ethnomedicinal trees in Apayao province and to determine the cytotoxicity analysis of these trees. Cytotoxicity testing is a critical tool in ensuring safety and efficacy of products as well as in advancing scientific understanding of cellular response to various substances. A descriptive research design was employed, involving both fieldwork and chemical laboratory analyses. Methanol extracts from various species of these native and ethnomedicinal trees, were evaluated for their cytotoxic potential against cancer cells. The study found that out of sixteen (16) species tested, four (4) species exhibited high cytotoxicity, three (3) species showed moderate cytotoxicity, six (6) species were identified as weak to non-cytotoxic, and three (3) species were noted to promote breast cancer cell proliferation. The threats to the survival of these trees include extreme weather events such as droughts, typhoons, and forest fires

Keywords: *Native fruit trees; ethnomedicinal trees; cytotoxicity*

Experiences on the Use of Generative Artificial Intelligence (AI) Tools for Research Writing Among Graduate School Students of ASC Conner Campus

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Abstract

Artificial intelligence (AI) has the power to revolutionize the field of education by enhancing teaching and learning experiences. The study aimed to explore the experiences of students of using Generative AI tools in research writing. It employed qualitative research particularly phenomenology. There were 15 students from the Graduate School who were selected for the study. In this study, students' experiences on using generative AI tools for research writing were thematized/ analyzed. Results revealed that students had varied purposes of using generative AI tools for the first time during their research writing process. Moreover, it is evident that the participants in this study had positive and negative experiences in using generative AI tools for research. It is recommended to strengthening the skills for effective use of generative AI tools in academic writing just like in research and thesis writing. The courses of the graduate school should be reviewed to incorporate competencies on utilization of AI tools to ensure that both students and teachers are well prepared for the responsible and effective use of AI tools and apps since AI have penetrated the teaching- learning process.

Keywords: *technology. artificial intelligence, generative, experiences, AI tools*

Purchase Behavior of Restaurant Operators Towards Seafood Products in Lianga Bay, Surigao Del Sur

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Abstract

This study examines the purchasing behavior of restaurants concerning seafood products, with a specific focus on the factors that shape procurement decisions in the municipalities of Lianga and Barobo, around Lianga Bay, Surigao del Sur, Philippines. Given the region's expanding food tourism sector, understanding the dynamics of seafood sourcing is crucial for ensuring both business sustainability and local economic growth. This research aims to identify key determinants such as product quality, pricing, supplier relationships, availability, and sustainability considerations that influence restaurant operators in their seafood procurement choices. Employing a quantitative descriptive methodology, the study surveyed 15 restaurants in these municipalities to assess their seafood sourcing strategies, challenges, and opportunities. Findings reveal that freshness and quality are paramount considerations, as they directly impact customer satisfaction and business reputation in the restaurant sector. However, price instability, supply chain inefficiencies, and inconsistent availability pose significant challenges for restaurant operators. Despite these constraints, a strong preference for locally sourced seafood emerged, highlighting the potential for strengthening linkages between local fishermen, aquaculture producers, and the restaurant industry. Furthermore, the study underscores the importance of establishing more resilient and sustainable supply chains, advocating for improved logistics, market coordination, and strategic partnerships between suppliers and buyers. These insights provide valuable recommendations for seafood producers, marketers, and policymakers to align their strategies with the needs of restaurant businesses while promoting sustainable fishing and aquaculture practices in the province. Ultimately, this research contributes to enhancing the local seafood industry's competitiveness and ensuring the long-term viability of Surigao del Sur's culinary and tourism sectors.

Keywords: *purchase behavior, restaurant operators, seafood products, marketing decisions, supply chain*

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