Conference Program

2026 11th International Conference on Information and Network Technologies (ICINT 2026)

March 6-8, 2026

Sydney, Australia

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Welcome Message

On behalf of the Organizing Committee, it is our great pleasure to welcome you to the 2026 11th International Conference on Information and Network Technologies (ICINT 2026), held in Sydney, Australia, during March 6-8, 2026.

ICINT aims to provide a leading international forum for researchers, academics, industry professionals, and practitioners to exchange innovative ideas, share research achievements, and discuss the latest developments in information and network technologies and related fields. The conference continues to serve as a valuable platform for fostering academic collaboration and promoting interdisciplinary communication among participants from around the world.

The technical program of ICINT 2026 features a diverse range of high-quality research contributions organized into three main tracks: Track 1: Multi-Sensor Processing and Signal Processing; Track 2: Digital Communication Technology and Development Technology; and Track 3: Advanced Information Systems and Data Management. These tracks reflect the conference's commitment to advancing research and innovation in core areas of information and network technologies. Through keynote speeches, technical sessions, and academic discussions, we aim to encourage meaningful exchanges of knowledge, foster interdisciplinary collaboration, and promote forward-looking perspectives among participants from academia and industry.

We sincerely appreciate the dedication and hard work of the conference committee members, reviewers, keynote speakers, session chairs, track chairs, invited speakers, authors, and all participants who have contributed to the success of this conference. We also extend our gratitude to the sponsors and supporting institutions for their generous support and collaboration.

We hope that ICINT 2026 will provide you with an inspiring academic experience, valuable networking opportunities, and enjoyable moments during your stay in Sydney. We wish you a productive conference and look forward to fruitful discussions and future collaborations.

Conference Chair of the ICINT 2026

Wei Xiang

La Trobe University, Australia

Useful Information

Conference Venue

Castlereagh Boutique Hotel, Ascend Hotel Collection
Address: 169 Castlereagh St, Sydney NSW 2000 Australia

Website: https://www.thecastlereagh.com.au/

Time Zone:

GMT+11

Average Temperature of Sydney in March

✧ Average daily minimum temperature: 64°F (18°C)

✧ Average daily maximum temperature: 77°F (25°C)

Bank and Foreign Exchange

Currency: Australian Dollar (AUD)

Important Phone Numbers

Fire: 000   Medical Emergency: 000   Police: 000

Important Notes:

Please take care of your belongings during the conference. The conference organizer does not assume any responsibility for the loss of personal belongings of the participants.

Please wear delegate badge during the conference. There will be NO access for people without a badge. Never discard your badge at will.

Accommodation is not provided. Early reservation is suggested to be made for delegates.

Please show the badge and meal coupons during lunch and dinner.

Don't stay too late in the city and don't be alone in the remote area. Be aware of the strangers who offer you service, signature of charity, etc., at scenic spots. More Tourist Information and Security tips are available online.

Online APP

ZOOM Download Link: https://zoom.us/download
ZOOM Using & Presentation Instruction: *www.icint.org/kits.zip*
Please rename your screen name before entering the room

Rename Screen Name Before Entering the Room	Examples
Authors: Paper ID-Name	SN101-San Zhang
Delegate: Delegate- Name	Delegate-San Zhang
Keynote Speaker: Keynote-Name	Keynote-San Zhang
Invited Speaker: Invited-Name	Invited-San Zhang
Committee Member: Committee-Name	Committee-San Zhang

Materials Prepared by the Presenters

✧ **Oral Presentation:**

PowerPoint or PDF files

PowerPoint Background Template: www.icint.org/kits.zip

Duration of Each Presentation

✧ Keynote Speech: 45 Minutes of Presentation including Q&A.

✧ Invited Speech: 20 Minutes of Presentation including Q&A.

✧ Regular Oral Presentation: 15 Minutes of Presentation including Q&A.

Note

✧ The regular oral presentation schedule is for reference only. In case of any absence or presentations shorter than 15 minutes, please join your session before it starts to ensure a smooth flow of the program.

✧ One excellent presentation will be selected from each session, and the winner will be announced and awarded an Excellent Presentation Certificate.

✧ Please ensure a stable internet connection during the conference.

✧ Please use your real name (same as registration) when entering the Zoom meeting. Participants without proper identification may not be admitted.

✧ Please enter your session meeting room 10 minutes in advance and wait for the session to begin.

✧ Please test your audio, video, and PPT presentation during the test period on March 6, 2026.

✧ Please keep your microphone muted when you are not speaking to avoid background noise.

✧ For your privacy, do not share the Zoom meeting link or passcode with others.

✧ If you encounter technical issues during the conference, please contact the technical support team via the designated email or Zoom chat.

