Wisdom Conferences

Where Knowledge Meets Insights

World Virtual Conference on Artificial Intelligence, Blockchain & Cybersecurity

October 06–07, 2026 | Virtual Conference

ABSTRACT BOOK



Organizing Committee Member

AI Ethics in Education and Research: Confronting the Rise of "Erudite Illiterates"



Dr. Fernando Moreira
Universidade Portucalense, Portugal

Abstract:

***I**n our rapidly digitalizing world, AI has become both a powerful tool and a formidable challenge for educational systems. This keynote examines the dual-edged nature of artificial intelligence in shaping modern pedagogy. While AI-driven platforms grant unprecedented access to information and learning opportunities, they also risk cultivating a generation of individuals who, though well-versed in data retrieval, may lack critical reasoning and ethical discernment, the so-called "erudite illiterates." This presentation will critically analyze how AI's role in education can inadvertently undermine deep comprehension and analytical skills. Drawing from interdisciplinary research spanning cognitive science, ethics, and educational theory, I will explore the subtle ways in which reliance on algorithmic learning may lead to superficial understanding. Furthermore, I will discuss the ethical responsibilities of educators, policymakers, and technologists in designing curricula that balance technological advancement with the cultivation of reflective, critically engaged minds. Key issues include the implications of AI on academic integrity, the widening gap between technological proficiency and true literacy, and the urgent need for an educational framework that fosters ethical awareness in digital contexts. Through case studies and theoretical models, this keynote aims to ignite a global conversation on redefining literacy in the age of artificial intelligence, ensuring that our educational systems produce not just information processors, but thoughtful, ethically grounded citizens prepared to navigate the complexities of our digital future.*

Biography:

***Prof.** Fernando Moreira is a Full Professor at Portucalense University, where he has served as a faculty member since 1992. He founded and led the Department of Science and Technology from 2018 to 2022 and contributed to the establishment of the university's first engineering degree programmes. He holds a PhD in Electronic Engineering from the University of Porto, where he also completed his Habilitation in 2018. His research interests include Mobile Computing, Generative AI in Higher Education, Machine Learning, and Digital Transformation. He has authored more than 275 peer-reviewed publications indexed in Scopus and regularly contributes to leading international journals and conferences. He has organised special issues for JCR-indexed journals, including Telematics and Informatics, Future Generation Computer Systems, and Expert Systems. He serves on several editorial boards and contributes as a keynote speaker, conference chair, and scientific committee member. He supervises doctoral and master's students and is affiliated with ACM, IEEE, and NSTICC. In 2019, he received the Atlas Elsevier Award for his academic contributions.*

Organizing Committee Member

Blockchain Fundamentals and Hyperledger



Dr. Abdullah Ayub Khan
Bahria University Karachi Campus, Pakistan

Abstract:

H*yperledger Fabric is a platform for distributed ledger solutions in industrial level. A modular architecture - Delivers high degrees of confidentiality, resiliency, flexibility and scalability. It is designed to support pluggable implementations of different components and accommodate the complexity and intricacies that exist across the economic ecosystem. Breaks from some other blockchain systems is that it is private and permissioned*

Biography:

Dr. *Abdullah Ayub Khan (Chairing, ACM Chapter) | Recognized Top 2% Scientist List 2023-2024 has earned his Ph.D. (CS | Blockchain) from the Department of Computer Science, Sindh Madressatul Islam University Karachi (Batch 2019). He has published more than One Hundred and Forty Six (146) research publications in well-reputed journals/publishers (such as IEEE Access, IEEE Transactions, MDPI, Elsevier, Spring, Wiley, Hindawi, etc.) in the domain of Digital Forensics, Cybersecurity, Blockchain, Hyperledger Technology, Information Security, Internet of Things (IoT), Federated Learning, Deep Learning, and Machine Learning. Recently, Dr. Abdullah Ayub Khan has been working as an Assistant Professor in the Department of Computer Science at Bahria University Karachi Campus.*

Keynote Presentation

The Role of Measurement in Quantum Computing: Problems and Advances



Marco Carratu
University of Salerno, Italy

Abstract::

Although limited in terms of qubit count, coherence time, and algorithmic complexity, low-cost quantum computers, particularly those based on Nuclear Magnetic Resonance (NMR) technology, are gaining increasing attention in academic, educational, and technical domains. Their accessibility, operational stability, and cost-effectiveness make them ideal for experimental studies and early-stage quantum algorithm development. Unlike superconducting quantum systems that rely on expensive and complex cryogenic infrastructure, NMR-based platforms operate at room temperature, enabling desktop experimentation in standard laboratory environments without the need for extreme cooling systems. This work presents a comprehensive characterization of a desktop NMR quantum computer, with the objective of evaluating the repeatability, reliability, and robustness of fundamental quantum algorithms executed under varying external conditions. A series of controlled experiments were conducted in which environmental parameters such as ambient temperature, electromagnetic interference, and mechanical vibrations were systematically altered. The analysis focused on the resulting algorithm output fidelity, signal stability, and sensitivity to noise, highlighting both the operational capabilities and limitations of NMR quantum systems. Alongside physical characterization, the study investigates the crucial role of electronic measurement and monitoring systems in enhancing computational accuracy. In particular, we explore how real-time signal processing, electromagnetic shielding, and filtering techniques can mitigate the influence of external perturbations. These electronic measures are essential to validate the correct execution of quantum routines, especially when quantum processing units are embedded within broader digital systems, including cybersecurity-related infrastructures. The integration of these electronic support systems not only strengthens the hardware layer of quantum computation but also ensures higher confidence in the outcomes of quantum protocols. This is especially relevant in security-sensitive applications, where the correctness and repeatability of algorithmic results are critical. The findings of this research contribute to the growing body of knowledge on low-cost quantum computing platforms and provide practical recommendations for their deployment as reliable, secure, and diagnostically transparent tools for both educational use and advanced quantum algorithm validation.

Biography:

Dr. *Marco Carratù, IEEE Senior Member (2024), received his Ph.D. from the University of Salerno in 2019 and currently serves as an Associate Professor at the Department of Industrial Engineering, specializing in the field of Electronic Measurements. His main research interests include NMR Quantum Computing, Instrument Fault Detection and Isolation, digital signal processing for advanced instrumentation, embedded measurement systems, and the application of artificial intelligence techniques for the indirect measurement of physical quantities, with a particular focus on measurement uncertainty in Machine Learning contexts. He is the author of numerous peer-reviewed scientific papers published in international journals and conferences, in collaboration with esteemed researchers worldwide.*

Oral Presentation

Thinking Out Loud: Leveraging Reasoning in Generative AI Tools for Research Conceptualization



Dion Hoe-Lian Goh
Nanyang Technological University, Singapore

Abstract:

***R**esearch conceptualization is a foundational yet complex and cognitively challenging task that requires students to synthesize existing knowledge, identify research gaps, generate novel connections, and formulate testable questions. While recent generative AI (GenAI) tools demonstrate strong capabilities in knowledge synthesis and complex reasoning, they typically function as direct answer providers without revealing their underlying thinking processes. Students who simply use the outputs of these GenAI tools risk under-developing their own reasoning and critical thinking skills. Here, expert reasoning processes can serve as cognitive modeling, allowing students to observe and internalize problem-solving strategies that enhance their independent research abilities. However, human experts are constrained by time, individual cognitive boundaries, and limited expertise diversity. This means that most students will be unable to learn from these experts.*

To address these limitations, we introduce InspAIre, an AI system that integrates machine think-aloud processes as cognitive scaffolding for research conceptualization. Think-aloud protocols have been recognized as effective pedagogical strategies in educational contexts, where learners verbalize their thought processes to enhance cognitive development and problem-solving skills. Employing this approach, we position AI as a thinking partner whose transparent reasoning processes can inspire and guide human research conceptualization.

We conducted an experiment whose primary objective was to ascertain whether students observing InspAIre's think-aloud process would improve research conceptualization performance and enhance inspiration. Using a between-subjects experimental design, we compared InspAIre, a LLM that produced final answers only, and online instructional materials about research conceptualization. Students from diverse academic backgrounds participated in the experiment in which both quantitative and qualitative data were collected. Results showed significant improvements in research conceptualization abilities among students using InspAIre. Students reported high levels of inspiration and positive attitudes toward the system. These findings suggest that making AI reasoning processes transparent and interactive can effectively enhance students' research conceptualization capabilities, transforming GenAI tools from passive answer providers to active collaborative cognitive partners in educational contexts.

Biography:

***Dr.** Dion Goh is Professor with the Wee Kim Wee School of Communication and Information, Nanyang Technological University, Singapore. He is also the Associate Dean for Graduate and Continuing Education at the College of Humanities, Arts and Social Sciences. Dion's research is categorized within the broad area of human information behavior. Specifically, he has extensive experience in the areas of online information sharing and seeking, human-computer interaction, and AI literacy. Dion has led a number of funded projects in the use of LLMs for education, deepfake identification and education, wellbeing in the extended reality environments, game-based techniques for crowdsourcing, and games for mental health interventions. He has published more than 300 articles in international journals and conference proceedings as well as delivered keynote talks at international conferences in his areas of research.*

...4

Keynote Presentation

Privacy-preserving federated learning for industrial machine fault diagnosis



Xiang Li
Xi'an Jiaotong University, China

Abstract:

***S**ignificant progress has been made in intelligent fault diagnosis methods for mechanical equipment in recent years, represented by deep learning. These data-driven approaches achieve high diagnostic accuracy, demand little expert experience, and offer high execution efficiency, yet they generally presuppose that abundant condition-monitoring data can be collected centrally to train a model. In practical engineering, however, data acquisition costs are high, and a single user often struggles to obtain sufficient and balanced samples: an individual terminal typically experiences only a few fault modes, some faults never occur, and the resulting datasets are scarce, biased, and severely imbalanced, which readily leads to overfitting. Although different users may possess similar equipment and could in principle collaborate, they usually refuse to share raw data, because monitoring data constitute a core competitive asset and are increasingly protected by privacy legislation such as the EU GDPR, the California CCPA, and China's Personal Information Protection Law. Directly centralizing distributed data is further hindered by large data volumes and slow transmission. Together, these factors give rise to the well-known data silo problem.*

This report presents federated learning as a promising paradigm for addressing the data silo problem and reviews its research progress in multi-user intelligent collaborative fault diagnosis. Federated learning enables multiple clients to jointly train a global model under the coordination of a central server while keeping local data private—only model parameters or gradients, rather than raw signals, are exchanged. After introducing the fundamentals, including the classical Federated Averaging (FedAvg) algorithm and the distinction between horizontal and vertical federated learning, the report analyses the particular difficulties of applying federated learning to fault diagnosis, such as large amounts of unlabeled data, scarce fault samples, uncertain data quality, and heterogeneous working conditions across users (non-IID data).

The report then details three collaborative modeling and transfer learning methods that ensure local data privacy. The first integrates self-supervised learning with a dynamic validation mechanism to alleviate insufficient individual data and to adaptively select the most informative client models for aggregation. The second introduces federated transfer learning based on data prior distributions, using a shared prior (e.g., Gaussian or uniform) as an intermediary so that knowledge can be transferred to unlabeled target users without source and target data ever being accessed simultaneously. The third employs deep adversarial networks, exchanging domain-invariant features instead of raw data and combining multiple client classifiers through majority voting to handle varying operating conditions. These methods are validated on bearing, bogie, and shaft-crack datasets under IID, Non-IID-Class, and Non-IID-Domain settings, achieving performance approaching that of centralized training while preserving privacy.

Finally, the report points out the remaining research challenges and future directions, including efficient collaborative modeling for massive equipment fleets, targeted knowledge transfer under severe data heterogeneity without accessing raw data, intelligent assessment of client data quality and contribution for fair incentive allocation, and engineering-deployment obstacles such as infrastructure cost and limited industrial confidence. The work highlights federated learning tailored to the field of intelligent equipment operation and maintenance.

Biography:

Prof. *Xiang Li, Professor at Xi'an Jiaotong University, China. I'm an IET Fellow. My research interests include industrial AI, machine vision, multimodal large model, neuromorphic computing, predictive maintenance, etc. I have published over 100 high-level research papers, including 35 ESI highly cited papers and 12 ESI hot papers. I'm serving as the Associate Editors for IEEE Transactions on Neural Networks and Learning Systems, Expert Systems with Applications, and Pattern Recognition. I'm also on the editorial boards of IEEE/CAA Journal of Automatica Sinica, Measurement Science and Technology, Measurement, etc. Prior to joining Xi'an Jiaotong University, I was a Postdoctoral Fellow in the Center for Intelligent Maintenance Systems at the University of Cincinnati, US. I received the B.S. degree in engineering mechanics and the Ph.D. degree in mechanics from Tianjin University in 2012 and 2017, respectively. My citations on Google Scholar are over 14000 with H-index of 56. I'm honored to be selected as Highly Cited Researcher by Clarivate, and top 2% scientists in career worldwide.*

Oral Presentation

Navigation Aid for Visually Impaired People Based on AI and AR Technologies



Peter Edelmann
University of Applied Sciences Mittelhessen, Germany

Abstract:

According to the World Health Organisation (WHO), there are approximately 1.2 million visually impaired or blind people living in Germany. Demographic change and the associated increase in life expectancy will result in an increase in the number of blind and visually impaired people. Finding an object such as a door handle is some-times a great challenge for these people.

By developing a prototype, the present work investigates the hypothesis that the navigation process to a searched object in the immediate surroundings can be partially automated with the help of a smartphone app and thus made easier for the visually impaired person.

For this purpose, the aspects of object recognition and navigation are combined. The visually impaired person detects the relevant environment immediately before the search by means of the augmented reality framework ARCore from Google. The target object is recognised by means of the neural network of the Google Cloud Vision API and tracked during navigation in the environment modelled by the augmented reality framework. ARCore is based on concepts from computer vision that enable orientation in space and an understanding of the environment. The Google Cloud Vision API essentially provides a list of recognised objects based on an image.

The evaluation shows that the recognition of, for example, a door handle and the navigation to this door handle is possible if sufficient criteria such as texture-rich surfaces and good lighting conditions are given.

The prototype is only intended to demonstrate the technical feasibility of the concept, Test series with visually impaired or blind people are still pending. However, these can only be carried out once the app has been further developed with regards to its practical suitability. These include the warning of obstacles, the improvement of the user experience, the improvement of performance and the increase in the reliability of object recognition.

Biography:

Dr. *Peter Edelmann is a professor at THM University of Applied Sciences in Germany. He lectures on software architecture and development and has extensive experience in developing the architecture of complex software systems through his collaboration with companies (e.g. Siemens, IBM, Zeiss). For several years, he has been supervising students who carry out their software projects, bachelor's and master's theses in medium-sized companies. His research interests focus on applications of component-based systems and process automation. For example, he developed a Lego-like system (Relation Oriented Construction Kit) for image-controlled technical testing and processing of products. In practice, the system enables rapid adaptation of testing software to an improved product.*

Oral Presentation

Generative Artificial Intelligence for Cyber Security



Farah Jemili
University Of Sousse, Tunisia

Abstract:

I*n the face of escalating cyber threats, the fusion of artificial intelligence (AI) with cybersecurity strategies has become a cornerstone for modern defense systems. This presentation, delivered by Dr. Farah Jemili, explores the pivotal role of generative AI in fortifying cybersecurity frameworks. As modern communication technologies generate vast amounts of data daily, the presentation addresses the pressing need to harness this data to safeguard Industry 4.0 infrastructures, which are increasingly vulnerable to cyber-attacks. With cyber-attack damages projected to reach $8 trillion in 2024 and escalate to $10.5 trillion by 2025, innovative solutions are essential.The presentation outlines the current cybersecurity landscape, identifying key challenges such as data collection, storage, processing, and the accurate detection of cyber threats. It emphasizes the transformative potential of AI methodologies, including machine learning, deep learning, and generative learning, in developing robust intrusion detection systems and real-time threat response mechanisms.A detailed examination of real-world AI applications in cybersecurity is provided, showcasing technologies like Cylance for malware prevention, AEG for automatic exploit generation, AI2 for predictive threat analysis, and IBM's Watson for IoT network analytics. The comparative study of various deep learning models highlights their distinct advantages and limitations in cybersecurity contexts.Furthermore, the presentation discusses the integration of AI with other technological pillars such as cloud computingand big data,illustrating how thesesynergies enhance cybersecurity capabilities. The research contributes tounderstanding how AI can be leveragedto develop intelligent, adaptive, and resilient cybersecurity systems, ultimately aiming to mitigate the risks and impacts of cyber-attacks.The presentation concludes with perspectiveson future research directions and theevolving landscape of AI in cybersecurity, underscoring the critical role of continuous innovation and collaboration in this domain.*

Biography:

Ms*. Farah Jemili is an Associate Professor at the Higher Institute of Computer Science and Communication Technologies of Sousse (ISITCOM), Tunisia. She earned her Ph.D. in 2010 from the National School of Computer Sciences (ENSI), Tunisia. In addition to her academic role, she serves as a Scientific Referent at the Tunisian Agency of Evaluation and Accreditation (ATEA) and as Internship Director at ISITCOM. She has held several leadership positions within the institution, including membership on the Scientific Council from 2011 to 2014 and Head of the Department of Computer Science from 2017 to 2020. Her research interests encompass artificial intelligence, cybersecurity, and big data analytics. She has actively contributed to the academic community as a reviewer for numerous international journals and conferences. With approximately 60 research publications in reputable venues and a record of invited and contributed talks at international conferences, she has established a strong presence in her field. Her work reflects sustained engagement in both research and academic service.*

AI-enabled Monsoon Rainfall Forecasting for Flood Risk Mitigation in the Mahanadi River Basin



Monalisha Pattnaik
Sambalpur University, India

Abstract:

I*Flood prediction is essential for managing the delta area of the Mahanadi River, particularly below the Hirakud Dam. Due to the complex hydrological dynamics and the increasing frequency of extreme rainfall events, incorporating soft computing techniques like 'Artificial neural networks (ANNs)', fuzzy logic, and hybrid models has significantly improved flood forecasting in the Mahanadi River basin, enhancing forecast accuracy. Climate change manifests through long-term fluctuations in streamflow, reflecting the river basin's response to such changes. Extreme weather patterns and global warming have led to increased flood frequency and severity, causing considerable damage to human lives, the economy, and agriculture. The use of the internet and early warning systems can mitigate these harms, making flood risk management technologies essential, especially in developing country like India.*

Objectives:

The primary objective of this study is to develop a reliable and accurate rainfall forecasting framework for the Mahanadi River catchment to support effective flood risk management and water resource planning. Specifically, the study aims to (i) analyze and understand the rainfall behavior and patterns across selected rain gauge (RG) stations in the basin, (ii) evaluate the capability of traditional statistical, machine learning, hybrid, and deep learning models in capturing the complex, non-linear, and non-stationary nature of rainfall data, and (iii) identify the most robust forecasting models based on performance evaluation metrics such as Root Mean Square Error (RMSE) and Mean Absolute Error (MAE). By improving rainfall prediction accuracy, the study seeks to enhance early warning systems and contribute to improved flood mitigation strategies in the Mahanadi River Basin.