Keynote Speaker I

Saturday, March 7 • 09:05–09:50 (GMT+11, Sydney Time)
Meeting Room: Hyde Room - Level 5
ZOOM ID: 848 8907 3693   Password: 827782

ZOOM Link: https://us02web.zoom.us/j/84889073693

Prof. Octavia A. Dobre

Fellow of the IEEE, Member of Academia Europaea

Memorial University, Canada

Speech Title: Bridging Wireless Communications and Quantum Computing

Abstract: With 5G-Advanced established in 3GPP Release 18 and extended in Release 19, as the field moves toward 6G, the wireless landscape is undergoing transformative shifts. These include the seamless integration of people, machines, and environments through embedded intelligence; the convergence of space-air-ground networks; the unification of diverse frequency bands with distinct propagation behaviors; and the fusion of communication, computing, sensing, positioning, and intelligence. Although further progress is required on the road to 6G, researchers worldwide are already exploring groundbreaking technologies and emerging services extending beyond it.

This talk will provide an overview of advances toward next-generation wireless networks and highlight their connections to quantum computing. It will also introduce key concepts in quantum computing and illustrate their potential through an example application within this rapidly evolving ecosystem.

Biography: Octavia A. Dobre is a Professor and Tier-1 Canada Research Chair at Memorial University, Canada. Her research focuses on next-generation wireless networks, as well as optical and underwater communications. She has authored more than 600 publications in these areas and has received numerous Best Paper Awards, including the prestigious IEEE ComSoc Heinrich Hertz Award.
Dr. Dobre served as Vice President of Publications for IEEE ComSoc. She was the Founding Editor-in-Chief of the IEEE Open Journal of the Communications Society and previously served as Editor-in-Chief of IEEE Communications Letters.
She is a Clarivate Highly Cited Researcher and a Fellow of the IEEE, the Engineering Institute of Canada, the Canadian Academy of Engineering, and the Royal Society of Canada. She is also an elected member of Academia Europaea and the European Academy of Sciences and Arts.

Keynote Speaker II

Saturday, March 7 • 9:50-10:35 (GMT+11, Sydney Time)
Meeting Room: Hyde Room - Level 5
ZOOM ID: 848 8907 3693   Password: 827782

ZOOM Link: https://us02web.zoom.us/j/84889073693

Prof. Xinghuo Yu

Fellow of the Australian Academy of Science, Honorary Fellow of Engineers Australia, Fellow of the IEEE

RMIT University, Melbourne, Australia

Speech Title: Synergetic Interplay between Artificial Intelligence and Complex Networks

Abstract: Artificial Intelligence (AI), as a foundational technology for intelligent systems, is playing an increasingly pivotal role in modern industry and society. In parallel, Complex Networks (CN) provide powerful representations of the structural and dynamical characteristics of large-scale real-world systems. Recent advances in AI have established it as a transformative platform for solving highly complex problems, while CN offers complementary perspectives that can simplify analysis and enhance computational efficiency.

This talk will first review recent developments in both AI and CN, and then explore emerging challenges and opportunities arising from their synergetic interplay, with the aim of harnessing the strengths of both fields. We will further discuss prospective paradigms that may extend beyond conventional AI frameworks to address the growing complexity of interconnected systems, including innovative methodologies inspired by nature.

Particular attention will be devoted to modelling, control, and optimisation issues in large-scale industrial cyber-physical systems, such as smart grids. Several real-world industrial problems, including selected case studies from our own research, will be presented to illustrate practical implications and future directions.

Biography: Professor Xinghuo Yu is a Distinguished Professor and Associate Deputy Vice-Chancellor at RMIT University (Royal Melbourne Institute of Technology), Melbourne, Australia. He is a Fellow of the Australian Academy of Science and an Honorary Fellow of Engineers Australia. He is also a Fellow of the IEEE, the International Federation of Automatic Control, the Australian Computer Society, and the Australian Institute of Company Directors. He served as President of the IEEE Industrial Electronics Society from 2018 to 2019.

Professor Yu' research spans control systems, intelligent and complex systems, artificial intelligence and machine learning, and power and energy systems. His scholarly work has attracted over 63,000 citations on Google Scholar, with an H-index of 118. He has been recognised as a Clarivate Highly Cited Researcher in Engineering every year since 2015. His honours include the 2018 M A Sargent Medal from Engineers Australia, the 2018 Australasian AI Distinguished Research Contribution Award from the Australian Computer Society, and the 2013 Dr.-Ing. Eugene Mittelmann Achievement Award from the IEEE Industrial Electronics Society.

Keynote Speaker III

Saturday, March 7 • 11:05-11:50 (GMT+11, Sydney Time)
Meeting Room: Hyde Room - Level 5
ZOOM ID: 848 8907 3693   Password: 827782

ZOOM Link: https://us02web.zoom.us/j/84889073693

Prof. Yonghui Li

Fellow of the IEEE

University of Sydney, Australia

Speech Title: Beyond 5G towards a Super-connected World

Abstract: Connected smart objects, platforms and environments have been identified as the next big technology development, enabling significant society changes and economic growth. The entire physical world will be connected to the Internet, referred to as Internet of Things (IoT). The intelligent IoT network for automatic interaction and processing between objects and environments will become an inherent part of areas such as electricity, transportation, industrial control, utilities management, healthcare, water resources management and mining. Wireless networks are one of the key enabling technologies of the IoT. They are likely to be universally used for last mile connectivity due to their flexibility, scalability and cost effectiveness. The attributes and traffic models of IoT networks are essentially different from those of conventional communication systems, which are designed to transmit voice, data and multimedia. IoT access networks face many unique challenges that cannot be addressed by existing network protocols; these include support for a truly massive number of devices, the transmission of huge volumes of data burst in large-scale networks over limited bandwidth, and the ability to accommodate diverse traffic patterns and quality of service (QoS) requirements. Some IoT applications have much stringent latency and reliability requirements which cannot be accommodated by existing wireless networks. Addressing these challenges requires the development of new wireless access technologies, underlying network protocols, signal processing techniques and security protocols. In this talk, I will present the IoT network development, architecture, key challenges, requirements, potential solutions and recent research progress in this area, particularly in 5G and beyond 5G.

Biography: Yonghui Li is now a Professor and Director of Wireless Engineering Laboratory in School of Electrical and Information Engineering, University of Sydney. He is the recipient of the Australian Research Council (ARC) Industry Laureate Fellow in 2025, ARC Queen Elizabeth II Fellowship in 2008 and ARC Future Fellowship in 2012. He is an IEEE Fellow and Clarivate highly cited researcher. His current research interests are in the area of wireless communications. Professor Li was an editor for IEEE transactions on communications, IEEE transactions on vehicular technology and guest editors for several special issues of IEEE journals, such as IEEE JSAC, IEEE IoT Journals, IEEE Communications Magazine. He received the best paper awards from several conferences. He has published one book, more than 300 papers in premier IEEE journals and more than 200 papers in premier IEEE conferences. His publications have been cited more than 30000 times.

Invited Speaker I

Saturday, March 7 • 13:30-13:50 (GMT+11, Sydney Time)
Meeting Room: Hyde Room - Level 5

Assoc. Prof. Miloslava (Mia) Plachkinova
Kennesaw State University, USA

Speech Title: AI and the Future of Critical Infrastructure

Abstract: Critical infrastructure systems underpin modern society, yet they are increasingly exposed to complex, fast-moving threats driven by digital transformation, geopolitical uncertainty, and climate-related disruptions. Artificial intelligence is rapidly becoming a defining force in how these systems are designed, operated, attacked, and defended. This talk examines the dual role of AI as both a source of new risk and a powerful tool for strengthening critical infrastructure resilience across sectors such as energy, transportation, healthcare, finance, and communications. The presentation explores how AI is reshaping threat detection, incident response, and system optimization, while also introducing new vulnerabilities related to automation, model dependence, data integrity, and adversarial manipulation. Drawing on real-world infrastructure environments, the talk highlights how AI-enabled tools can improve situational awareness, anticipate cascading failures, and support human decision-making under uncertainty, provided they are deployed with appropriate governance and oversight. The talk also addresses policy and operational challenges at the intersection of technology, regulation, and public trust, including accountability in automated decision-making, transparency in AI-driven control systems, and the need for human-in-the-loop safeguards. It concludes by outlining a practical framework for integrating AI into critical infrastructure security and resilience strategies in a way that balances innovation with safety, reliability, and societal impact. This perspective is intended to support infrastructure operators, policymakers, and researchers seeking to prepare for an AI-augmented future while managing systemic risk.

Biography: Miloslava (Mia) Plachkinova, Ph.D. is an Associate Professor of Information Security and Assurance at Kennesaw State University, where she also serves as Assistant Department Chair. She earned her Ph.D. in Information Systems and Technology from Claremont Graduate University and holds multiple professional certifications, including CISSP, CISA, CCSP, CISM, CRISC, CDPSE, PMP, and CIPP/US. Dr. Plachkinova's research spans cybersecurity, data privacy, and emerging technologies, with publications in leading journals such as Journal of the Association for Information Systems, Communications of the Association for Information Systems, and Journal of Computer Information Systems. She has secured significant external funding, including a multi-year NSA GenCyber grant to advance cybersecurity education. Her leadership extends to curriculum development, industry partnerships, and mentoring students and faculty. Recognized for research excellence and teaching innovation, she also serves as an editor and reviewer for top academic journals and conferences. Her current projects explore AI-driven security frameworks, regulatory challenges in technology adoption, and improving the quality of healthcare systems.