Scope of the Study:

The scope of this research is limited to 18 rain gauge (RGs) stations located in the Mahanadi River Basin. Monthly rainfall data from these stations were used for model development and evaluation. While the Mahanadi basin consists of 18 rain gauge stations, data from all locations were not consistently available, posing challenges related to data completeness, communication overhead, and station maintenance. Despite this limitation, the selected stations represent key downstream locations that are critical for flood forecasting. The study focuses on comparing a wide range of forecasting techniques, from conventional statistical models to advanced artificial intelligence-based approaches, thereby providing insights into their applicability for rainfall prediction under data-constrained environments.

Methods Used:

The methodology adopted in this study consists of several stages. Initially, exploratory data analysis and cluster analysis were employed to understand rainfall variability and identify patterns among the selected stations. The monthly rainfall dataset was divided into training and testing subsets using a random 70:30 split to ensure unbiased model evaluation.

A variety of forecasting models were implemented and compared. These included traditional statistical models such as SARIMA, machine learning-based models such as Artificial Neural Networks (ARNN), hybrid models like SARIMA–ARNN, and advanced deep learning frameworks including Long Short-Term Memory (LSTM), Gated Recurrent Unit (GRU), and Temporal Fusion Transformer (TFT). The ARNN and TFT models were specifically designed to handle non-linearity, noise, and temporal dependencies present in rainfall data. Model performance was evaluated using RMSE and MAE, as these metrics effectively quantify prediction error magnitude and robustness. Regular system checks and adaptive learning mechanisms were integrated to address issues related to data variability, noise, and station-level inconsistencies.

Results and Discussion.:

The comparative analysis revealed that most conventional and hybrid models struggled to fully capture the inherent complexity of rainfall data in the Mahanadi River Basin. The rainfall series exhibited non-linear behavior, non-Gaussian distributions, and strong non-stationarity, making accurate prediction challenging. Models such as SARIMA and SARIMA–ARNN demonstrated limited effectiveness in handling these characteristics. Among all tested models, the ARNN and TFT approaches consistently outperformed others across all four RG stations. For the training dataset, RMSE and MAE values for studied RGs namely Basantpur, Kantamal, Kesinga, and Tikarpara were approximately [4.18, 2.96], [3.53, 2.27], [3.84, 2.55], and [29.50, 18.51], respectively. For the test dataset, the corresponding RMSE and MAE values were [25.34, 14.43], [22.76, 14.04], [27.90, 17.90], and [35.61, 23.07].

These results indicate that ARNN and TFT models possess superior learning capability and generalization performance.The strong performance of TFT is attributed to its attention-based architecture, which effectively captures temporal relationships and feature importance, while ARNN efficiently models non-linear patterns. Both models demonstrated robustness even with limited spatial data coverage.

Conclusion.

This study concludes that advanced deep learning models, particularly ARNN and TFT, provide significant improvements in rainfall forecasting accuracy for the Mahanadi River Basin compared to traditional and hybrid approaches. Despite the challenges posed by noisy data, limited station coverage, and non-stationary rainfall patterns, these models successfully learned complex temporal dynamics and delivered reliable predictions across all four rain gauge stations. The findings highlight the potential of AI-driven forecasting systems for flood risk management, especially in data-scarce regions. While the study is limited to four locations, it demonstrates that sophisticated models can compensate for data constraints and still offer actionable insights. Future work may focus on incorporating data from additional rain gauge stations, integrating real-time climate variables, and extending the framework to daily rainfall forecasting to further enhance flood preparedness and decision-making in the Mahanadi River Basin.

Biography:

Prof. *Monalisha Pattnaik is a distinguished academician and researcher currently serving as Professor and Head, Department of Statistics, Sambalpur University, Odisha, and as Deputy Director of the Research & Development Cell. She holds a D.Litt. in Supply Chain Management from Sambalpur University, a Ph.D. in Operations Research from Utkal University, and a Certificate Course in Business Analytics with Management Science Models and Methods from IISc Bangalore. With over 19 years of teaching experience, Prof. Pattnaik has taught courses in Artificial Intelligence, Robotics, Operations Research, Supply Chain Management, Financial Time Series Analysis, Optimization Techniques, Data Analytics, Econometrics and Multivariate Analysis. She has successfully guided five Ph.D. scholars, with seven currently pursuing research under her supervision. An avid researcher, she has published more than 135 research papers, with over 60 are indexed in SCOPUS and Web of Science, and has authored 10 books, edited 5 international volumes, and contributed over 60 book chapters with reputed publishers.*

Poster Presentation

AI for Autonomous Vehicles



Arwa Amaira
University of Sfax, Tunisia

Abstract:

H*istorically, vehicles were relatively simple, and their primary function was to transport people. As globalization progressed and technology advanced, a vehicle's primary objective expanded beyond transportation to encompass comfort, safety, and convenience. These aims motivated extensive research into vehicle advancements and the incorporation of technological discoveries and improvements, which led to the rise of the notion of vehicular networks. In general, vehicular networks are undergoing a crucial evolution. Various use cases have been invented and developed in recent years. Autonomous vehicles (AVs) are a key use case and key technology in future vehicular networks. AV relies on the different types of communication that exist in vehicular networks, such as vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I), vehicle-to-pedestrian (V2P), and vehicle-to-network (V2N), thereby increasing road safety for all users. As an innovative technology, AVs rely on a variety of technologies and methodologies to improve the safety, navigation, and coordination of an increasing number of AVs. Artificial Intelligence (AI) is the most relevant technology that can impact and enhance AVs. Many research papers and white papers discussed and presented solutions based on AI for AVs. Then, the E-poster will investigate and highlight the role of AI for AVs based on these studies, and we will also outline potential future directions in this field.*

Biography:

Ms. *Arwa Amaira received her bachelor's degree from the National School of Electronics and Telecommunications of Sfax (ENET'COM), Sfax University, Tunisia, in 2009. She earned an Engineering Diploma in Telecommunications and Computer Science from the Higher Institute of Computing and Communication Technologies (ISITCOM), Sousse University, Tunisia, in 2012, and completed her doctoral degree at the same institute in 2024. Since 2016, she has been an active member of the Research Laboratory of New Technologies and Telecommunications Systems (NTS'COM) at Sfax University. She is currently affiliated with ENET'COM as a contractual faculty member, where she continues to contribute to research and academic activities in collaboration with the NTS'COM laboratory. Her research focuses on wireless networks, artificial intelligence, vehicular networks, and mobility management, with a broader emphasis on Quality of Service (QoS) in modern communication systems. Through her work, she aims to advance innovative solutions in next-generation networking technologies and intelligent communication systems.*

The Human Element in Cybercrime: A Neuro-inspired Approach to Behavioural Threat Detection



Er. Kritika
Institute of Scholars, India

Abstract:

T*he continuous development of cybersecurity through resistance against advanced cyber threats exposes traditional detection methods to their limitations. Today's cybercriminals use human susceptibility alongside technology weaknesses to achieve unauthorized system entry for obtaining valuable data assets and financial resources. Human cognitive biases along with emotional vulnerabilities and decision-making weaknesses serve attackers because these basic security vulnerabilities do not correlate with traditional cybersecurity defenses. The increasing need for better crime prevention drives the necessity to go past technical approaches by developing stronger cognitive and behavioural expertise in cybercrime identification and prevention systems. The session "The Human Element in Cybercrime: A Neuro-Inspired Approach to Behavioural Threat Detection", will investigate how neuroscientific knowledge especially within behavioural science and cognitive psychology enhances our capability to identify and understand cybercriminal activities better. This speech will first show why human conduct stays crucial for contemporary cybercrime before exploring the neuro-inspired methods which unite AI and machine learning capabilities with neurological principles to create advanced behavioural threat identification frameworks.*

This issue holds immediate significance because cybercriminal strategies keep becoming more complex. Cybercriminals will keep developing new methods of operation in the future through enhancing both their computing prowess and their knowledge of human mental makeup. Cybercriminals increase their arsenal through exponential growth of manipulation attacks that now heavily depend on AI-driven phishing and emotional exploitation methods. Traditional cybersecurity approaches lack the ability to identify such attacks because attackers exploit human psychology through imperceptible mental processes.

Neurosecurity as the merger of neuroscience and cybersecurity provides a new method to protect against this problem through the integration of human-like cognitive features into automated security systems. Organizations achieve better cybersecurity through introducing neuro-inspired models which help detect suspicious behavioural patterns that might signal security threats even when they conceal their activities. This method detects unusual activities in addition to tracking cyberspace manipulation techniques which cybercriminals use for psychological and emotional manipulation of systems and individuals. About behavioural threat detection systems, will study their creation through neurological methods which surpass signature-based systems' capability to find potential risks. Emotion analytics implementation will serve as one topic during the discussion while neural network models focus on cognitive anomaly detection alongside biometric-based authentication through brainwave pattern usage as identifier systems.Current case studies demonstrate neuro-inspired methods that successfully detect cybercrime across threat monitoring of internal abuse incidents and social exploitation events and financial security breaches.

The presentation will combine neurosecurity technology demonstrations with an ethical breakdown of privacy risks and decision-making bias implications while deploying the application. Understanding human behaviour elements for cybersecurity defenses at the conference grants participants complete knowledge about evolving cybercrime detection methods combined with neuro-inspired technologies that reshape digital system protection and data defense.

This session delivers to cybersecurity experts and researchers and those with an interest in the field an innovative viewpoint regarding people behaviour role in threat detection. Through prospective implementation of neurosecurity practices we will establish systems which detect security threats before they can develop into potential threats thus creating stronger digital security

Biography:

Ms. *Er. Kritika is a distinguished researcher and keynote speaker recognized for her interdisciplinary contributions at the intersection of cybersecurity, artificial intelligence and machine learning, data governance, digital forensics, Internet of Things, gamification, open-source intelligence, and neuroscience. She has established a strong academic profile through numerous Scopus-indexed publications, book chapters, and authored volumes, consistently advancing knowledge across diverse domains. Her work has earned multiple accolades, including the Trailblazer Award for Security/Safety in Education (2025), Best Researcher Award (2024), Young Engineer Award (2024), and Young Researcher Award (2023). She is an active member of prominent professional bodies, including ISC2, the International Association of Engineers (IAENG), the Women in Cybersecurity (WiCyS) India Affiliate, and the Institute of Scholars (InSc). In addition, she serves as a reviewer for leading publishers and organizations such as IEEE, Elsevier, Springer, and IGI Global. Through her research, professional engagement, and thought leadership, she continues to contribute meaningfully to technological innovation and the global scientific community.*

Strategic Innovation Management for AI Adoption: The 6G-PATH Project



Filipe Marques da Silva Cabral Pinto
Altice Labs, Portugal

Abstract:

L*arge telecom corporations are racing against the clock to deploy Artificial Intelligence artefacts in their operations, improving processes, products, or services to ultimately enhance the customer experience. However, AI is a broad umbrella that encompasses various facets, each supported by a set of frameworks that must work together to bring value to businesses. Generative and Predictive AI can be utilised to improve the entire journey, from service discovery to retention, targeting the improvement of all touchpoints with the customer.*

Large telecom corporations must be agile and select the most appropriate path to meet client needs while thriving in a highly competitive environment. Moving quickly and in the right direction is not within everyone's reach, especially when the path is fraught with uncertainty. The appropriate use of Artificial Intelligence cannot be a blind bet within corporates, rather requiring a careful approach to achieve the right result. AI adoption requires a deliberate and strategic approach.

Innovation management, sponsored by C-level executives and aligned with well-defined processes, helps find the right path and quickly change course if the chosen one is not the

best. Implementing an innovation management system enhances an organisation's ability to transform and adapt while optimising resources. A structured approach minimises uncertainty and maximises the likelihood of achieving impactful results through innovation initiatives.

The Horizon Europe 6G-PATH project accelerates this vision by driving 6G technology development through collaboration with 6G-IA projects and Open Calls. It engages European companies to create innovations for B5G and 6G systems, introducing new use cases and pilot sites across four key verticals: Health, Education, Smart Cities, and Farming. These technologies will converge on advanced platforms that power next-generation applications, supported by Artificial Intelligence, to enhance network intelligence, flexibility, and performance. Artificial Intelligence as a Service (AIaaS) is not just a tool—it is a stepping stone toward smarter network management and a gateway to a new era of AI-driven applications answering the evolving needs of the intelligent digital era.

Biography:

Dr. *Filipe Cabral Pinto is a telecommunications consultant and technology researcher with 20 years of experience in mobile networks, data analytics, and innovation management. He manages the Exploratory Innovation group at Altice Labs, where he contributes to the organisation's innovation management system and certification process. He represents Altice Labs in Horizon Europe projects focused on evolved 6G communications and trustworthy data spaces. He also serves as a Visiting Professor at the Polytechnic University of Viseu, teaching Artificial Intelligence and Intelligent Data Analysis. Since 2002, he has participated in numerous national and European research and innovation projects, including NETGATE, Everest, B-BONE, C-MOBILE, C-CAST, Voices, IoT.est, CarCoDe, BESOS, CityAction, Aveiro STEAM City, and NextGen Mobility. He holds a PhD and an MSc in Telecommunications from Queen Mary University of London and a degree in Electrical Engineering from the University of Coimbra. He has authored more than 70 technical publications and holds two patents, reflecting his sustained contributions to telecommunications research and technological innovation.*

A System for Paraconsistent Reasoning



Bruno Costa Coscarelli
Federal University of Itajuba, Brazil

Abstract:

T*he purpose of this presentation is to introduce an article that proposes a system for dealing with inconsistent information in daily reasoning from a paraconsistent point of view. For that, reasoning is regarded as a process of refining states of knowledge of a reasoning agent. States of knowledge are divided into two parts: a safe one, which comprises consistent information and an unsafe one, which comprises inconsistent information. Safe knowledge must be kept while the agent reasons, while unsafe knowledge can be revised. The point is that safe knowledge can be gained from unsafe knowledge through a process of refinement.*

It is natural that safe information be treated classically, and unsafe information be treated classically ``as long as possible'' or in a ``cautious manner''. This implies that the base logic for the new reasoning system cannot be classical but shall be as close as possible to classical logic. The respect in which the base logic shall differ from classical logic is that it must account for unsafe sentences. That is, it must not collapse when exposed to such sentences. Intuitively, an unsafe sentence is one that is thought to be true or false but may not be so. It is unsafe when there may be evidence both in its favour and in favour of its negation. This suggests that the base logic should behave classically with respect to the positive fragment and should differ from classical logic concerning negation. The starting point are the logics called \textit{Logics of Formal Inconsistency}, or just LFI's.

The apparatus that is used to accomplish the task is that of model theory in a paraconsistent environment, that is, based in a logic derived from an LFI. Models play the role of states of knowledge, isomorphic models are those that may disagree about inconsistent information, but are compatible in terms of safe knowledge and homomorphisms link models when external consistent information is gained from outside. Refinements gain safe information from inconsistent information, within the philosophy that inconsistent information is not idle information. In classical model theory, the truth values of basic formulae are fully determined by an interpretation function, and the truth values of complex formulae are fully determined from the truth values of the basic interpreted formulae. In a paraconsistent environment, the truth values of complex formulae cannot generally be determined from the truth values of their subformulae.