Invited Speaker II

Saturday, March 7 • 13:50-14:10 (GMT+11, Sydney Time)
Meeting Room: Hyde Room - Level 5

Asst. Prof. Basheer M. Al-Ghazali

(Fellow of HEA, World Top 2% Scientists for Citation Impact since 2025 of Stanford University's List)

King Fahd University of Petroleum & Minerals, Saudi Arabia

Speech Title: Automation in Tourism: The Role of Robotics and AI in Redefining Service Delivery

Abstract: The tourism and hospitality sector is undergoing a significant transformation driven by the growing integration of robotics and automation technologies across various service domains. This paper provides a comprehensive systematic review of the global landscape—analyzing current trends, implementation challenges, and emerging opportunities related to the use of robotics and automation in tourism service environments. Based on an extensive review of recent scholarly research, industry reports, and real-world implementations, the study explores the application of technologies such as service robots, smart kiosks, autonomous delivery tools, and AI-enabled customer interaction platforms across diverse tourism contexts, including hotels, airports, restaurants, and tourist attractions. The analysis reveals that robotics and automation have the potential to improve operational efficiency, enhance service quality, offer personalized guest experiences, and mitigate labor shortages—especially those intensified by global disruptions like the COVID-19 pandemic. Nevertheless, the review also highlights significant obstacles to broader adoption, including high initial costs, inadequate infrastructure, employee resistance, and concerns related to the authenticity of service in human–robot interactions. Furthermore, the paper explores new frontiers in the development of smart tourism ecosystems, collaborative human–robot service models, edge-based AI applications, and adaptive service systems that respond to contextual variables. The review concludes by outlining a strategic roadmap for future research and industry practice, aimed at promoting ethical, human-centered, and sustainable automation in tourism. These insights serve as a valuable resource for scholars, technology providers, tourism managers, and policymakers seeking to navigate and shape the evolving role of automation in service delivery.

Biography: Dr. Basheer M. Al-Ghazali is an Assistant Professor of Technology Management and Entrepreneurship at King Fahd University of Petroleum & Minerals (KFUPM), Saudi Arabia, where he previously served as Head of the Department of Business Administration. He holds a B.S. in Computer Engineering and an MBA from KFUPM, as well as a Ph.D. in Technology Management from Universiti Teknologi Malaysia.

Dr. Al-Ghazali is a Fellow of the Higher Education Academy (HEA), UK, and is recognized among the Top 2% of Scientists Worldwide by Stanford University in 2025. He has authored over 30 peer-reviewed journal articles and multiple book chapters, with his work appearing in several high-impact international journals.

His research interests span digital transformation, digital entrepreneurship, AI-enabled services, technology adoption, innovation management, and sustainability.

Invited Speaker III

Saturday, March 7 • 14:10-14:30 (GMT+11, Sydney Time)
Meeting Room: Hyde Room - Level 5

Prof. Hans-Henrik Hvolby

act2learn, Denmark

Speech Title: Dynamic Storage Location Assignment in 3PL Warehouses: Empirical Challenges from Retail Operations and AI Perspectives

Abstract: Warehousing is pivotal in modern supply chains, buffering variability, consolidating goods, and enabling value-added services like returns handling. In third-party logistics (3PL) contexts, short contract horizons and multi-client diversity amplify challenges in storage location assignment (SLAP), particularly under dynamic demand. This paper reviews SLAP policies (e.g., class-based storage) and 3PL-specific hurdles like information silos and limited automation. An empirical case from a European retail 3PL reveals around 50% misalignment in SKU classifications, with opportunities for 5% travel time reductions via optimised forward picking. Findings underscore the need for dynamic, forecast-integrated processes and lessons for sustainable 3PL operations

Biography: Professor Hans-Henrik Hvolby is a senior researcher and project manager at act2learn, which is an industry-oriented division at the University College of Northern Denmark. His research is mainly within supply chain planning and integration with a special focus on transport and maritime logistics. He was Professor at Aalborg University from 2001 to 2023 as well as co-founder and manager of a strong industrial research unit titled Centre for Logistics at Aalborg University, being a core player in applying and managing industrial research projects and industry networks. He has been directly involved in 29 larger national and European industrial research projects, of which he has been project manager of more than half. Further, he has published more than 175 peer-reviewed papers in academic journals and conferences, supervised 14 Ph.D. students, reviewed more than 20 Ph.D. projects, editorial board member of 4 international journals, organised more than 50+ national and international conferences, seminars and workshops as well as being a visiting professor at University of Tasmania (Australia), University of South Australia and Norwegian University of Science and Technology.

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Invited Speaker IV

Saturday, March 7 • 15:45-16:05 (GMT+11, Sydney Time)
Meeting Room: Hyde Room - Level 5

Prof. Yutaka Ishibashi

(Fellow of IEICE)

Aichi Sangyo University, Japan

Speech Title: Remote Robot Operation Using Visual-Haptic Fusion: Influence of Object Size

Abstract: Remote robot operation systems with visual-haptic fusion enable cooperative manipulation by integrating visual information with force feedback. This paper investigates the influence of object size on cooperative manipulation using a simulation-based remote robot operation system with real haptic devices. The proposed system consists of two network-connected subsystems, each equipped with a haptic device, allowing cooperative manipulation of a virtual object using two robot hands. In the investigation, a single user operated two haptic devices simultaneously, while the object weight was kept constant and only its size was varied. The results show that object size significantly affects force characteristics and task performance, highlighting the importance of visual factors in visual-haptic remote robot operation.