Furthermore, as reasoning agents are conceived as non-omniscient, it makes no sense for the truth values of basic formulae to be fully determined in a model. For these reasons, the concept of structure is enriched so that a significant part of basic knowledge can be controlled, and clauses that propagate consistency are introduced so that the propagation of truth can be controlled in a significant part of complex knowledge. Subsequently, the concept of refining models is developed as a tool for extracting extra safe information from models. The idea behind this concept is that unsafe information is not idle information, and a closer look at that segment of the model can increase safety. Knowledge gained by refining inconsistent information is achieved through chains of compatible models using refinement criteria.

Following the article's presentation, possible future developments will be discussed. One of the developments discussed will be an essay on what a paraconsistent PROLOG could look like.

Biography:

***Mr.** Bruno Costa Coscarelli is an associate professor in Mathematics Department at Universidade Federal de Itajubá, Minas Gerais, Brazil. With expertise in Logics, he has contributed to the study of model theory in the context of paraconsistent logics. His research interests include model theory and non-classical logics.*

Multi-level Convolutional Feature Integration for Precision-oriented Facial Recognition Systems



Subhranil Das
University of Petroleum and Energy Studies, India

Abstract:
F*ace recognition has become one of the most prominent applications of computer vision, driven by advancements in deep learning techniques. Traditional approaches relied on handcrafted features and shallow classifiers, but these methods were limited in robustness and scalability under varying lighting, pose, and occlusion conditions. Recent deep learning models, particularly Convolutional Neural Networks (CNNs), have revolutionized face recognition systems by enabling end-to-end feature extraction and classification with significantly improved accuracy.*

State-of-the-art architectures such as VGG-Face, FaceNet, DeepFace, ArcFace, and SphereFace have set new benchmarks by learning discriminative facial embeddings. These models leverage large-scale datasets and deep layers to capture subtle facial features that differentiate individuals effectively. Innovations like Siamese networks and triplet loss further enhance intra-class compactness and inter-class separability. Furthermore, the use of residual connections (e.g., ResNet variants) and attention mechanisms has improved feature depth while mitigating the vanishing gradient problem.

In addition to 2D image-based methods, recent research has explored 3D face recognition, generative adversarial networks (GANs) for face augmentation, and transformer-based architectures that offer global context awareness. Deep learning also enables robustness to facial aging, expressions, and partial occlusions, enhancing real-world applicability in surveillance, biometric authentication, social media tagging, and border security.

The key advantages of deep learning-based face recognition systems include high accuracy, adaptability to new identities through transfer learning, and reduced need for manual feature engineering. These models also allow for real-time implementation on edge devices using model compression techniques like pruning and quantization. As research continues to evolve, integrating multimodal biometric cues (e.g., voice, gait) with face recognition is anticipated to further elevate security and performance.

Overall, deep learning has transformed face recognition into a highly reliable and versatile technology with applications across security, healthcare, and human-computer interaction domains.

Biography:

Dr. *Subhranil Das is a distinguished researcher and academician recognized for his significant contributions to the field of Artificial Intelligence (AI). His research spans a wide range of application areas, with particular emphasis on robotics and medical image processing. His scholarly work explores the integration of AI techniques across multiple domains, including optimization algorithms, deep learning for autonomous vehicles, big data analytics, predictive modeling, natural language processing, reinforcement learning, and computer vision. Through this interdisciplinary approach, he highlights the transformative potential of artificial intelligence in addressing complex real-world challenges. Prior to his current role at the University of Petroleum and Energy Studies (UPES), he served as an Assistant Professor at MIT World Peace University, School of Business. He also brings two years of industrial experience from Bharat Consultants, where he worked as an Electrical System Designer. This combination of academic and industry exposure enables him to effectively bridge theoretical research with practical applications. Dr. Das continues to contribute actively to AI-driven innovation through teaching, research, and interdisciplinary collaboration in emerging technologies.*

Integration of Real-time Plasma Disruption Prediction with an Open-source LLM and Retrieval-augmented Generation for Post-shot Plasma Analysis on ADITYA-U



Ramesh Joshi
Institute for Plasma Reseach, India

Abstract:

***R**eal-time prediction of plasma disruptions is one of the central challenges in magnetic confinement fusion research. On the ADITYA-U tokamak, early identification of disruption precursors is a prerequisite for triggering mitigation strategies and for improving overall operational reliability [1,2]. To prevent damaging disruptions caused by large-scale plasma instabilities in the ADITYA-U tokamak, this work develops a data-driven time series forecasting framework using deep learning architectures to predict precursor signal sequences prior to disruption events. By utilizing historical diagnostic data from approximately 8,000 ADITYA plasma discharges, multiple Long Short-Term Memory (LSTM) variants Auto Encoder were developed and evaluated using Root Mean Square Error (RMSE) metrics. The models effectively capture non-linear temporal dynamics and signal anomalies to provide sufficient advance warning time required for triggering disruption mitigation systems. Ultimately, this data-driven sequence prediction approach offers an efficient, reliable alternative to first-principles physics models, integrated for real-time hardware deployment and operational plasma control in ADITYA-U. Alongside the real-time prediction problem, experimental operations generate a large volume of shot-wise diagnostic and prediction data that is difficult to interpret manually at scale. This report documents a two-stage intelligent analysis framework built to address both needs: • Areal-time plasma disruption prediction system operating at 1 kHz sampling rate, generating a probability of disruption and precursor warnings for every plasma shot [3]. • ALarge Language Model (LLM) [4] based post-shot analysis and knowledge extraction layer that turns the numerical prediction output into natural-language summaries, comparisons and References a searchable knowledge base.*

Biography:

***Dr.** Ramesh Joshi is a Scientific Officer-F at the Institute for Plasma Research (IPR), Gandhinagar, India, where he has been associated since 2006. He holds a Master's degree in Information Technology from Gujarat Technological University, awarded in 2014, and a Ph.D. from RK University, Rajkot, focusing on disruption control and prediction using machine learning techniques. His professional responsibilities include data acquisition and instrumentation control activities associated with RF auxiliary heating systems. His current research interests focus on the application of machine learning and data-driven techniques to disruption prediction and control using multiple diagnostic systems, with emphasis on real-time deployment through edge computing and embedded controllers. He also serves as a faculty member and Innovation Ambassador at Homi Bhabha National Institute, contributing to academic and research activities. In addition, he delivers lectures to Ph.D. scholars, supporting advanced learning and research in emerging technological areas. His work integrates plasma research, machine learning, instrumentation, and real-time computing for data-driven scientific applications.*

Revisiting Ethical AI in Organizations: Navigating the Tensions Between Technological Transformation, Managerial Governance, and Human Capability



Aneerban Roy
Dr. B. C. Roy Engineering College, India

Abstract:

***T**he increasing integration of artificial intelligence (AI) into organizational processes has intensified scholarly and managerial concerns regarding the ethical implications of AI-enabled decision-making and automation. Although organizations have increasingly developed ethical principles and guidelines for AI, a persistent gap remains between the articulation of ethical principles and their implementation in organizational practice. Existing discussions frequently conceptualize ethical AI as a form of organizational self-regulation, while the adoption of AI for operational efficiency, cost optimization, and process automation may create tensions between organizational objectives and broader ethical considerations. These tensions are further complicated by the absence of universally accepted ethical principles and the contextual nature of AI governance across national and institutional settings.*

Managers consequently face substantial challenges in translating ethical AI principles into organizational practices. These challenges include limited understanding of AI algorithms and their implications, uncertainty regarding appropriate governance mechanisms, concerns that stringent controls may constrain operational efficiency, and inadequate understanding of the competencies required for employees to work with AI responsibly. The resulting tension between the transformative potential of AI and its ethical implications highlights the need for a more comprehensive examination of how organizations can pursue AI-enabled innovation while maintaining accountability, transparency, fairness, and human oversight.

Against this backdrop, the present study adopts an exploratory triangulated approach to examine the ethical challenges associated with organizational AI adoption and to identify mechanisms for mitigating potential adverse consequences. The study synthesizes the emerging discourse on ethical AI from organizational and managerial perspectives and develops an integrated understanding of the challenges associated with its responsible implementation. The study contributes to the emerging literature by highlighting the organizational, managerial, and human dimensions of ethical AI and by emphasizing the need to align technological adoption with appropriate governance, employee capabilities, and ethical accountability. The findings provide implications for managers and organizations seeking to leverage AI while fostering responsible and sustainable AI practices.

Biography:

Dr. *Aneerban Roy is an Assistant Professor of Organizational Behavior and Human Resource Management at Dr. B. C. Roy Engineering College, India, and a former Senior Research Fellow at the Indian Institute of Technology Kharagpur. His research interests include Strategic Human Resource Management, Artificial Intelligence in organizations, Organizational Behavior, Corporate Sustainability, Leadership, Business Ethics, and Emotional Intelligence. He has served as a Teaching Assistant for the NPTEL Emotional Intelligence curriculum under India's Ministry of Education and has presented research at several international conferences, receiving a Best Scientific Poster Presentation Award. He has also served as a Session Chair at the ISDSI Global Conference at IIM Nagpur. He has completed more than 27 short-term research and development programmes and has published several Scopus-indexed book chapters with publishers including IGI Global, CRC Press, Springer, and Scrivener Publishing. His research articles have appeared in journals including Knowledge Management Research & Practice, Discover Global Society, Cogent Business & Management, and the International Journal of Global Business and Competitiveness. He also serves on the editorial board of the Journal of Research in International Business and Management.*

Quantile Calibrated Ensemble Deep Learning Framework for Daily Global Horizontal Irradiance Forecasting



Yudhishthir Pandey
Rajkiya Engineering College, Ambedkar Nagar, India

Abstract:

T*he increasing penetration of solar photovoltaic (PV) generation into modern power systems has created a growing need for accurate, reliable, and uncertainty-aware solar irradiance forecasting. Variations in atmospheric conditions, cloud formation, seasonal characteristics, and aerosol concentration introduce substantial fluctuations in solar irradiance, which can affect photovoltaic power generation, grid scheduling, reserve management, and operational reliability. Global horizontal irradiance (GHI) forecasting is therefore an important component of renewable-energy management, particularly in regions experiencing significant climatic and seasonal variability. Although conventional machine-learning and deep-learning approaches have demonstrated considerable potential for solar forecasting, individual models may exhibit model-specific biases, limited generalization across temporal regimes, and inadequate representation of predictive uncertainty. Furthermore, many existing forecasting approaches focus primarily on point prediction and provide limited attention to statistically reliable prediction intervals. To address these challenges, this study develops a chronology-preserving quantile-calibrated ensemble deep-learning framework for daily GHI forecasting over central India.*

The proposed framework utilizes daily NASA Prediction of Worldwide Energy Resources (POWER) reanalysis data covering the central Indian region between 21.78°N–27.23°N and 73.96°E–83.07°E. The dataset spans the period from 1 July 2020 to 31 July 2025 and contains approximately 1,800 daily observations for the study locations. The forecasting pipeline integrates systematic data preprocessing, physics-aware feature engineering, heterogeneous machine-learning models, ensemble learning, quantile regression, and conformal prediction. Data preprocessing includes the construction of a continuous chronological index, anomaly identification using the interquartile range method, interpolation of isolated irregular observations, and controlled treatment of longer gaps. To improve physical interpretability and separate predictable astronomical behavior from atmospheric variability, the Ineichen clear-sky model is incorporated to derive clear-sky irradiance and clear-sky residual representations. Additional predictors include one-day and seven-day lagged irradiance values, multiwindow rolling statistics over 3-, 7-, and 14-day periods, and sinusoidal transformations of day-of-year variables to represent continuous seasonal behavior.

Four heterogeneous base learners (Random Forest (RF), Extreme Gradient Boosting (XGBoost), Light Gradient Boosting Machine (LightGBM), and Long Short-Term Memory (LSTM)) are employed to capture complementary nonlinear relationships and temporal dependencies in daily irradiance. Three ensemble strategies, namely simple averaging, validation-weighted linear blending, and chronology-preserving stacking, are investigated. The proposed stacking architecture employs a ridge-regularized linear meta-learner trained using out-of-fold predictions generated through an expanding-window or rolling-origin scheme. This chronological training strategy prevents look-ahead bias and provides a more realistic representation of operational forecasting conditions.

...23

The probabilistic forecasting component extends the deterministic framework through quantile regression at multiple probability levels ranging from 0.05 to 0.95. Conformal prediction is subsequently applied to calibrate the resulting prediction intervals and improve their empirical coverage while preserving interval sharpness. Forecast quality is assessed using deterministic metrics, including mean absolute error (MAE), root mean square error (RMSE), and coefficient of determination (R^2), together with probabilistic measures such as prediction interval coverage probability (PICP), mean prediction interval width (MPIW), continuous ranked probability score (CRPS), and mean calibration error.

The experimental results demonstrate that the proposed stacking ensemble substantially improves daily GHI prediction compared with individual learners and conventional persistence and climatology baselines. The stacking ensemble achieves an MAE of 0.085 W/m², RMSE of 0.110 W/m², and R^2 of 0.94. In comparison, Random Forest, which provides the strongest individual-model performance, achieves an MAE of 0.093 W/m², RMSE of 0.118 W/m², and R^2 of 0.85, while persistence and climatology produce MAEs of 0.115 and 0.124 W/m², respectively. The improved performance of the stacking framework is associated with the complementary inductive biases of the heterogeneous base learners, which reduce systematic error and prediction variance. Residual diagnostics further demonstrate that the stacking ensemble generates tighter and more symmetric residual distributions, with most residuals concentrated within approximately ±0.05 W/m², indicating improved stability and reduced model bias across different irradiance regimes.

The probabilistic results further demonstrate the importance of conformal calibration for reliable uncertainty estimation. Before calibration, the 90% prediction interval achieves a PICP of 0.7713, indicating substantial undercoverage relative to the nominal 0.90 level. Following conformal calibration, the 90% PICP increases to 0.8703 while maintaining an MPIW of approximately 0.8790. The calibrated framework also achieves a CRPS of 0.1931 and a mean calibration error of 0.0717. Quantile-wise analysis shows that calibration improves reliability particularly at lower and upper quantiles, where uncertainty associated with extreme irradiance conditions is more difficult to capture. Seasonal and irradiance-bin analyses further indicate stable forecasting behavior under both monsoon and winter conditions. The stacking ensemble also demonstrates reduced residual variance across low-, medium-, and high-irradiance ranges, confirming its robustness under changing atmospheric regimes.

Overall, the study demonstrates that combining physics-aware feature engineering, heterogeneous ensemble learning, chronology-preserving validation, quantile regression, and conformal calibration can provide both accurate point forecasts and statistically more reliable uncertainty estimates for daily GHI. The proposed framework offers an operationally interpretable approach for solar-resource forecasting over central India and can support renewable-energy scheduling, grid management, reserve planning, and risk-aware integration of solar generation. The framework also provides a foundation for future development involving stochastic-process-based forecasting, neural operators, generative uncertainty models, and scalable high-dimensional spatiotemporal representations for renewable-dominant power systems.