Biography: Yutaka Ishibashi is Dean Professor at the Department of Business Management, Faculty of Business Administration, Aichi Sangyo University, Japan, and Emeritus Professor at Nagoya Institute of Technology. He earned his Ph.D. in Computer Science from Nagoya Institute of Technology in 1990. With over four decades of experience, he has held various academic leadership roles including department chair and college director at Nagoya Institute of Technology. His research focuses on communication protocols and network performance evaluation. Ishibashi is a Life Senior Member of IEEE and a Fellow of IEICE, with numerous awards including lifetime achievement and multiple best paper recognitions at international conferences. He has actively contributed to professional societies such as IEEE, IEICE, IPSJ, ACM, and ITE, holding leadership positions including Director of IPSJ Tokai Branch and Chair of IEEE Nagoya Section. He has chaired and served as technical program chair for numerous prestigious international conferences, and has been guest editor-in-chief for special issues in academic journals.

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Invited Speaker V

Saturday, March 7 • 16:05-16:25 (GMT+11, Sydney Time)
Meeting Room: Hyde Room - Level 5

Asst. Prof. Mohammed Alaa Ala'anzy

SDU University, Kazakhstan

Speech Title: In-Place Sorting Algorithms: A Comparative Analysis

Abstract: In-place sorting algorithms are essential for optimizing performance in environments with limited memory resources. This study presents a detailed comparative analysis of thirteen in-place sorting algorithms, including widely used techniques such as quick sort and heap sort, as well as less conventional methods like pancake sort, Gnome sort, and Smooth sort. A dual-method approach is employed: theoretical evaluation assesses time and space complexity, stability, and algorithmic adaptability, while empirical experiments benchmark performance across varying input sizes, ranging from 10 to 100,000 elements, using uniformly distributed data. All algorithms were implemented in Java and tested under consistent conditions, with execution time measured using nanosecond precision. Results reveal that no single algorithm performs best across all scenarios. For example, quick sort and heap sort excel in large datasets, while simpler algorithms like bubble sort and insertion sort are more efficient for small or nearly sorted inputs. This research offers practical insights into the strengths and trade-offs of each algorithm, guiding developers and researchers in choosing the most suitable in-place sorting strategy based on data characteristics and resource constraints.

Biography: Mohammed Alaa Ala'anzy (Member, IEEE) received his Ph.D. in Computer Science from Universiti Putra Malaysia (UPM) in 2023. He currently serves as an Associate Professor at Suleyman Demirel University (SDU). Dr. Ala'anzy specializes in advanced fields such as algorithms, cloud computing, green computing, load balancing, task scheduling, fog computing, and the Internet of Things (IoT). He is widely recognized for his significant contributions to the academic community through numerous high-impact journal and conference publications.

Additionally, Dr. Ala'anzy serves as a respected reviewer for prestigious journals, including IEEE, Elsevier, and Springer. He is also a member of the Dissertation Council (Senate) at SDU and plays an essential role on the admissions committee, which evaluates candidates for the Kazakhstan government grant program. Furthermore, he is a member of the International Program Committee for the 2025 12th International Conference on Soft Computing and Machine Intelligence (ISCMI) in Melbourne, Australia, as well as a member of the Advisory Committee for the 2025 5th International Conference on Technological Advancements in Computational Sciences (ICTACS 2025), organized by Amity University in Tashkent, Uzbekistan.

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Invited Speaker VI

Saturday, March 7 • 16:25-16:45 (GMT+11, Sydney Time)
Meeting Room: Hyde Room - Level 5

Dr. Jacek Nazdrowicz

Fujitsu Global Delivery Center, Poland

Speech Title: IOWN: A Revolution in Future Communication – From Optical Fiber to Intelligent Networks

Abstract: The Innovative Optical and Wireless Network (IOWN) initiative represents a transformative leap in the evolution of digital communication. As the demands on global networks continue to grow—driven by artificial intelligence, immersive media, autonomous systems, and the Internet of Things—traditional architectures are reaching their limits in terms of latency, bandwidth, and energy efficiency. IOWN addresses these challenges by introducing a new paradigm built on ultra-high-speed, low-latency optical transmission, advanced wireless technologies, and intelligent data processing frameworks. This presentation will explore the foundational components of IOWN, including the All-Photonics Network (APN), which replaces conventional electronic transmission with photonic communication to dramatically reduce latency and power consumption. We will also examine the role of Digital Twin Computing and Cognitive Foundation technologies in enabling real-time decision-making, predictive analytics, and seamless integration between cyber and physical systems. Real-world applications will be highlighted across key sectors such as industry (smart factories and predictive maintenance), healthcare (remote diagnostics and robotic surgery), transportation (autonomous mobility and traffic optimization), and education (immersive learning environments). These examples will illustrate how IOWN supports the development of inclusive, resilient, and sustainable digital societies. Finally, the talk will address the broader implications of IOWN for global infrastructure, including its alignment with environmental goals, its potential to accelerate 6G deployment, and its role in shaping a human-centric network era. Attendees will gain insight into how IOWN is not only redefining connectivity but also laying the groundwork for a smarter, more responsive, and ethically grounded digital future.