Biography:

Dr*.Yudhishthir Pandey is an IEEE Senior Member and an Assistant Professor in the Department of Electrical Engineering at Rajkiya Engineering College, Ambedkar Nagar, a Government College of Uttar Pradesh, India. He holds a B.E. in Electrical and Electronics Engineering from Krishna Institute of Engineering and Technology, Ghaziabad, an M.Tech. from the Centre of Energy Studies at the Indian Institute of Technology Delhi, and a Ph.D. in Electrical Engineering from Jamia Millia Islamia, Delhi. His academic and research work focuses on restructured power systems, congestion management, electric vehicles, and bidirectional charging systems. His research interests also include the application of Machine Learning and Deep Learning techniques to electrical power and energy systems. He has contributed to peer-reviewed journal publications and serves as a reviewer for internationally recognized journals. Through his teaching, research, and professional engagements, he contributes to the development of innovative approaches in electrical engineering, with particular emphasis on emerging energy technologies, intelligent power systems, and data-driven solutions.*

Systems Thinking: Analyzing the Nexus of Societal, Environmental, and Cybersecurity in the Face of AI Challenges



Rasha Ahmed Al-Rkebat
National Agricultural Research Center, Jordan

Abstract:

G*lobal sustainable development is increasingly challenged by complex, interconnected threats where the digital sphere intersects with vital environmental and societal systems. This presentation employs a Systems Thinking approach, utilizing the Triple Helix model, to analyze the critical nexus between cybersecurity, environmental (water/food) security, and societal resilience in the context of Jordan, a nation facing extreme water scarcity and significant socio-economic pressures.^2 The analysis is grounded in primary research focused on Jordan's nascent AgriTech innovation ecosystem. It reveals that the key constraints to achieving resource efficiency and food security are not purely technological but systemic. A fundamental tension exists between top-down, AI-driven policy strategies and the bottom-up realities of smallholder farmers, leading to significant adoption gaps and systemic frictions.^1 Crucially, the study identifies a pervasive Data Governance Vacuum as the single most critical bottleneck. This vacuum generates farmer mistrust, prevents data interoperability, and exacerbates the digital divide necessary for effective AI-powered precision agriculture. The absence of clear data policies threatens to create "data injustice," where technological benefits are captured only by large operations, destabilizing social and environmental equity.^3 The session will argue that cybersecurity must be reconceived as an essential component of human security. Protecting the data integrity of AI systems used for water management is directly synonymous with protecting national food and social stability. The successful and equitable adoption of AI is contingent upon developing an integrated strategy that resolves these systemic frictions, establishing robust data governance frameworks, and building both technical and human capacity in parallel. Jordan's experience serves as a vital model for other arid regions seeking resilient, equitable solutions in the digital age. .*

Biography:

Dr. *Rasha Ahmed Al-Rkebat is a Jordanian scientist in Earth System Sciences and policy, specializing in the application of systems thinking to complex national security challenges. She serves as a representative researcher at the National Agricultural Research Center (NARC), where her work focuses on geospatial analysis and AI-enabled approaches to addressing water and food security. Her research contributions include climate change adaptation in Jordan's water sector and institutional analyses of women's empowerment in agriculture. In addition to her scientific work, she holds prominent roles in policy and academic initiatives, serving as Vice President of the Scientific Studies Unit at the Global Institute for Arab Renewal and as the founder of the Earth System Sciences Department in the Encyclopedia Arabica. She is also an active strategic opinion writer on governance and planetary risks and a member of the International Federation of World Peace Organizations. Her current research emphasizes resolving systemic inefficiencies and developing data governance frameworks to strengthen socio-ecological resilience in arid and cyber-vulnerable environments.*

Oral Presentation

From Public Comments to Strategic Signals: What Social-media Data Analysis can Contribute to Cyber-threat Intelligence



Doreen Said Pace
Institute for Education, Malta

Abstract:

L*arge-scale online communication provides organisations with valuable yet complex signals about public sentiment, trust, emerging narratives and potential vulnerabilities. However, converting user-generated content into strategic intelligence requires more than automated classification: it requires human interpretation of how users construct evidence, legitimacy, identity and opposition. This study demonstrates such an approach through an analysis of publicdiscourse surrounding Malta's2018 continuous-assessment reform.*

The reformmarked a shift from prescriptive syllabiand traditional examinations towards learning outcomes and continuous assessment, challenging Malta's established post-colonial testing culture. A dataset of 956 Facebook comments, tokenised into 971 sentence-level records, was analysedusing a mixed-methods design combiningVADER sentiment analysis, thematic analysis and critical discourse studies. The results reveal heterogeneous sentiment, with only a marginal positive lead. Evidentiality, legitimisation and polarisation dominated the discourse, while fairness, trust, teaching quality, student well-being and power relations crossed both positive and negative sentiment categories.

Using Möllering's conceptof suspension, the study interprets these comments as a baseline indication of institutional trust before the reform's first implementation cycle. Low institutional trust is not presented as a threat or evidence of malicious behaviour. Rather, recurring expressions of distrust may function as indicators of concern, pointing to social conditions in which misinformation, manipulation or polarising narratives could become more influential.

The study draws conceptual parallels with social-media intelligence, open-source intelligence and strategic intelligence. It proposes that AI-assisted analytics can locate patterns and prioritise signals, while human judgement is needed to evaluate context, meaning and potential consequences. This combination offers a methodologically scalable model for transforming dispersed public comments into contextualised insights that can support anticipatory decision-making, institutional resilience and cybersecurity management—without equating criticism, negative sentiment or policy resistance with cyber-threat activity.

Biography:

Dr. *Doreen brings 27 years of experience in education, having held roles from classroom teaching to leadership positions within Malta's Ministry for Education and Sport, including Education Officer for Inclusion, Curriculum, and EU projects, Head of Department for Assessment, and Head of College Network. She currently represents Malta on the Peer Counselling Cluster, an EC initiative supporting basic skills development across ten member states. She is a resident academic lecturer at the Institute for Education, Malta, teaching leadership, formative assessment, research strategies, and family/community engagement. At the University of Malta's Faculty of Education, she serves on the Professional Doctorate in Education (EdD) committee board, lectures on the programme, sits on the examination board, and supervises and assesses dissertations. She also lectures at IDEA College, Malta, at undergraduate and postgraduate levels, and serves as an internal VIVA examiner to doctoral level. She holds Practitioner Status from the Association for Educational Assessment – Europe and sits on its Scientific Programme Committee. Doreen has presented internationally, published in peer-reviewed journals and book chapters, coordinated her college's Research Symposium, edited its proceedings, and peer-reviewed for AEA-E, the Malta Journal of Education, and Science Publishing Group. Her research interests span assessment, action research, leadership for innovation, and inclusive education. She holds postgraduate qualifications in Learning Outcomes, Applied Educational Leadership, a Master's in Inclusion and Individual Educational Needs, and a Doctorate from the University of Sheffield.*

Oral Presentation

Chatbots & Generative AI in Academic Research: Redefining the Scholarly Workflow in an Era of Automation



Reuben Amewuda
Kwame Nkrumah University of Science and Technology, Ghana

Abstract:

T*he rapid integration of Large Language Models (LLMs) and generative artificial intelligence (AI) into the academic landscape marks a pivotal shift in how research is conceptualized, executed, and disseminated. In the contemporary "information explosion," researchers are often overwhelmed by the sheer volume of global scientific output. This is particularly evident in the health sciences and public health sectors, where the requirement for evidence-based decision-making necessitates the constant synthesis of emerging data. Traditional manual methods of literature review and data extraction, while rigorous, are increasingly viewed as bottlenecks in the rapid translation of research into policy. This presentation explores the dual role of AI as both a transformative catalyst for scholarly efficiency and a complex challenge to established norms of academic integrity.*

Scholars today face a growing "synthesis gap." For instance, in fields like trade economics exemplified by studies on the impact of agricultural trade on a nation's GDP the researcher must reconcile diverse datasets, fluctuating market variables, and a vast body of conflicting literature. In addition, manually screening thousands of abstracts for a systematic review is labor-intensive and prone to human fatigue. While AI offers the promise of speed, its adoption is hindered by concerns regarding "hallucinations" (the generation of plausible but false information), algorithmic bias, and the potential for "AI-giarism." The central problem addressed in this session is: How can researchers harness the power of generative AI to accelerate their workflow without compromising the fundamental rigor and authenticity of scientific inquiry?

This presentation outlines a strategic, multi-stage framework for utilizing AI throughout the research lifecycle. The core of this methodology is the "Human-in-the-Loop" (HITL) protocol, which positions the AI as a cognitive assistant rather than an autonomous author. First, I examine how specialized AI tools can be used to conduct "semantic searches" that go beyond keyword matching, allowing for the rapid identification of thematic gaps. Second, the session demonstrates the use of AI in generating and debugging code (Python/R) for complex statistical modeling. Third, the presentation discusses the ethical use of AI for manuscript refinement, ensuring that high-quality research from diverse linguistic backgrounds meets the stringent requirements of top-tier international journals.

Ultimately, this presentation argues that AI fluency is no longer an optional skill but a core competency for the 21st-century academic. By delegating administrative and repetitive tasks to AI, researchers can shift their focus back to high-level critical evaluation and creative hypothesis generation. The session concludes with a vision for the future of the PhD and early-career research, where the measure of a scholar is not their ability to "find" information, but their ability to "evaluate and synthesize" it in a way that drives societal progress.

Biography:

Mr. *Reuben Amewuda is a Graduate Research Assistant in the Department of Agricultural Economics, Agribusiness and Extension at Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana. He holds a Master of Philosophy (MPhil) in Agribusiness Management and has expertise in agribusiness, data analysis, and research methodology. Proficient in Python, R, SPSS, and STATA, he applies advanced analytical techniques to translate complex data into meaningful insights. His scholarly work includes research on the YouthBank model for inclusive decision-making and comparative analyses of virtual and in-person project management. He also serves as a reviewer for reputable journals, including Food Security and the Journal of Agribusiness in Developing and Emerging Economies. His current research interests encompass financial inclusion, systematic reviews, and the applications of artificial intelligence in academic productivity and research ethics. In addition to his academic pursuits, he has demonstrated leadership through roles as Project Coordinator at YouthBank International and Publicity Officer at the Financial Literacy Foundation Africa.*

Keynote Presentation

AI-driven Financial Forecasting: Integrating Financial NLP, Deep Learning, and Timestamp-aware Market Analytics



Liang Hu
Independent Researcher and Financial Technology Professional, United States

Abstract:

T*his proposed virtual keynote presentation examines how artificial intelligence and machine learning can be used to understand and forecast financial market behavior from both technical and economic perspectives. The presentation is organized around two related studies that connect financial natural language processing, deep learning, and timestamp-aware market analytics.*

The first study investigates whether public political communication, represented by Donald Trump's tweets, contains predictive information for Bitcoin return variation. From a technical perspective, the study focuses on collecting, cleaning, and aligning text-derived signals with market data so that language features can be evaluated within a disciplined predictive modeling workflow. From a financial perspective, the study highlights the role of investor attention, sentiment transmission, and timing alignment in cryptocurrency markets, where information can be rapidly incorporated into prices and short-horizon volatility may react strongly to public signals. The evidence suggests that tweet-derived sentiment features provide useful contextual market information, while recent Bitcoin market-history variables remain the most stable source of predictive signal.

The second study focuses on forecasting global stock index returns across major markets, including the S&P 500, FTSE 100, Nikkei 225, DAX 30, and CAC 40. This work applies deep learning methods to structured financial indicators and connects model performance with broader market interpretation. Economically, the study shows that technical indicators, market conditions, and cross-market differences can support investment decision-making when they are interpreted carefully rather than treated as mechanical prediction rules.

Together, the two studies demonstrate that AI-based financial forecasting is most valuable when predictive performance is interpreted alongside market structure, investor behavior, data quality, validation discipline, and responsible economic reasoning. A central theme of the keynote is that financial AI should be viewed as an evidence-building process rather than a simple claim of market predictability. The presentation is intended for researchers, students, and practitioners interested in artificial intelligence, financial technology, financial NLP, machine learning, cryptocurrency analytics, and quantitative market analytics. This individual abstract is intended to be coordinated with Yinru Shen's separate abstract for a joint presentation on AI-driven financial forecasting.

Biography:

Mr. *Liang Hu is a financial technology professional and researcher with expertise in computer science, machine learning, financial technology, market analytics, and data-driven systems. He earned both the B.S. and M.S. degrees in Computer Science from Columbia University, where his academic and research activities focused on artificial intelligence, machine learning, and advanced data-driven methodologies. His professional work spans financial technology, pre-trade analytics, risk and pricing systems, data engineering, service observability, reporting technologies, and AI/ML-enabled analytics. His research interests include financial natural language processing, cryptocurrency market analysis, global stock index forecasting, timestamp-aware signal construction, deep learning, transformer-based modeling, and machine learning approaches for understanding complex market dynamics. He has contributed to research on financial market prediction, social-media-derived signals, financial indicators, deep learning applications, and automated speech recognition evaluation. More broadly, his work emphasizes responsible AI in financial technology, reliable data infrastructure, and applied machine learning systems that support informed decision-making in complex technical environments. He is particularly interested in rigorous evaluation frameworks, transparent methodologies, and the evidence-based communication of predictive modeling results.*

Keynote Presentation

AI-driven Financial Forecasting: Integrating Financial NLP, Deep Learning, and Timestamp-aware Market Analytics



Yinru Shen
Florida State University, United States

Abstract:

T*his presentation examines how artificial intelligence and machine learning can be used to understand and forecast financial market behavior from both technical and economic perspectives. The talk is organized around two related studies. The first investigates whether public political communication, represented by Donald Trump's tweets, contains predictive information for Bitcoin return variation. From a financial perspective, this study highlights the role of investor attention, sentiment transmission, and timing alignment in cryptocurrency markets, where information is rapidly incorporated into prices and short-horizon volatility can react strongly to public signals. The evidence suggests that tweet-derived sentiment features provide contextual market information, while recent Bitcoin market-history variables remain the most stable source of predictive signal.*

The second study focuses on forecasting global stock index returns across major markets, including the S&P 500, FTSE 100, Nikkei 225, DAX 30, and CAC 40. Economically, this work connects technical indicators and fundamental variables to cross-market return prediction, showing how deep learning models can support investment decision-making and market interpretation. Together, the two papers demonstrate that AI-based financial forecasting is most useful when predictive performance is interpreted alongside market structure, investor behavior, validation discipline, and responsible economic reasoning. This presentation will be delivered jointly with Liang Hu as part of a coordinated presentation on AI-driven financial forecasting.

Biography:

Dr. *Yinru Shen received the B.S. degree in Mathematics from Rensselaer Polytechnic Institute, Troy, New York, USA, in 2021, and the M.A. degree in Statistics from Columbia University, New York, New York, USA, in 2022. He is currently pursuing the Ph.D. degree in Financial Mathematics at Florida State University, Tallahassee, Florida, USA. His research focuses on stock index prediction, asset pricing, sentiment analysis, financial machine learning, and data-driven financial modeling. Professionally, he has developed extensive experience in data analytics across the financial, healthcare, and artificial intelligence sectors. In 2019, he served as a Data Analyst Intern at MSCI Inc., where he worked on index construction methodologies, benchmark data analysis, and client support for major global financial institutions. From 2022 to 2023, he was a Data Analyst Intern at MetroPlusHealth, contributing to large-scale survey analysis, cross-functional data initiatives, and community-focused marketing efforts. Between 2023 and 2025, he worked as a Data Analyst at Collov AI, applying Python- and SQL-based analytical techniques to support customer onboarding, enhance client satisfaction, and improve operational decision-making.*

Keynote Presentation

Intelligent Intrusion Detection with Secure Cloud Storage Enabled by a Hybrid DNN-FNN Framework



Pullaiah Chowdary Vutla
University of the Cumberlands, United States

Abstract:

C*loud computing is widely used by organizations because it provides flexible, scalable, and on-demand computing and storage services. However, cloud environments are connected to the Internet and handle large amounts of different types of data, which makes them vulnerable to cyberattacks. Detecting abnormal activities in large and complex network traffic is difficult. In addition, protecting normal user data after detecting an attack is also an important security problem. To address these challenges, this study proposes a new framework for intrusion detection and secure cloud data storage using three main techniques: the Smart Regeneration-aided Starfish Optimization Algorithm (SRSFOA), the Deep-Fuzzy Neural Network (DFNet), and the Advanced Galois/Counter Encryption Mode-X (AGCEM-X). The proposed framework first uses the NSL-KDD dataset as the input data.*

The data are cleaned and standardized during the preprocessing stage to improve their quality. After preprocessing, SRSFOA is used to select the most important features and remove unnecessary and redundant features. The proposed SRSFOA improves the traditional Starfish Optimization Algorithm by using a fast regeneration mechanism. This helps the algorithm recover quickly when a search path does not provide good results and improves the feature selection process. The selected features are then given to the proposed DFNet classifier. DFNet combines a Deep Neural Network (DNN) and a Fuzzy Neural Network (FNN). The DNN learns complex patterns in the network data, while the FNN helps the model handle uncertain and changing intrusion patterns. This combination allows the proposed model to identify normal and attack traffic more accurately. After detecting the traffic, legitimate user data are protected using the proposed AGCEM-X encryption method. AGCEM-X adds a shift-based transformation to the AES-GCM encryption process to improve data protection while keeping the computational cost low.

The proposed framework was evaluated using the NSL-KDD dataset, which contains 148,517 training records and 82,332 testing records. The experimental results show that the proposed DFNet achieved an accuracy of 99.5%, precision of 98.5%, specificity of 98.9%, and sensitivity of 99.0%. It also achieved a low false negative rate of 0.5% and a false positive rate of 0.3%. Compared with existing intrusion detection methods, the proposed DFNet achieved better overall performance. The SRSFOA also showed faster convergence and lower error compared with GWO, PSO, and the traditional SFOA. In addition, AGCEM-X required less encryption time than the compared encryption methods.

The ablation study further showed that removing any of the main components reduced the performance of the proposed framework. Overall, the results show that the proposed framework can accurately detect network intrusions and provide secure and efficient protection for legitimate cloud data. Future work will focus on testing the framework in real-time cloud environments and improving its ability to detect new and changing cyberattacks.