Biography: Jacek Nazdrowicz, PhD - is a Senior System Architect at Fujitsu Global Delivery Center in Poland and a Global Fujitsu Distinguished Engineer in Network Technologies. He is also employed at Lodz University of Technology in the Department of Microelectronics and Computer Sciences, where he contributes to academic research and education in electronics, computer science, and power engineering. He holds a Ph.D. in Economics and Management from Lodz University of Technology, complemented by multiple Master of Science degrees in Physics, Mathematics, Computer Science, Electronics, Power Energy, and Management.
Since joining Fujitsu in 2016, he has held key technical leadership roles, including Regional Distinguished Engineer and System Engineer Expert specializing in Storage Area Networks and Backup Systems. Prior to his tenure at Fujitsu, he worked as an Open Systems Administrator at one of Poland's largest bank.

His research interests include network architecture, ASIC design, and MEMS modeling. He is a co-creator of the patented MEMS XMB10 3-axis accelerometer topology and a contributor to the EduMEMS initiative, focused on developing multidomain MEMS models for educational use. He has also participated in the StrategMed II – INNOREH project, an innovative system for evaluating and rehabilitating human imbalance, funded by the National Centre for Research and Development in Poland. He is currently involved in the IOWN Global Forum project, which pioneers the development of Innovative Optical and Wireless Network technologies, aiming to replace electronics with photonics for ultra-high-speed data transmission.

He has published extensively in IEEE journals and presented at international conferences across the United States (Anaheim, San Jose, Las Vegas, San Diego, Orlando, Denver, Dallas) and Europe (Sweden, Italy, Poland). He is also reviewer As part of the Erasmus program, he has delivered lectures at universities in Tokyo, Gran Canaria, Oslo, Bergen, Reykjavik, Sibenik, and Helsinki. He is an active member of IEEE and IEEE Young Professionals, contributing to the advancement of engineering and technology through both academic and industrial channels.

She is a Clarivate Highly Cited Researcher and a Fellow of the IEEE, the Engineering Institute of Canada, the Canadian Academy of Engineering, and the Royal Society of Canada. She is also an elected member of Academia Europaea and the European Academy of Sciences and Arts.

Invited Speaker VII

Saturday, March 7 • 16:45-17:05 (GMT+11, Sydney Time)
Meeting Room: Hyde Room - Level 5

Prof. Kazuyuki Shimizu

Meiji University, Japan

Speech Title: Designing Time: ESG Investment, Blockchain, and the Convergence of Mobility and Energy in the Digital Era

Abstract: This study aims to clarify how technological innovation, ESG investment, and digital governance are reconstructing the foundations of capitalism through the convergence of time, energy, and information. Building on George Gilder's concept that "money is tokenized time," it redefines the traditional notion of "time is money" into "money (tokens) is time," interpreting capital as stored and exchangeable time and presenting a new relationship between productivity, sustainability, and ethical value creation. Theoretically, it adopts the perspective of Actor–Network Theory (ANT) to analyze interrelationships and empirically examines the interactions among ESG investment, Industrie 4.0, and blockchain technology through statistical analysis and case studies.

A comparative regional analysis revealed that ESG investment, supported by strong policy frameworks and infrastructure, has accelerated the spread of electric vehicles (EVs) in Europe and the United States, while Japan, Canada, and Australia exhibit weaker linkages due to fragmented capital flows and delayed institutional adaptation. Furthermore, case studies such as TRENDE's blockchain-based P2P electricity trading and the BIS "Project Genesis 2.0" demonstrate how blockchain and IoT technologies enhance the transparency of carbon-credit systems and decentralized energy markets.

These findings indicate the emergence of an "information-value economy," in which environmental data, renewable energy, and financial instruments are tokenized. This model of decentralized network capitalism transforms sustainability from a moral ideal into a data-driven architecture of value co-creation, presenting a new paradigm that integrally reshapes technological innovation, financial systems, and social structures.

Biography: Prof. Dr. Kazuyuki Shimizu is a Professor at the Faculty of Business Administration, Meiji University, Japan. His research focuses on corporate governance, stakeholder theory, and digital transformation, with a particular interest in blockchain technologies and ESG investment strategies. He has been a visiting scholar at the University of Limerick, Ireland, and regularly presents his work at international conferences, including ETHICOMP and other conferences.

Prof. Shimizu's recent research explores the impact of digital innovation on corporate governance and sustainability, and he has published extensively in both Japanese and international academic journals. His practical experience

includes working in institutional investor relations at German investment banking and Barclays Capital in Tokyo, providing him with a unique blend of academic and industry insights.

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Invited Speaker VIII

Sunday, March 8 • 9:30-9:55 (GMT+11, Sydney Time)
ZOOM ID: 848 8907 3693   Password: 827782
ZOOM Link: https://us02web.zoom.us/j/84889073693

Assoc. Prof. Herminiño C. Lagunzad

National University, Philippines

Speech Title: Machine Learning Model for Forecasting Material Costs in School Construction Projects

Abstract: This study develops and evaluates a transparent baseline for early construction cost estimation using Linear Regression on a dataset of 178 projects. To address right-skew and heteroskedasticity in costs, the model is trained on log1p(Total_Project_Cost) and coupled with a reproducible pipeline: unit/currency harmonization, inflation adjustment to a base year, one-hot encoding for categorical attributes (e.g., school level, structural/ project type, location), and lightweight feature engineering (e.g., area-per-classroom, footprint = area/floors, and floors×area). Performance is assessed using leakage-safe 5-fold out-of-fold (OOF) predictions, yielding an MAE of ₱21.84M, an RMSE of ₱33.09M, and an R^2 of 0.915, representing a substantial improvement over naïve OLS on raw cost ($R^2 = 0.189$). Diagnostics indicate that project scale, particularly Total_Floor_Area_m2, is the dominant driver; additional variables, such as the number of floors/classrooms, mainly capture density effects once area is controlled. VIF ≈ 1 across features indicates negligible multicollinearity, supporting the stability and interpretability of the coefficients. While typical OOF errors fall in the ±5–15% band, occasional outliers (~20–25%) suggest unmodeled premiums/discounts (e.g., site constraints, procurement route, award-month price dynamics). Overall, the pipeline provides an auditable, deployment-ready baseline suitable for conceptual budgeting, with clear upgrade paths. It adds duration procurement type, month-level indices, and site-complexity flags to further tighten tail errors without sacrificing interpretability.

Biography: Herminiño C. Lagunzad is a seasoned IT educator and researcher with a strong focus on intelligent systems, cybersecurity, and data-driven technologies. His research interests include IoT applications, data mining and analytics, information security, machine learning, and medical informatics. He has presented and published papers in multiple IEEE-indexed conferences, with notable works on DNS sinkholing, AES-based encryption using Raspberry Pi, and wearable technologies for rehabilitation.
He has served as Session Chair and Technical Committee Member for international conferences such as ICINT, PRAI, ICCAE, and ICCCS, demonstrating his active involvement in the global research community. His technical skillset includes programming (Java, Python, TensorFlow), database management (MS SQL, MySQL), and network technologies (TCP/IP, DHCP, routers, switches).

With nearly a decade of teaching experience in various universities, Mr. Lagunzad has delivered courses in system architecture, software engineering, web technologies, and data management. He remains dedicated to advancing innovation in the IT field through research, instruction, and collaborative engagement.

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Invited Speaker IX

Sunday, March 8 • 14:00-14:25 (GMT+11, Sydney Time)
ZOOM ID: 848 8907 3693   Password: 827782
ZOOM Link: https://us02web.zoom.us/j/84889073693

Asst. Prof. John Ivan C. Maurat

National University, Philippines

Speech Title: Predicting At-Risk Students Using Machine Learning Models on the OULAD Dataset: A Comparative Analysis

Abstract: The Open University Learning Analytics Dataset is used in this study to evaluate the application of machine learning approaches to predict at-risk pupils. Traditional class record systems primarily document attendance and grades, but they lack the analytical capabilities to provide early warning signals. To close this gap, this study creates a data-driven predictive paradigm that incorporates behavioral, evaluation, demographic, and social interaction characteristics. Four supervised models (Logistic Regression, Random Forest, Neural Network, and XGBoost) were trained and tested using accuracy, F1-score, confusion matrices, and ROC-AUC metrics. The results demonstrate that XGBoost outperformed the other algorithms in terms of capturing nonlinear interactions in student behavior and learning patterns. Explainable AI approaches, notably SHAP values, were utilized to enhance model transparency, revealing that total clicks, assessment scores, and forum participation are the most reliable predictors of academic success. The study reveals how predictive analytics can help identify students who are likely to fail or withdraw, allowing for proactive academic assistance. The findings highlight the importance of integrating learning analytics, machine learning, and interpretable models into institutional early warning systems to enhance student retention and informed educational decision-making. Future research should focus on developing real-time prediction pipelines, incorporating additional behavioral indicators, and implementing adaptive intervention mechanisms.

Biography: Asst. Prof. John Ivan C. Maurat is an IT Educator with over 7 years of experience, specializing in teaching IT professional and core courses. He holds a Master of Information Technology and a Bachelor of Science in Information Technology and has completed the academic requirements for the Doctorate in Information Technology with a specialization in Social Computing at National University – Manila. He is also a Greenbelt Lean Six Sigma Certified professional and Microsoft Innovative Educator Expert.