Biography:

Mr. *Pullaiah Chowdary Vutla is a Ph.D. candidate in Information Technology, specializing in Information Security, at the University of the Cumberlands, with expected completion in August 2027. He holds a Bachelor's degree in Electrical and Electronics Engineering from India and dual Master's degrees in Computer Science and Information Technology Management from the United States. Based in San Francisco, California, he works as a Software Developer, with expertise spanning application development, cybersecurity, cloud computing, artificial intelligence, and machine learning. His research interests focus on leveraging emerging technologies to address complex challenges and advance innovation in information technology. He has published research in international conferences and peer-reviewed journals and has manuscripts under review with leading publishers, including IEEE, Elsevier, Springer Nature, and Taylor & Francis. He also serves as a reviewer for IEEE journals, international conferences, and Emerald Publishing journals. Additionally, he has served as a Session Chair for technical sessions in artificial intelligence and machine learning, demonstrating his commitment to research, peer review, and academic collaboration.*

Man Versus Machine: A Validated Algorithm versus Machine Learning Algorithm to Judge the Appropriateness of Anatomic Total Shoulder Arthroplasty



Sarav Shah
New England Baptist Hospital, USA

Abstract:

O*ver the past decade there has been a dramatic rise in the number of anatomic total shoulder arthroplasties (TSA) performed with approximately 27,000 completed each year. Although TSA is a cost-effective operation, the overall age of our population continues to increase as well as prevalence of degenerative illnesses. It can be difficult to obtain evidence via clinical trials for surgical interventions; thus, other methods must be used. Researchers from the RAND Corporation and the University California in Los Angeles (UCLA) have developed a method that combines available scientific evidence with expert opinion, and this has been widely used to assess the appropriateness of surgical interventions.*

Appropriateness criteria for aTSA has potential to be an extremely powerful tool for improving quality of care and controlling costs. Our recent study used the RAND/ UCLA method and expert opinion via American Shoulder and Elbow Surgeons (ASES) membership to determine and validate appropriateness criteria for the use of aTSA across a range of hypothetical clinical characteristics (age, rotator cuff status, surgical history, glenohumeral joint mobility, symptomatology, and imaging classifications). The decision tree is based on a combination of clinical experience from high-volume ASES-member surgeons and a comprehensive review of current evidence. This tool can be used as part of a broader set of factors, including individual patient characteristics, prior studies, and expert opinion, to inform clinical decision making, improve quality of care, and control costs.

Recently, Machine learning (ML)–based clinical decision support tools (CDSTs) have the potential to standardize evidence-based decision making and help health care providers make
patient-specific treatment decisions that adhere to the most relevant clinical data and guidelines.

Purpose:
To compare assessment of appropriateness for aTSA decision making using Human derived RAND/UCLA appropriateness criteria decision tree versus machine learning algorithm based on fictious clinical scenarios containing a set number of variables.

Methods:
List of Scenarios
An extensive and mutually exclusive set of clinical scenarios (186) have been written to capture the gamut of potential patient scenarios reflecting all potentially important clinical indications for aTSA. The intention is to address all imaginable clinical patterns of shoulder issues for which aTSA might be considered. Variables to be used in creating the scenario list include age, previous surgical interventions, symptomology, radiology, computerized tomography, and joint mobility.

Panel of Experts- Previously published validated appropriateness criteria
Two panels of experts will be assembled consisting of orthopedic surgeons specializing in TSA surgeries in the US, American Shoulder and Elbow Surgeons (ASES) members on each panel.

Appropriateness will be defined as meaning that the expected health benefit exceeds the expected negative consequences by a sufficiently wide margin to make TSA worth performing.

i. Thus, a rating of "appropriate" indicates the expected benefits of the procedure outweigh the expected harms to the extent that the procedure is justified. A rating of "inconclusive" indicates either that the expected benefits and harms are roughly equal or that a lack of consensus among panel members was found. An "inappropriate" rating indicates the expected harms outweigh the expected benefits.

Machine Learning Algorithms- Published validated accuracy regression predictions
Clinical data from a multicenter clinical outcomes database of a single platform shoulder prosthesis (Advita, Inc., Gainesville, FL, USA) was analyzed in this study. Every patient enrolled in this clinical database provided consent, and all data were collected using the same standardized forms at 40 different sites in the United States and Europe according to an institutional review board–approved protocol.
ML predictions were made for these 9 measures with aTSA and rTSA at 6 postoperative time points: 3-6 months, 6-9 months, 1 year, 2-3, 3-5, and 5+ years.

Appropriateness will also be defined as meaning that the expected health benefit exceeds the expected negative consequences by a sufficiently wide margin to make TSA worth performing. This was interpreted to mean ASES score for aTSA that both exceeds MCID (9.1) PASS (81.9) (PMID: 31307894) while also predicting a higher ASES score at 2 years versus RSA.
A rating of "inconclusive" indicates either that the expected benefits and harms are roughly equal or a lack of consensus. This was interpreted to signify the aTSA predicted ASES score did reach MCID and/or PASS but had a significantly higher complication profile percentage or ASES score less than predicted RSA score at 2 years.

An "inappropriate" rating indicates the expected harms outweigh the expected benefits. This was interpreted to signify the aTSA predicted ASES score did not reach MCID and/or PASS.

4. Outline for Clinical Scenarios

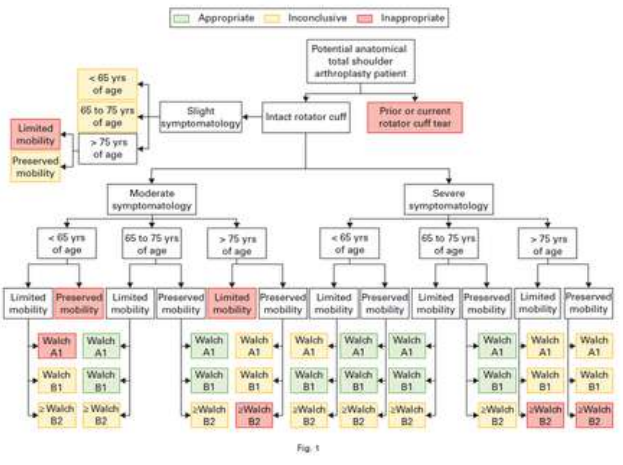


Fig. 1

Flow diagram demonstrating the appropriateness use criteria algorithm.

Statistical Analysis

Primary Outcomes

i.Direct Comparison to Appropriateness percentages from human derived decision tree versus ML algorithm.

ii.Report and compare the characteristics of the appropriateness / inappropriateness groups from the two approaches and what were the causes for the differences.

Results:

Human-derived Decision tree and ML algorithm reached agreement in 30 (48%) indications. TSA was appropriate in 15 (24%) of indications based on the human derived decision tree versus 25 (40%) in the ML algorithm. For patients with severe symptomatology, TSA was often appropriate for patients aged <75 years and inconclusive or inappropriate for patients aged >75 years. Among patients aged <65 years, TSA varied between appropriate and inconclusive, often dependent on Walch classification. For patients with moderate symptomatology, TSA was inappropriate or inconclusive for patients aged <65 or >75 years.

Conclusions:

Comparing an appropriateness decision tree and ML algorithm for pertinent patient variables offers a collaboration of both methodologies that may help streamline the clinical decision-making process and allows for rapid and more reliable determination of appropriateness for practitioners. A high proportion of disagreement and/or inconclusive ratings may be explained by continued controversy regarding appropriateness of TSA across a number of indications, despite a growing body of evidence exploring outcomes across age, symptomatology, prior surgery, and radiologic parameters.

Biography:

***D**r. Shah is a double board-certified Orthopaedic Surgeon at New England Baptist Hospital in Boston, Massachusetts, USA. He currently serves as Chief of the Division of Sports Medicine and Program Director of the NEBH Sports Medicine Fellowship, contributing significantly to strengthening its reputation as a premier fellowship program in the field. In addition, he played a key role in establishing the ASES-accredited Shoulder/Elbow Fellowship and serves as its Co-Fellowship Director. Throughout his tenure at New England Baptist Hospital, Dr. Shah has been instrumental in advancing multidisciplinary clinical care, research, and innovation within the orthopaedic department. He has also made substantial contributions to medical education and the professional development of medical staff, fostering an environment of academic excellence and clinical expertise. His leadership continues to support the growth of specialized training programs and the integration of evidence-based practices in sports medicine and orthopaedic surgery, enhancing both patient care and surgical education standards.*

Oral Presentation

Digital Finance, Crypto Assets and Tokens, what it means for India and Australia?



Robert Walters
Australian Catholic University, Australia

Abstract:

O*ne of the most pressing challenges facing the world is the evolving developments in digital finance/digital assets - crypto assets, stablecoins and tokens. The benefits and challenges are far from being fully understood. To date, governments, regulators and policy makers around the world are grappling with how to keep pace with the transformation of technology providing a pathway to digital finance products and services. The tokenisation of the economy is inextricably linked to smart contracts, and in turn, to blockchain technology.*

Biography:

Dr. *Robert Walters, Associate Professor Law and Deputy Dean Law Australian Catholic University, Adjunct Professor European Faculty of Law, Advisor Corporate Insolvency Centre Gujarat National Law University, India, Honorary Lecturer Liverpool Law School, United Kingdom, Adjunct Senior Research Fellow University Western Australia, Research Fellow O.P Jindal University India. Dr Walters is a practicing Solicitor and International Arbitrator, holding an LLB (Victoria), MPPM (Monash), PhD Law (Victoria), and been engaged by national governments to address commercial and private law matters across the digital economy.*

Modeling K–12 Teachers' Adoption of AI Chatbots for Perceptual-motor Language Instruction: Evidence From Chinese Teachers' Pronunciation and Handwriting Teaching



Yunsong Wang
Nanjing Normal University, China

Abstract:

AI chatbots are increasingly used in language education, yet little is known about what drives teachers to adopt them for pronunciation and handwriting instruction, two teaching domains involving perceptual discrimination and corrective action. This study examined Chinese K-12 foreign language teachers' adoption of AI chatbots for these instructional tasks. A total of 615 questionnaires were collected, and 526 valid responses were retained for confirmatory factor analysis and structural equation modeling. The results showed that teachers mainly used AI chatbots for lesson planning and assignment design, while direct use for pronunciation and handwriting instruction remained limited. Perceived ease of use positively predicted perceived usefulness, trust, self-efficacy, and behavioral intention, and perceived value of AI for perceptual-motor teaching strongly predicted perceived usefulness. Trust and self-efficacy significantly predicted behavioral intention, which in turn predicted actual use, whereas perceived usefulness did not directly predict behavioral intention. These findings suggest that teachers' adoption of AI chatbots for pronunciation and handwriting instruction is shaped more by usability, trust, and implementation confidence than by perceived usefulness alone. These results imply that teacher training and AI chatbot implementation should move beyond promoting general usefulness and instead focus on helping teachers evaluate AI-generated feedback, build trust, and translate chatbot outputs into corrective guidance and repeated practice for pronunciation and handwriting instruction.

Biography:

Dr. *Yunsong Wang is a Ph.D. and Research Assistant at the School of Foreign Languages and Cultures, Nanjing Normal University, China. His research interests encompass English Language Teaching, Applied Linguistics, and the integration of Positive Psychology into language education. He is actively involved in several funded research projects, contributing to research design, data analysis, manuscript development, and project coordination. His scholarly activities also include peer reviewing for internationally recognized journals such as System, Computers in Human Behavior, Applied Linguistics Review, European Journal of Education, BMC Psychology, and The Asia-Pacific Education Researcher. He has also served as a Guest Editor for special issues in Forum for Linguistic Studies and Environment and Social Psychology. Through his research, reviewing, and editorial engagements, he contributes to interdisciplinary scholarship in language education, applied linguistics, educational psychology, and positive psychology, with a particular interest in developing innovative and evidence-based approaches to English language teaching and learning.*

Oral Presentation

Securing SDON with hybrid evolutionary intrusion detection system: An ensemble algorithm for feature selection and classification



Benitha Christinal J
Presidency University, India

Abstract:

S*oftware-Defined Optical Network (SDON) is a modernized approach to manage optical networks by integrating the principles of Software-Defined Networking (SDN). This integration allows for enhanced programmability, flexibility, and automation in network operations, addressing the growing demand for efficient and adaptable network infrastructures. SDON is powered by a centralized controller, where the entirety of network intelligence is integrated into the control plane. However, this centralization introduces significant challenges related to data privacy and network security.*

To address these security issues, this paper proposes an adaptive IDS SDON-EFSC (Intrusion Detection System for Software-Defined Optical Network with Ensemble Feature Selection and Classification) framework. In the proposed framework, during the initial phase, the gathered data is preprocessed to remove noise, and Adaptive Synthetic (ADASYN) sampling is implemented to balance imbalanced datasets. Overfitting is mitigated using Root Mean Square Deviation (RMSD) regularization, which reduces the loss between training and test data. In the second phase, the Deep Convolutional Neural Network Attention based Bi-directional Long Short-Term Memory (DCNN-AttBiLSTM) system is employed for classification. The hybrid metaheuristic-Adam optimizer is used to optimize hyperparameter selection. Experiments demonstrate the efficacy of the IDS-SDON-EFSC model, which was trained and evaluated on the most current and practical datasets in the SDON domain: InSDN, SDN-IoT, and SDNFlow.

The model achieved excellent performance, discerning various forms of intrusion with 100% accuracy on training data and 99.71% accuracy on test data. Additionally, it achieved a minimal latency rate of 1.6%, reduced controller overhead, and a minimal degradation rate of 2.1% leading to improved throughput performance when executed in real-time networks.

Biography:

Dr. *Benitha Christinal J is an Assistant Professor at Presidency University, Bengaluru, with over 13 years of teaching and academic experience in Computer Science and Engineering. She holds a Ph.D. in Computer and Information Engineering from Anna University, along with an M.Tech and B.E. in Computer Science and Engineering from Karunya University. Her research interests include Deep Learning, Artificial Intelligence, Internet of Things, Information Security, Software-Defined Networking, and intelligent computing applications. She has held academic and training positions at institutions including Presidency University, Panimalar Engineering College, Peri Institute of Technology, and SNS College of Engineering. Her academic contributions encompass course and project coordination, mentoring, examination activities, and the organization of workshops, faculty development programmes, seminars, webinars, and international conferences. She has published research in Scopus-indexed journals and presented papers at international and IEEE conferences on cybersecurity, deep learning, IoT, blockchain, and AI-based applications. She has also co-authored a book on Database Management Systems and actively engages in academic and professional development activities.*

Generative AI as a Writing Scaffold: Use, Perceptions, and Writing Quality among Pre-service Teachers in the Philippines



Rico Dollente De Asis
University of Eastern Philippines, Philippines

Abstract:

***S**ince generative artificial intelligence became widely accessible in late 2022, teacher education programs have faced a pressing question: does AI help pre-service teachers write better, or does it simply help them write cleaner? This presentation reports findings from a study conducted at the University of Eastern Philippines – Pedro Rebadulla Memorial Campus, a state university campus serving a predominantly rural, bilingual (Filipino-English) student population in the Eastern Visayas region. The study examined how pre-service teachers use generative AI for academic writing, what benefits and risks they perceive, and how AI-assisted writing compares with their unassisted writing in technical quality and reflective depth.*

Guided by a digital literacy framework built on three dimensions (critical evaluation, ethical awareness, and self-regulated use), the study employed a convergent mixed-methods design. All 46 pre-service teachers in the Bachelor of Secondary Education and Bachelor of Elementary Education programs completed a structured survey. Thirty-two participated in individual interviews, focus group discussions, and written reflections. A within-participant comparative writing analysis was conducted with 12 participants, each producing one reflective paragraph without AI and a parallel paragraph with ChatGPT assistance, in counterbalanced order. Two blind, calibrated evaluators scored all samples using an analytic rubric, with strong inter-rater agreement ($\kappa = 0.75–0.88$).

Nearly all participants (95.7%) had used generative AI for academic writing, most commonly ChatGPT (87.0%). Use was moderate and purposeful rather than wholesale. Participants relied on AI most for grammar correction (63.1% often or always), vocabulary improvement (56.5%), and idea clarification (52.2%), and least for full draft generation (19.6%). They rated grammar improvement, faster drafting, and improved coherence as the chief benefits. Their leading concerns were misinformation, loss of personal voice, academic integrity, and overdependence. Notably, eight of twelve interviewees described deliberately choosing not to use AI in certain tasks. Their test was not "Will my teacher notice?" but "Will I be able to own what I submit?"

The comparative analysis revealed a clear divergence. AI-assisted writing scored significantly higher on grammar ($d = 2.38$), vocabulary ($d = 2.14$), clarity ($d = 1.97$), and organization ($d = 1.71$). Reflective depth, however, the criterion most central to professional formation in teacher education, showed only a small, non-significant gain ($d = 0.39$, $p = .207$).

Writers with lower baseline scores gained roughly twice as much as stronger writers, which suggests AI may partly offset proficiency gaps for second-language writers. In two cases, AI restructuring produced cleaner prose but erased the personal teaching insight that had made the original distinctive.

The presentation argues that generative AI functions as a writing scaffold, not a writing substitute, but only when writers keep ownership of their ideas. AI can reduce the mechanical burden of writing, but it cannot supply the reflective thinking that makes teacher writing professionally meaningful. The session will discuss implications for teacher education: embedding AI literacy as an explicit learning outcome, designing writing tasks that foreground personal professional voice, requiring students to document and evaluate their AI use, and addressing AI access inequities in regional state universities. Because the comparative sample was small, the large effect sizes should be read as preliminary, and the presentation will outline directions for larger, multi-institution replication.

This presentation is based on: De Asis, R. D. (2026). Generative AI as a writing scaffold: Use, perceptions, and writing quality among pre-service teachers in the Philippines. Social Sciences & Humanities Open, 14, 103275. https://doi.org/10.1016/j.ssaho.2026.103275

Biography:

Dr. *Rico Dollente De Asis is a Professor IV and Campus Director of the University of Eastern Philippines–Pedro Rebadulla Memorial Campus, Catubig, Northern Samar, Philippines. He holds a Doctor of Philosophy in Educational Management, earned with Academic Excellence and Leadership Awards, and has 33 years of government service in education. He previously served as Vice President for Academic Affairs at the University of Eastern Philippines and has taught The Teaching Profession for 21 years, alongside graduate courses in educational administration, planning, supervision, and research since 2010. He authored Writing Research: A Guide to Writing and Publishing Using IMRAD Layout and the APA Citation Format and instructional modules for teacher education. In 2026, he published three sole-authored articles in Scopus-indexed journals addressing generative AI in writing instruction, blended learning, and faculty stress. He is an active member of the National Research Council of the Philippines and an accreditor for AACCUP. His research interests include educational management, inclusive education, faculty development, institutional governance, and generative AI in teacher education.*

Oral Presentation

Beyond Black-Box Prediction: Explainable Fuzzy AI for Urban Traffic Congestion Assessment and Decision Support



Gizem Erdinc
Beykoz University, Turkey

Abstract:

U*rban traffic congestion is characterized not only by high traffic volumes and reduced speeds, but also by uncertainty, gradual transitions between traffic states, and context-dependent interpretations of what constitutes congestion. These characteristics make conventional crisp classification approaches insufficient in many real-world transportation applications. At the same time, increasingly complex artificial intelligence models can provide strong predictive capabilities while limiting the transparency required by transportation planners and decision-makers.*

This invited talk explores the role of explainable fuzzy artificial intelligence in bridging this gap. The focus is on how fuzzy logic can represent ambiguous and overlapping traffic conditions while maintaining an interpretable relationship between observed traffic indicators and resulting congestion states. Rather than treating traffic conditions as strictly uncongested or congested, fuzzy-based approaches allow traffic states to be represented along a continuum and provide a more realistic characterization of transitions among free-flow, moderate, and congested conditions.

Drawing on research in fuzzy traffic-state identification and congestion detection, the presentation discusses the design of rule-based and multi-stage fuzzy frameworks that combine measurable traffic variables with interpretable inference mechanisms. Particular attention is given to the selection of input variables, membership-function design, rule construction, and the transformation of model outputs into information that can support operational transportation decisions.

The presentation also positions fuzzy systems within the broader development of explainable AI for intelligent transportation systems. While data-driven machine-learning models are increasingly used for traffic prediction and control, interpretability remains critical when model outputs influence infrastructure management, traffic operations, and mobility policies. Hybrid approaches that combine the adaptability of data-driven techniques with the transparency of fuzzy reasoning therefore represent a promising direction.

The talk concludes by discussing how explainable fuzzy AI can evolve from traffic-state classification toward integrated decision-support systems capable of assisting transportation agencies in congestion monitoring, operational planning, and proactive traffic management under uncertainty.

Biography:

Dr. *Gizem Erdinç is an Assistant Professor of Industrial Engineering at Beykoz University, Türkiye, with a multidisciplinary academic background spanning Industrial Engineering, Civil Engineering, Transportation Engineering, and Operations Research. She holds two PhD degrees in Industrial Engineering and Transportation Engineering and has undertaken research in international academic environments, including Sapienza University of Rome and Brno University of Technology. Her research focuses on data-driven decision support, transportation systems, optimisation, forecasting, and the application of artificial intelligence and computational methods to complex operational challenges. Her recent work explores fuzzy logic and explainable artificial intelligence for traffic congestion assessment and transportation decision support. Her research examines how fuzzy systems can effectively represent uncertainty, gradual transitions, and overlapping traffic states while maintaining interpretable relationships between observed traffic conditions and model outputs. Her broader research interests include intelligent transportation systems, mobility analytics, operational decision support, machine learning, and uncertainty-aware modelling, with an emphasis on developing practical and interpretable methodologies for real-world transportation applications.*

Inversion of Magnetotelluric Data for the Characterization of Geothermal Structures in the Region of Paucarani Zone, Tacna, Peru



Keshetti Sreekala
Mahatma Gandhi Institute of Technology, India

Abstract:

R*ice, a staple food for more than half of the global population, faces significant yield and quality losses due to various diseases and environmental stresses. This paper presents a new Simplicial Finite-Element-Informed Neural Network based on the Musical Chairs Optimisation Algorithm (SFEINN-MCOA) to detect rice leaf disease precisely and effi-ciently. The first step involves the acquisition of the RGB image from the Rice Leaf Disease dataset.*

The Iterative Robust Peak-Aware Guided Filter (IRPAGF) is used to remove noise and enhance contrast, thus improving the image. The Graph-Based Soft- Balanced Fuzzy Clustering (GSBFC) method is used to separate diseased regions and then analyse them. The Self-Distillated Masked Autoencoder (SMA) is used to perform feature extraction and capture important attributes of leaves. The SFEINN classifies data under the category of healthy and diseased leaves, and the MCOA optimises the model parameters to achieve maximum accuracy and minimum error. Experimental findings reveal that the SFEINN-MCOA model has an accuracy of 99.9% and an F1-score of 98.9%, which is better and stronger. This smart system offers a secure, automatic, and effective system for early disease identification of rice and helps farmers to enhance crop health and yield sustainability.

Biography:

Dr. *Keshetti Sreekala is an Assistant Professor in the Department of Computer Science and Engineering at Mahatma Gandhi Institute of Technology, Hyderabad, Telangana, India. Her expertise lies in Artificial Intelligence, with a particular focus on applying advanced technologies to agriculture. Her research interests include Machine Learning, Deep Learning, Computer Vision, and AI-driven solutions aimed at supporting farmers and addressing challenges in modern agriculture. She has published and presented around 100 research papers in reputed national and international journals and conferences. She has also authored three books and holds eight patents in the field of Artificial Intelligence. With extensive experience in academic mentoring, she has guided approximately 60 undergraduate and postgraduate mini and major projects. In addition to her teaching and research responsibilities, she serves as the Research and Development Coordinator for the Department of Computer Science and Engineering at Mahatma Gandhi Institute of Technology. Her academic contributions reflect a strong commitment to advancing AI-based technological solutions for agriculture and promoting research-driven innovation in higher education.*

Oral Presentation

The integration of Explainable Artificial Intelligence in the Banking Sector



Ntombi Tuge
University of South Africa, South Africa

Abstract:

Artificial intelligence (AI) and machine learning (ML) are reshaping banking by enabling institutions to strengthen risk management, detect fraud, personalise customer services, automate operations, and improve decision-making. Yet the transition from isolated experimentation to enterprise-scale value remains difficult, particularly in highly regulated environments where resilience, accountability, data protection, explainability, and public trust are essential. This presentation examines how banks and central banks can move beyond technology-led pilots towards a strategic, governed, and value-driven approach to AI adoption.

Drawing on experience in enterprise digital transformation, technology strategy, cloud and data-centre modernisation, portfolio governance, and financial-sector innovation, the presentation proposes an integrated framework for responsible AI implementation. The framework connects five interdependent capabilities: strategic alignment, trusted data and scalable digital infrastructure, risk-based governance, measurable value realisation, and workforce readiness. It argues that AI investments should be prioritised according to clearly defined institutional outcomes rather than technological novelty. These outcomes may include stronger operational resilience, more timely insight, improved service delivery, enhanced regulatory compliance, and sustainable financial performance.

Before prescribing exercise, both gynecological and physical evaluations are essential to identify contraindications and assess pre-pregnancy activity levels. The ACOG and Canadian guidelines list absolute and relative contraindications (e.g., pre-eclampsia, placental disorders, uncontrolled hypertension) and encourage tailored programs for those without risk.

Particular attention is given to the role of explainable AI in strengthening transparency and human oversight when ML models influence high-impact banking decisions. The presentation also considers how cloud-enabled architectures, advanced analytics, and interoperable platforms can support responsible innovation while maintaining appropriate controls for critical financial systems. A governance-by-design approach is advanced in which ethical principles, model risk management, cybersecurity, data quality, regulatory obligations, and accountability are embedded across the AI lifecycle—from opportunity identification and business-case development to deployment, monitoring, and continuous improvement.

The central message is that successful AI transformation in banking is not achieved by algorithms alone. It requires coordinated leadership across business, technology, risk, governance, and people functions; disciplined investment choices; and clear measures linking technology initiatives to business and societal value. Participants will leave with practical insights for developing AI roadmaps, selecting high-impact use cases, establishing governance mechanisms, closing capability gaps, and scaling innovation responsibly.

The presentation is relevant to banking executives, technology leaders, regulators, researchers, and practitioners seeking to harness AI and ML while protecting institutional resilience, fairness, transparency, and trust.

Biography:

Dr. *Ntombi Tuge is an Information Technology Strategist at the South African Reserve Bank and a digital transformation and technology strategy executive with more than 15 years of leadership experience across central banking, telecommunications, financial services, and government. She holds a Master of Business Administration and is a Certified Artificial Intelligence and Data Scientist from MIT. Her expertise encompasses enterprise digital and information technology strategy, artificial intelligence, cloud computing, Internet of Things, enterprise architecture, programme and portfolio governance, and business process optimisation. At the South African Reserve Bank, she contributes to enterprise-wide digital and IT strategy, cloud and data-centre modernisation, innovation governance, and the alignment of technology investments with institutional priorities. Previously, she held senior leadership positions at Business Connexion, Vodacom South Africa, the Office of the Deputy Minister for Digital and Telecommunications, and MMI Holdings, where she led transformation initiatives and governance frameworks. She also serves on the SADC Region ICT Subcommittee for central banks. Her professional interests include responsible AI, digital transformation, financial-sector innovation, technology governance, and organisational readiness.*

Oral Presentation

Generative AI in K–12 Education: Teachers' Classroom Practices, Pedagogical Uses, and Integration Challenges



William Edusei-Mensah
Beijing Normal University, Ghana

Abstract:

G*enerative Artificial Intelligence (GenAI) is increasingly positioned as a transformative tool in K–12 education, yet empirical evidence on its classroom use remains limited. This study investigates how Chinese K–12 teachers integrate GenAI into teaching and the challenges constraining deeper integration. A convergent mixed-methods survey was conducted with 723 teachers across diverse school types, subjects, and regions. Quantitative analysis examined patterns of GenAI use and adoption barriers, while qualitative responses explored how teachers adapted AI-generated outputs to lesson objectives, student needs, and classroom contexts.*

The findings show that GenAI was used most frequently for lesson preparation, resource creation, and assessment, with notable disciplinary differences. Science and Mathematics teachers emphasised simulations and diagnostic feedback, whereas Language, Arts, and Humanities teachers focused more on creative activities and multimodal resources. Thematic analysis identified six pedagogical functions: lesson preparation & instructional design; Assessment & Feedback; classroom engagement and creative learning; visualisation & conceptual scaffolding; personalised & adaptive learning support; and administrative & professional support. Lesson preparation and assessment were the most prominent, suggesting that GenAI adoption remained concentrated in preparatory and relatively lower-risk professional tasks.

Several barriers constrained deeper integration. Rapid changes in AI tools were the most frequently reported challenge (58%), followed by limited interdisciplinary design capacity (52%), insufficient professional knowledge (48%), and inadequate mentoring or sustained training (44%). Teachers also reported poor subject adaptation and logical errors (39%), unreliable AI-generated outputs requiring verification (36%), and operational difficulties, including prompt-writing challenges (36%).

GenAI adoption was neither uniform nor automatic. Teachers acted as adaptive pedagogical designers who evaluated, revised, and contextualised AI-generated outputs according to curriculum goals, disciplinary practices, learner needs, and classroom realities. Thus, GenAI functioned primarily as a teacher-mediated resource rather than an autonomous pedagogical solution. Sustainable integration requires moving beyond tool-focused adoption towards teacher-centred capacity building. Schools and policymakers should therefore prioritise subject-specific professional development, sustained mentoring, reliable infrastructure, and clear ethical guidance to support critical, responsible, and pedagogically meaningful GenAI integration in K–12 education.

Biography:

Dr. *William Edusei-Mensah is an educational technology researcher based in Ghana and a 2026 graduate of Beijing Normal University, China, where he earned a Ph.D. in Educational Technology. His interdisciplinary academic background spans educational technology, public administration, finance, and accounting, providing a broad perspective on technology adoption in educational and organisational contexts. His research focuses on the effective and responsible integration of emerging technologies into teaching and learning, with particular interests in Generative AI in K–12 education, teacher digital competence, technology-enhanced professional development, AI-TPACK, and institutional factors influencing technology-mediated pedagogical innovation. Drawing on academic and research experience across Chinese and Ghanaian educational contexts, he brings a cross-cultural perspective to the study of digital technology adoption in education. His work seeks to contribute to educational policy, teacher professional development, and the design of AI-enabled learning environments. He is particularly interested in empowering teachers as adaptive pedagogical designers who can critically and meaningfully integrate emerging technologies into educational practice.*

Hybrid technique to detect network intrusion using a deep learning algorithm in RNN – a elaborative review



Ruchika Dungarani
Swarrnim Startup and Innovation University, India

Abstract:

T*he primary objective of this research is to develop an efficient and reliable deep learning-based Intrusion Detection System (IDS) capable of identifying malicious network activities with improved accuracy and reduced false-positive rates. With the rapid growth of interconnected systems, cloud platforms, Internet of Things (IoT) devices, and software-defined networks, cyber-attacks have become increasingly sophisticated. Traditional security mechanisms and conventional intrusion detection approaches may not be sufficiently effective when dealing with complex traffic patterns, large-scale network data, and evolving attack behaviors. Therefore, this research focuses on developing a hybrid deep learning technique that can learn meaningful patterns from network traffic and assist in the timely identification of security threats.*

The proposed research investigates the application of deep learning techniques for analyzing network traffic and recognizing abnormal or malicious behavior. In particular, recurrent learning mechanisms are considered for their ability to capture relationships among sequential network events and identify temporal patterns associated with cyberattacks. The research also explores the integration of different deep learning techniques to construct a hybrid detection framework that can exploit the strengths of multiple learning architectures. Such an approach is intended to improve the capability of the IDS to distinguish between legitimate and malicious network activities.

An important component of this research is the systematic study and analysis of existing intrusion detection techniques and deep learning algorithms. Different machine learning and deep learning approaches are examined based on their detection capabilities, computational requirements, adaptability, accuracy, and limitations. The study considers commonly used IDS evaluation parameters, including accuracy, precision, recall, F1-score, false-positive rate, detection time, and computational efficiency. The findings from this analysis are used to identify limitations in existing approaches and establish the requirements for the proposed hybrid framework.

The research also involves the collection and preparation of network attack data from reliable and representative sources. Publicly available benchmark datasets containing normal network traffic and different categories of cyberattacks are considered for experimental evaluation. The collected data are processed through appropriate preprocessing techniques, including data cleaning, feature selection, normalization, encoding, and class-balancing methods where necessary. These preprocessing steps are intended to improve the quality of the input data and enable the deep learning model to learn relevant characteristics of network traffic more effectively.

Another major objective is to determine suitable security parameters and performance indicators for evaluating the proposed intrusion detection framework. The research focuses on identifying parameters that can provide a comprehensive assessment of the system's ability to recognize malicious activities while maintaining acceptable performance for legitimate traffic. Particular attention is given to reducing false alarms, improving detection reliability, and maintaining the integrity of the network monitoring process. The model is evaluated using appropriate training, validation, and testing procedures to ensure that the obtained results are consistent and reliable.

The proposed framework is designed to provide meaningful information about detected network threats, including the nature and category of an attack and, where supported by the available data, its characteristics and potential target. Such information can assist network administrators and security professionals in understanding attack behavior and selecting appropriate defensive measures. The research therefore goes beyond simple binary classification and investigates how deep learning can contribute to more informative and intelligent network security monitoring.

The final objective is to implement and evaluate a secure, robust, and accurate intrusion detection framework. The proposed system is expected to enhance the overall integrity of network security by continuously analyzing network traffic and identifying suspicious patterns. Experimental results are compared with existing approaches to determine the effectiveness of the proposed hybrid technique. The research also considers the practical requirements of an IDS, including computational efficiency, scalability, detection capability, and suitability for real-world network environments.

Specific Objectives

The research objectives can be summarized as follows:

1.To study and analyze existing deep learning algorithms and technologies used in Intrusion Detection Systems, with particular emphasis on their architectures, advantages, limitations, detection capabilities, and computational requirements.

2.To collect and prepare network traffic and cyberattack data from reliable and representative sources, including suitable benchmark datasets containing normal and malicious network activities for developing and evaluating the proposed IDS.

3.To identify and select relevant network traffic features and security parameters that can contribute to accurate identification and classification of malicious activities.

4.To investigate hybrid deep learning techniques for intrusion detection by combining suitable learning architectures to capture both important network traffic characteristics and sequential or temporal attack patterns.

5.To develop an effective deep learning-based intrusion detection framework capable of distinguishing legitimate network behavior from malicious activities with improved detection accuracy.

6.To minimize false-positive and false-negative detections by optimizing the proposed model and applying appropriate preprocessing, feature-selection, class-balancing, and model-training techniques.

7.To evaluate the performance of the proposed IDS using established evaluation metrics, including accuracy, precision, recall, F1-score, false-positive rate, detection time, and computational efficiency.

8.To provide detailed information regarding detected network attacks, including attack category and relevant characteristics supported by the dataset and model, so that security administrators can better understand potential threats.

9.To implement a secure and robust intrusion detection mechanism that maintains data and system integrity while providing reliable detection of malicious network activities.

10.To compare the proposed hybrid technique with existing intrusion detection approaches and identify its effectiveness, limitations, and potential areas for future enhancement.

Biography:

***D**r. Ruchika Dungarani is an Assistant Professor at Swarrnim Startup and Innovation University, with expertise in Computer Engineering, Information Security, Network Security, Cybersecurity, Artificial Intelligence, Machine Learning, Deep Learning, Blockchain, and the Internet of Things. Her doctoral research, titled "Hybrid Technique to Detect Network Intrusion using Deep Learning," reflects her research interest in developing intelligent and secure network systems. Her scholarly contributions encompass network security, intrusion detection, blockchain, cloud security, artificial intelligence, IoT, and privacy-preserving technologies, with publications and conference contributions associated with IEEE, Springer, Taylor & Francis, and other academic platforms. She has authored a book on storage privacy using Black-Box and Sanitizable Signature and contributed book chapters and a patent on an artificial-intelligence-based industrial wastewater treatment device using nanotechnology. She has presented her research at international conferences and serves as a reviewer for journals, conferences, and book chapters. Her professional interests further include emerging technologies and collaborative research focused on secure, intelligent, and technology-driven solutions.*

The Algorithmic Gaze: Geopolitical Representation of Women and Marginalized Identities in Transnational Streaming Media



Harshita Poswal
Amity University, India

Abstract:

W*ith the rapid expansion of digital platforms, global streaming services have become powerful cultural gatekeepers that actively shape how regional stories, identities, and borders reach worldwide audiences. This paper explores the concept of the "algorithmic gaze," investigating how modern recommendation engines, content curation tools, and digital distribution models influence the visibility and framing of women and marginalized communities within contemporary Spanish and Latin American streaming series. Moving beyond traditional literary and cinematic theories of representation, the study looks closely at how platform categorization and metadata tagging intersect with narratives of migration, gender, and social marginalization. While global streaming architectures offer unprecedented access to diverse regional storytelling, they often risk flattening complex socio-political realities into homogenized tropes designed for rapid, binge-watching consumption. By bridging cultural studies, media sociology, and contemporary literary critique, this research analyses the ongoing tension between global digital reach and local cultural authenticity, evaluating how platform dynamics ultimately dictate the reception of marginalized voices in modern transnational media.*

Biography:

Dr. *Harshita Poswal is an Assistant Professor at the Amity School of Foreign Languages, Amity University, Noida, Uttar Pradesh, India. Her academic expertise encompasses Hispanic literature, translation studies, gender studies, and border narratives. She has contributed to international scholarship through peer-reviewed publications in Q2-ranked Scopus-indexed journals and edited volumes published by internationally recognised academic publishers. Her research interests include postmodern Spanish narrative, comparative literature, cultural studies, and the geopolitical representation of borders in contemporary cinema and streaming media. Her interdisciplinary research connects literary criticism with evolving forms of digital and visual culture, examining how contemporary media represent identity, territory, and cultural boundaries. Alongside her research activities, she is actively involved in curriculum development, academic collaborations, and participation in international conferences. Her scholarly work reflects a sustained interest in exploring contemporary literary and cultural questions through comparative and interdisciplinary approaches, with particular attention to the intersection of literature, media, society, and geopolitical discourse.*

Hierarchical Forecasting and Auditable AI-enabled Pricing for Capacity-constrained Cold-storage



Mohamed Doubiz
Hassan II University, Morocco

Abstract:

Accurate forecasting plays a pivotal role in supply chain management (SCM), especially in capacity-constrained cold-storage systems, where pricing, procurement, production, and distribution decisions are highly interdependent. In such contexts, warehouse occupancy both affects and is affected by upstream supply processes, such as replenishment and production planning, as well as downstream operations, including order fulfillment and distribution flows.

The first study develops a hierarchical forecasting framework combining behavioral time-series profiling, profile-based model comparison, forecast reconciliation, and decision-oriented evaluation. The framework is applied to six years of weekly stock data covering 70 products grouped into nine operational families. Candidate models are evaluated through rolling-origin out-of-sample validation, and family-level forecasts are reconciled with total warehouse occupancy using alternative hierarchical methods. The results show that forecasting performance varies across behavioral profiles and that the MinT diagonal method provides the lowest observed aggregate error measures, although bootstrap intervals indicate overlapping performance across reconciliation methods. Statistical rankings also do not fully coincide with tariff-oriented and scenario-based economic outcomes. These findings show that occupancy forecasts should be evaluated jointly in terms of accuracy, hierarchical coherence, uncertainty, and operational consequences.

By integrating behavioral segmentation, hierarchical forecasting, and decision-oriented evaluation, this published study demonstrates the importance of assessing forecasting systems according to their impact on interconnected supply-chain decisions rather than predictive accuracy alone. The framework provides both methodological contributions and managerial insights for managing capacity-constrained cold-storage supply chains.

Building on these findings, an ongoing prescriptive research extension investigates how forecast-based pricing recommendations can be embedded within a broader Supply Chain 5.0 decision-support framework. This extension combines hierarchical occupancy forecasting with threshold-based tariff recommendations, human-in-the-loop validation, and lightweight blockchain anchoring. The objective is to progress from predictive decision support toward a governed and auditable decision process in which routine recommendations may be automated, while commercially sensitive pricing decisions remain subject to managerial validation and traceable through a lightweight audit mechanism.

Overall, this research illustrates a progression from hierarchical forecasting and decision-oriented evaluation toward a human-centered, transparent, and auditable AI-enabled decision-support framework for cold-storage supply chains.

Biography:

Dr. *Mohamed Doubiz is a researcher affiliated with the Laboratory of Artificial Intelligence, Modeling and Computational Engineering at Hassan II University in Casablanca, Morocco. With 18 years of professional experience in the food supply chain sector, he brings extensive practical expertise to research on data-driven decision support, cold-chain operations, and supply-chain digitalisation. His research interests encompass artificial intelligence, machine learning, the Internet of Things, blockchain, and human-centred decision-support systems. His recent work explores forecasting and reconciliation methods for capacity-constrained cold-storage warehouses, integrating predictive analytics with pricing and operational decision-making. He also investigates Supply Chain 5.0 frameworks that combine predictive intelligence, human-in-the-loop validation, and lightweight blockchain technologies to enhance transparency, traceability, and auditability. His research further addresses real-time cold-chain monitoring through cost-effective and auditable architectures for temperature-sensitive environments, including vaccine cold rooms. His broader scholarly interests include predictive analytics, digital traceability, smart logistics, resilient supply chains, and sustainable and trustworthy decision-support systems.*

Oral Presentation

Privacy-Preserving Federated AI for Cross-bank Credit Card Fraud Detection



Dhanveer Singh
Capital One Financial Services, USA

Abstract:

P*rivacy-Preserving Federated AI for Cross-Bank Credit Card Fraud Detection*

Financial fraud increasingly operates across institutional boundaries, while privacy regulations, security requirements, and institutional data-governance policies limit banks' ability to directly exchange sensitive customer and transaction information. Traditional fraud-detection models are typically trained within individual institutions and therefore may fail to identify fraud patterns that span multiple financial organizations. This presentation introduces a privacy-preserving federated machine-learning framework that enables collaborative cross-bank fraud detection without requiring participating institutions to centralize or directly share raw transaction data.

The proposed framework combines Federated Machine Learning with differential privacy, homomorphic encryption, and secure multi-party computation (SMPC). Each participating institution trains a local model using its own transaction data and transmits protected model updates rather than customer-level information. These updates are securely aggregated to produce a global fraud-detection model that benefits from intelligence distributed across multiple institutions while preserving institutional and customer privacy. The published research evaluates the framework using financial-transaction datasets including IEEE-CIS and PaySim and reports improved fraud-detection performance compared with isolated single-bank approaches while maintaining strong privacy safeguards.

Beyond model accuracy, the presentation will examine the practical engineering challenges involved in applying federated AI in regulated financial environments. These include heterogeneous, non-IID data distributions across institutions; secure aggregation; explainability; model governance; real-time transaction processing; model lifecycle management; adversarial resilience; and compliance with different privacy regimes. The architecture also considers real-time streaming technologies, scalable cloud deployment, role-based access controls, model monitoring, and explainable AI techniques required to move federated-learning systems from experimental research toward production-scale financial infrastructure.

The broader objective is to demonstrate that collaborative intelligence and data privacy do not need to be competing goals. Federated AI can let financial institutions learn collectively from distributed fraud patterns while keeping sensitive data within organizational boundaries. The approach provides a foundation for more secure, privacy-aware, and collaborative fraud-defense ecosystems and may also be applicable to other highly regulated sectors such as cybersecurity, insurance, and healthcare.

Biography:

Dr. *Dhanveer Singh is a Senior Software Engineering Manager and technology leader with approximately 20 years of experience spanning software engineering, cloud architecture, financial technology, cybersecurity, distributed systems, and enterprise decisioning platforms. His professional expertise focuses on developing resilient cloud-native architectures, AI-enabled financial systems, privacy-preserving technologies, and large-scale platforms for complex financial-services operations. He is the first-listed and corresponding author of the research article "Federated Machine Learning for Cross-Bank Credit Card Fraud Detection: A Privacy-Preserving Framework," published in the African Journal of Science, Technology, Innovation and Development. His professional contributions include U.S. patent innovation, scholarly and technical publications, international peer review, judging, and technical editorial and book-review activities. He has reviewed more than 70 research papers across over 15 international IEEE conferences and has participated in industry and academic speaking engagements. He holds professional recognition as an IEEE Senior Member, BCS Fellow, and IETE Fellow. His research interests include privacy-preserving AI, federated learning, financial fraud detection, cloud-native architecture, cybersecurity, and AI-driven decisioning systems.*

From Static Honeypots to Autonomous Cyber Defense: Explainable AI-driven Adaptive Cyber Deception



Ganesh Khekare
Vellore Institute of Technology, India

Abstract:

T*he rapidly evolving cyber threat landscape challenges conventional defence mechanisms that primarily focus on detecting and blocking malicious activity. Modern attackers increasingly employ automated, multi-stage, and adaptive strategies, making static security controls and conventional honeypots less effective. This talk presents an Explainability-Driven Adaptive Cyber Deception Control System designed to transform a traditional honeypot into an intelligent and autonomous defense environment capable of understanding attacker behavior, adapting its responses, and continuously gathering threat intelligence.*

The proposed approach integrates machine learning, explainable artificial intelligence (XAI), behavioral profiling, adaptive control, reinforcement learning, and dynamic environment mutation within a unified cyber deception framework. A Random Forest-based behavioral profiler analyzes command-level attacker activities and distinguishes malicious behavior from legitimate interactions. To make deception decisions transparent, the framework introduces the Feature Dominance Deception Index (FDDI), which combines behavioral contributions with prediction confidence to determine the appropriate level of deception. The Behavioral Convergence Score (BCS) further captures the temporal consistency of attacker behavior, helping distinguish systematic attack patterns from irregular activity.

The framework also incorporates cyber kill-chain-based intent recognition to associate attacker actions with different stages of an attack and generate context-aware deceptive responses. A hysteresis-based control mechanism provides stability during transitions between deception levels, while a Q-learning reinforcement learning layer enables the system to learn and improve its deception strategies through repeated interactions. In addition, a session-consistent environment mutation mechanism dynamically changes system characteristics between sessions, reducing the likelihood of honeypot fingerprinting.

Experimental evaluation using Cowrie honeypot interactions and established intrusion-detection datasets demonstrates the potential of the proposed approach. The behavioral classifier achieved 90.0% accuracy, 85.7% recall, and 92.3% F1-score, while the complete framework achieved 90.0% attack classification accuracy and approximately 77% improvement in threat-intelligence extraction per session compared with baseline Cowrie deployment. The evaluated fingerprinting attempts were unsuccessful, while the system maintained adaptive and context-aware deception.

The talk will highlight how the convergence of AI, explainability, behavioral intelligence, and autonomous decision-making can move cyber deception beyond static honeypots toward more transparent, adaptive, and intelligent approaches to network defense

Biography:

Dr. *Ganesh Khekare is an Associate Professor in the Department of Computer Science and Engineering at Vellore Institute of Technology, Vellore, India. He holds BE, ME, PhD, and Postdoctoral qualifications in Computer Science and Engineering and has more than 16 years of teaching and research experience. His research interests include Data Science, Artificial Intelligence, Machine Learning, Internet of Things, and Networking. He has published more than 150 research articles in reputed international journals and conferences and has authored numerous scholarly contributions with publishers including IEEE, ACM, Springer, Elsevier, Wiley, and Taylor & Francis. His academic achievements include the prestigious IEI Young Engineers Award and four best paper awards. He is an IEEE Senior Member and holds memberships in several professional societies, including ACM, ISTE, IEI, and IAENG. He has filed patents and copyrights, secured research grants, and guided numerous undergraduate and postgraduate projects while supervising PhD scholars. He has also served as an editor, reviewer, invited speaker, resource person, and technical committee member for numerous international academic events.*

Local Variance Multilevel Wavelet Thresholding with Hybrid CNN for Medical Image Classification



Devi Nurtiyasari
Mathematics Education, Sunan Kalijaga State Islamic University, Indonesia

Abstract:

R*ecent advances in computational statistics and machine learning have supported the development of image classification methods, including applications in medical imaging. However, medical images may contain noise arising during image acquisition or transmission, which can affect subsequent image analysis and classification. This study presents a hybrid framework that integrates Local Variance Multilevel Wavelet Thresholding (LVT) for image denoising with a Convolutional Neural Network (CNN) for classification. The proposed LVT method uses local variance as an adaptive criterion to select between soft and hard thresholding at multiple wavelet decomposition levels. Rather than applying a single thresholding rule uniformly, the method switches between soft and hard thresholding according to the local variance of the wavelet coefficients, with the aim of reducing noise while preserving relevant image features. The denoised images are subsequently processed by a CNN for binary medical image classification. The framework is evaluated using Signal-to-Noise Ratio (SNR) and Mean Squared Error (MSE) for denoising, along with accuracy, precision, recall, and F1-score for classification. Experimental results show differences in denoising and classification performance among the evaluated thresholding approaches.*

For image denoising, soft and hard thresholding produced SNR values of 87.123 and 88.527, respectively, while local variance thresholding achieved an SNR of 89.577. Classification experiments were conducted over 10, 20, 50, 100, 200, and 300 epochs to examine model performance under different training durations. At 300 epochs, the Multilevel Wavelet CNN with local variance thresholding achieved a training accuracy of 95.65% and a testing accuracy of 73.08%, with a final loss of 0.21. The corresponding precision, recall, and F1-score were 73.68%, 87.50%, and 80.00%, respectively. These results suggest that incorporating local-variance-based threshold selection within a multilevel wavelet preprocessing framework can provide a useful approach for combining image denoising with CNN-based classification. The findings provide initial evidence for the potential of this framework in medical image classification and motivate further evaluation on larger and more diverse medical imaging datasets.

Biography:

Dr. *Devi Nurtiyasari is a faculty member in the Mathematics Education Study Program at Sunan Kalijaga State Islamic University, Yogyakarta, Indonesia. She holds a doctoral degree in Mathematics from Universitas Gadjah Mada (UGM), specializing in statistical computation and advanced computational methods. Her research expertise encompasses wavelet analysis, neural networks, machine learning, computational statistics, and statistical modeling. Her academic work focuses on developing and applying statistical and computational techniques for data analysis, modeling, and classification. Through her research and teaching, she contributes to the advancement of mathematics education and the application of computational approaches to complex data-driven problems. Her interdisciplinary interests bridge mathematics, statistics, and artificial intelligence, with particular emphasis on wavelet-based methods, neural network models, and machine learning applications. She continues to engage in academic research aimed at developing innovative computational methodologies and applying them to contemporary challenges in mathematics and data science.*

Deep Learning Frameworks for Low-light Human Activity Detection Using Thermal Vision



Anuradha Chetan Phadke
Vishwanath Karad MIT World Peace University, Maharashtra, India

Abstract:

T*he field of Human Activity Detection (HAD) has gained significant attention because of its potential applications in intelligent surveillance, health-care monitoring, smart home, military activity and security systems. In the present work a complete framework of Human Activity Detection based on thermal videos is discussed. It includes core machine Learning techniques with handcrafted features, deep learning techniques, and hybrid optimization approach for activity recognition. Two datasets are used in this work. First dataset is an in-house thermal video data set created by using a thermal imaging camera, that includes 1,000 video recordings of four activities conducted by human: Running, Duck Walking, Slow Walking, and Crawling. Second dataset is open-source dataset named LWIRPOSE. This dataset has more than 2,400 images which cover everyday actions, like discussion, direction, eating, phone talk, greeting, posing, sitting, purchasing, taking a photo, smoking, walking, and waiting.*

First, conventional machine learning methods, such as Threshold- Based Human Tracking and Support Vector Machine (SVM), are implemented. These methods obtained classification accuracy of 85% and 90% respectively. Pre-trained deep learning models namely MobileNetV2 and EfficientNet-B0 were implemented and accuracy obtained by these models is 92.5% and 90% respectively.

In addition, hybrid deep learning models are implemented, that integrate the convolutional networks with the temporal sequence learning, to make use of both spatial and temporal information contained in the thermal video data. The proposed Searched Binary Convolutional Neural Network (SeBCoN) framework combines with advanced pre-processing methods, such as Local Gamma Transform, Lovasz-Softmax based segmentation and Mscf-ResNet pose representation, for obtaining improved activity recognition performance. The experimental results showed that SeBCoN model achieved 96.37% accuracy, 95.36% sensitivity and 97.14% specificity.

In general, the proposed hierarchical scheme proves to be able to enhance the robustness, accuracy, and computational efficiency of HAD in challenging illumination scenarios when fusing the information provided by the thermal pattern with the deep learning-based classifier and the binary search-based optimization procedure. The proposed system is an effective solution that can be used for reliable activity recognition.

Biography:

Dr. *Anuradha Chetan Phadke is an Associate Professor in the Department of Electrical and Electronics Engineering at Dr. Vishwanath Karad Maharashtra Institute of Technology World Peace University. She received her B.E. and M.E. degrees in Electronics from Walchand College of Engineering, Sangli, India, in 1993 and 1995, respectively, and earned her Ph.D. from Savitribai Phule Pune University in 2016 for her research on algorithms for breast cancer diagnosis using digital mammogram analysis. Her research interests include digital image processing, pattern recognition, embedded system design, and machine learning. She has authored two books, holds three granted patents, and has published and presented numerous research papers in indexed journals and conferences. She has successfully completed multiple research projects supported by competitive grants. Her professional achievements include the Ideal Teacher Award from Maharashtra Academy of Engineering & Education Research, Pune, and the Prof. Y. K. Bhushan Most Influential Professor citation. In 2025, she was also recognised by IEEE among the top contributors to IEEE publications from MIT-WPU.*

Can AI Learn Humans Better Than Humans Do?



Dan Healy
WH5 Consulting, United Kingdom

Abstract:

C*an artificial intelligence learn how to deal with humans by talking to digital versions of us? Digital Brains explores that possibility. The aim is to create persistent synthetic representations of individuals and stakeholder groups that can be questioned, challenged, placed under pressure and put into interaction with one another. The commercial opportunity is not simply to make AI sound more human. It is to create a new way to understand people, rehearse decisions and explore how human systems may react before those decisions reach the real world.*

The work began with the research behind my book, AI Experiment to Be Human. Thirteen deliberately unlikely encounters were created between historical and contemporary figures, including Plato and Jake Paul, George Orwell and Donald Trump, Margaret Thatcher and Greta Thunberg and Alan Turing and Elon Musk. It was designed to be entertaining and provocative but there was a serious experiment underneath it. Could AI build representations rich enough to sustain recognisable character, belief, humour, contradiction and judgement through an extended encounter? Could a synthetic version of a person respond consistently when challenged rather than simply produce a plausible quotation? Most importantly, could these synthetic humans help AI learn something about human behaviour that facts alone do not explain?

Digital Brains is the commercial development of that experiment. A Digital Brain can be built from evidence about an individual or a stakeholder group, drawing on interviews, speeches, public statements, research findings, documents, behavioural information and other material that helps explain what matters to someone and how they tend to frame choices. The objective is not to claim that a person has been perfectly copied. It is to build an evidence based representation that can be interrogated repeatedly, tested against new situations and updated as new information becomes available.

This changes how research and intelligence can be used. Instead of receiving a static report that says what stakeholders thought at one moment, decision makers can continue the conversation. They can ask why a proposition is unconvincing, change it and test it again. A product launch, policy change, acquisition, investment case, campaign, organisational restructuring or reputational problem can be placed in front of several Digital Brains before it reaches the real stakeholders. This creates a safe environment for difficult conversations, negotiation rehearsal and scenario testing where ideas can fail cheaply, objections can emerge early and alternative approaches can be explored without putting relationships or reputation at risk.

The more powerful step comes when Digital Brains interact. People do not behave independently. Investors react to regulators, employees react to leaders, customers react to media coverage and politicians react to public pressure.

In a shared synthetic environment one Digital Brain can change the choices and information available to another. This brings game theory and strategic interaction into stakeholder intelligence. Instead of asking only 'How will this person respond?', organisations can explore 'What happens next when everybody starts responding to everybody else?' The purpose is not to produce one confident prediction. It is to expose plausible pathways, alliances, conflicts, tipping points and second and third order consequences that may otherwise be missed.

Commercial applications extend across strategy, market research, public affairs, communications, investor relations, negotiation, risk, crisis preparation, training and scenario planning. Digital Brains can stress test messages, rehearse board or stakeholder conversations, model reactions to strategic choices and identify where further real world research is needed. They can also work alongside traditional research. Synthetic representations can generate hypotheses quickly and continuously while interviews, surveys and observed behaviour can challenge and improve them. The result is potentially a more persistent form of stakeholder intelligence that can be used between research events rather than only when a new study is commissioned.

There is a broader implication. If we become better at replicating how people reason, remember, prioritise and react, those representations could become part of how AI itself learns to work with humans. An AI system trained on text knows a great deal about what people have written. A system able to interact with Digital Brains could also be exposed to simulated disagreement, persuasion, uncertainty, self interest, changing incentives and social pressure. Synthetic humans may therefore have a role in training safer and more socially aware AI systems. The same capability also points towards digital continuity. A founder's decision logic, an expert's accumulated judgement or a family member's stories and responses could one day remain available as something people can interact with rather than simply archive. This is not consciousness and it is not literal immortality. It is the preservation of parts of how a person thought and responded in a form that can continue to be questioned.

The more convincing these representations become, the more important governance becomes. A simulation must never be confused with the real person. Evidence needs to be separated from inference, provenance and uncertainty need to remain visible and synthetic identities must be clearly labelled. Privacy, consent, bias and misuse become more significant as fidelity improves. This presentation will trace the development of Digital Brains from the early AI Experiment to Be Human through to commercial stakeholder intelligence and multi agent simulation. It will examine both the practical opportunity and the larger question behind the work: if we can replicate enough of ourselves to teach AI how humans think, react and decide, what should we do with that capability?

Biography:

Dr. *Dan Healy is a strategist, researcher, and intelligence consultant with more than 25 years of experience in market research, behavioural insight, and decision support. He is the Founder and CEO of WH5 Consulting and previously served for 12 years as a Managing Director at FTI Consulting. His professional work focuses on understanding human behaviour, decision-making, and the application of evidence to improve organisational outcomes. He studied Business, with a focus on marketing and statistics, at Queensland University of Technology and later pursued behavioural economics at the London School of Economics. His recent research and professional interests centre on large language models, AI agents, and synthetic representations of human behaviour. He is the author of AI Experiment to Be Human, which explores whether artificial intelligence can reproduce aspects of human character, judgement, and belief through thirteen synthetic conversations involving historical and contemporary figures. His current work focuses on developing Digital Brains for stakeholder intelligence, multi-agent simulation, decision rehearsal, and exploring how synthetic human representations may contribute to AI systems' understanding of human behaviour.*

Oral Presentation

Reproducibility and Credibility in Computational Social Science: Testing the Fidelity of Gen AI-generated Data



Abhinandan Kulal
Government First Grade College Siddakatte, India

Abstract:

T*his study systematically evaluates the fidelity of generative AI-generated datasets as substitutes for real survey data in computational social science research. Using an original survey of 453 rural Karnataka college students as the empirical benchmark, we generated three LLM-simulated datasets (SIM1–SIM3) through theory-driven prompting and four AI-reconstructed datasets (REC1–REC4) via reverse-engineering from SPSS analytical outputs across Perplexity Pro and ChatGPT-5 platforms. Comparative analyses reveal simulated datasets achieve excellent first-order statistical fidelity (means, correlations) but fail higher-order mediation pathways, confirming H1. Early reconstructed datasets match marginal distributions yet exhibit psychometric failures, while REC4 (Perplexity v3.2, 2026) demonstrates viable reliability and partial mediation recovery, supporting H2–H3. Findings establish methodological boundaries for AI data generation, demonstrating complementary roles for simulation (replication testing) and reconstruction (robustness validation) while highlighting platform evolution effects. The study contributes rigorous benchmarks, multi-platform comparisons, and governance protocols for credible GenAI integration in social science, with implications for reproducibility, privacy-preserving analysis, and underrepresented context research.*

Biography:

Dr. *Abhinandan Kulal is a distinguished academician and researcher specializing in Personal Finance, Behavioral Finance, Artificial Intelligence, and Investment Management. He holds a Ph.D. in Commerce from Mangalore University, focusing on the savings and investment patterns of college teachers, and cleared NET and KSET during his first year of M.Com. He received the ICAI Gold Medal for excellence in Financial Accounting and has published over 41 research papers in SCOPUS-indexed journals, including ABDC-A/B and Q1/Q2 publications, with more than 1,250 Google Scholar citations. His academic contributions have earned him the AAOU Fellowship and ICAI International Research Awards in Accounting, Economics, and Finance for 2023–2025. He serves as a reviewer for more than 25 SCOPUS-indexed journals published by Elsevier, Emerald, SAGE, and Springer. He has delivered FDPs and research methodology workshops across India and represented India internationally as a speaker at the Asian Productivity Organization, Japan, and academic events in the United States and France.*

Oral Presentation

Blockchain in Accounting and Auditing: A Decade of Research, Emerging AI Convergence, and the Future of Digital Assurance



Sadeq Abdullah Aladeeb
Ibn Tofail University, Morocco

Abstract:

B*lockchain technology is increasingly influencing the digital transformation of accounting and auditing, with important implications for transparency, trust, financial reporting, governance, and assurance. At the same time, its convergence with artificial intelligence (AI), data analytics, and other emerging digital technologies is creating new opportunities for continuous and technology-enabled assurance. This presentation synthesizes a decade of research to examine the evolution of blockchain applications in accounting and auditing and to highlight emerging directions at the intersection of blockchain and intelligent digital technologies.*

The study adopts a hybrid bibliometric–systematic review methodology, using a PRISMA informed approach to analyze 593 publications indexed in Scopus between 2013 and 2024. Bibliometric performance analysis and science-mapping techniques—including co-citation analysis, keyword co-occurrence, and bibliographic coupling—are integrated with systematic qualitative synthesis to map the intellectual structure, thematic development, and research gaps within the field.

The analysis identifies six principal themes: blockchain-enabled accounting information systems; blockchain-enabled auditing and assurance through Audit 4.0; technological convergence involving blockchain, artificial intelligence, and data analytics; governance and regulation; sustainability and supply chains; and financial infrastructures. The findings indicate that blockchain is contributing to a transition from centralized and periodic accounting and auditing processes toward distributed, continuous, and network-based models of information and assurance. Rather than simply replacing accounting and auditing professionals, these developments are associated with changing professional responsibilities toward systems assurance, data analytics, technological governance, and the evaluation of digital control infrastructures.

Particular attention is given to the emerging convergence of blockchain, AI, and data analytics and its implications for digital assurance. Despite significant transformative potential, the literature remains characterized by limited empirical validation, regulatory uncertainty, interoperability challenges, and evolving professional competencies. The presentation concludes by outlining future research priorities centered on empirical validation, integrated digital governance, cross-technology interoperability, professional capability development, and resilient assurance frameworks for increasingly interconnected digital ecosystems.

Biography:

Dr. *Sadeq Abdullah Aladeeb is a PhD researcher at the Laboratory of Economics, Finance, Management and Innovation, Faculty of Economics and Management, Ibn Tofail University, Kenitra, Morocco, and is also affiliated with the Department of Accounting and Auditing, Faculty of Commerce and Economics, Sana'a University, Yemen. His research focuses on accounting and auditing, blockchain technology, digital transformation, and the application of emerging technologies to accounting and assurance practices. His scholarly interests particularly examine the evolving role of blockchain in accounting and auditing and its convergence with artificial intelligence, data analytics, governance, and digital assurance. His research adopts interdisciplinary approaches to investigate how technological innovation can enhance transparency, accountability, efficiency, and trust within financial and assurance systems. He is the lead author of the 2026 article, "A Decade of Blockchain Research in Accounting and Auditing: Mapping the Intellectual Landscape through a Hybrid Bibliometric-Systematic Review," published in Cogent Business & Management. His current research contributes to the growing academic understanding of digital transformation and technology-enabled innovation within contemporary accounting and auditing practices.*

An optimised approach to detect and prevent hardware trojan in FPGA using machine learning approach



Mrunalini U. Buradkar
St. Vincent Pallotti College of Engineering and Technology, India

Abstract:

***F**ield Programmable Gate Arrays (FPGAs) are widely used in embedded systems, including defense, automotive, healthcare, and the Internet of Things (IoT), to enhance computational performance and energy efficiency. However, FPGA security has become a critical concern, particularly due to the potential insertion of Hardware Trojan Horses (HTHs) in unoccupied spaces, leading to hardware failures and information leakage. This research introduces an Optimized Approach to Detect and Prevent Hardware Trojans in FPGA using Machine Learning. The proposed Revolutionary Preventative Approach secures FPGA designs by filling unused spaces with Look-Up Tables (LUTs) and Flip-Flops (FFs), mitigating the risk of Trojan insertion. Additionally, shift registers and gate chains are strategically embedded to establish security checkpoints, effectively preventing checkpoint and side-channel attacks. To enhance Trojan detection, a Unique Ensemble Model integrates Extreme Gradient Boosting (XGBoost) with Random Forest (RF), improving detection accuracy without compromising performance. This hybrid approach efficiently identifies unknown Trojans, eliminating hidden vulnerabilities in FPGA designs. Experimental results demonstrate that the proposed system not only enhances FPGA security by occupying unused resources but also achieves a high detection accuracy of 98%. This innovative framework ensures trust in FPGA-based applications, making it a reliable solution against hardware Trojans.*

Biography:

Prof. Mrunalini U. Buradkar is an Assistant Professor (Senior Grade) in the Department of Electronics & Telecommunication Engineering at St. Vincent Pallotti College of Engineering & Technology, Nagpur, Maharashtra, India. With over 23 years of academic experience, she has expertise in VLSI Design, Artificial Intelligence, Outcome-Based Education (OBE), Engineering Education, Assessment & Evaluation, and Pedagogical Innovation.Prof. Buradkar has trained 750+ faculty members and 800+ students through FDPs, workshops, and training programmes and has served as a resource person at national and international platforms. She has actively contributed to curriculum development, OBE implementation, AI-integrated pedagogy, digital assessment, LMS integration, and faculty development. She has also served as a Board of Studies member for AI and IIoT and has been associated with initiatives such as OE4BW and IEEE CONECCT. Her professional contributions have been recognized through several awards, including the institutional, national, and professional recognitions for excellence in teaching, research, mentoring, leadership, and academic innovation. Her recognitions include Best Performing Faculty (2018–19, 2022–23, 2025–26), Best Contributing Faculty (2023–24), Appreciation for Research & ART Score. At the national level, she received Senior Educator & Researcher Award, Women Leadership Award, Microchip Centre of Excellence Award (2025–26), Outstanding Faculty Mentor Award (2024–25), and Distinguished & Inspiring Academician Award (2022–23 & 2023–24),2nd Runner-Up Mentor and Top 10 Mentor recognition in the Intel Unnati AI Grand Challenge, and the Mentor Award in the Geospatial AI National Space Day Competition. She has also received Best Paper Awards at NCASIT 2023 and IKS 2025. Her professional contributions include mentoring her student at BITS Pilani M.Tech. AI/ML and NPTEL AI & Data Science, and serving as an Evaluator at the Fanthom Medical Conference, GDC Nagpur. Her research interests include VLSI security, Hardware Trojans, AI, IoT, cybersecurity, and technology-enhanced engineering education.

Wisdom Conferences

Where Knowledge Meets Insights

OUR LOCATION

Office 12329, 182-184 High Street North, East Ham, London, E6 2JA

EMAIL

- **support@wisdomconferences.org**
- **contact@wisdomconferences.org**

PHONE

+44 738034 5362 / +44 7360 501524

Website

https://wisdomconferences.com/



TOKYO, JAPAN

OCTOBER 6TH - 7TH 2026