He is deeply committed to academic excellence and is passionate about integrating research, teaching, and technology to create meaningful and impactful learning experiences. His research contributions span across various domains, including AI-assisted learning in programming, educational game development, smart systems, sentiment analysis, augmented and virtual learning environments, social network analysis, and digital transformation in education.

He is currently affiliated with National University – Manila as an Assistant Professor 4 and has authored and co-authored numerous research papers that reflect his dedication to innovation and inclusive education in the digital age.

Invited Speaker X

Sunday, March 8 • 14:25-14:50 (GMT+11, Sydney Time)
ZOOM ID: 848 8907 3693　Password: 827782
ZOOM Link: https://us02web.zoom.us/j/84889073693

Assoc. Prof. Wei-Min Huang

National Chung Cheng University, Taiwan

Speech Title: Determinants of Family Members' Adoption of Long-Term Care Mobile Applications: An Integration of TAM and ISSM

Abstract: As Taiwan enters a super-aged society, mobile applications play a vital role in long-term care communication. This study integrates the Technology Acceptance Model (TAM) and Information System Success Model (ISSM) to examine family members' adoption intentions. An online survey of 164 respondents analyzed with SEM shows that service quality and information quality enhance perceived usefulness, while system and service quality improve ease of use. Ease of use and convenience significantly drive adoption, whereas perceived usefulness and privacy risk are not significant. Results highlight convenience and service quality as key factors, guiding app design to improve usability and family–institution interaction.

Biography: Dr Wayne W.M. Huang, MB/MSc, LLM, MPH, DrPH, PhD in Law

Born in 1964 in Kaohsiung City, Taiwan

Professor, Graduate Institute of Healthcare Information Management, College of Management, National Chung Cheng University, Taiwan (since 2008)

Director of Health Research Center, Taiwan Law Foundation, Taiwan (since 2019)

Senior Researcher & visiting Fellow of Fulbright Scholarship in Public Health /Medicine, USA (2012~2013)

MPH & DrPH, Tulane University School of Public Health & Tropical Medicine, USA (1993~1998)

PhD in Law (JD equivalent), College of Law, National Chung Cheng University, Taiwan (2009~2017)

MB/MSc, College of Medicine, National Taiwan University, Taiwan (1984~1991).

Invited Speaker XI

Sunday, March 8 • 14:50-15:15 (GMT+11, Sydney Time)
ZOOM ID: 848 8907 3693   Password: 827782
ZOOM Link: https://us02web.zoom.us/j/84889073693

Dr. J. JANET

Aarupadai Veedu Institute of Technology Chennai, India

Speech Title: Advanced Computational Science and Applications for E-Education: Scalable AI, Learning Analytics & Secure Platform

Abstract: TBA

Biography: Dr. J.Janet is a visionary leader with 29 years of experience in Engineering Education and Administration in various reputed Engineering Institutions across the country and presently Heading Aarupadai Veedu Institue of Technology as Principal, and also served as Pro Vice Chancellor in Sanjivani University located in Kopargon Maharasthra. In her present stint at Sanjivani university she formulated B.Tech Programmes in niche technologies and Management Programs. She was instrumental in signing MoU with Nassom and IBM powered Programmes for niche technologies. She was also invited by MKCL Maharasthra and Primus,Credenza Pune for Industry Academia Partnership in her campus. She is the architect of implementing Industry Powered Curriculum for UG and PG for making students Industry Ready in cutting edge technologies.

Agenda Overview

Day 1- March 06, 2026, Friday, GMT+11, Sydney Time

Onsite Sign-in		
Time	**Event**	**Venue**
13:00-17:00	**Onsite Sign-in**	**the lobby area of level 3**

Zoom Test (Online)

13:00-17:00	Session Chairs, Committee Members, Invited Speakers	
13:00-17:00	**Online Session 1: Application of Machine Learning and Intelligent Computing Models in Information Systems** Session Chair: Prof. Herminiño Lagunzad, National University, Philippines Invited Speaker VIII: Prof. Herminiño Lagunzad, National University, Philippines SN044, SN007, SN048, SN040, SN033, SN042, SN046, SN052	**ZOOM ID:** **848 8907 3693** **Password:** **827782** **ZOOM Link:** *https://us02web.zoom.us/j/84889073693*
13:00-17:00	**Online Session 2: Emerging Network Technologies and Information Security** Session Chair: Asst. Prof. John Ivan C. Maurat, National University, Philippines Invited Speaker IX: Asst. Prof. John Ivan C. Maurat, National University, Philippines Invited Speaker X: Assoc. Prof. Wei-Min Huang, Graduate Institute of Healthcare Information Management, National Chung Cheng University Minxiong Township, Chia-Yi County, Taiwan Invited Speaker XI: Dr. J. JANET, Aarupadai Veedu Institute of Technology Chennai, India SN050, SN005, SN019, SN054, SN053, SN049	

Online Test Tips:

✧ Please get your presentation file ready for the pretest.

✧ Please unmute audio and start video while your presentation.

✧ It's suggested to use headset with microphone or earphone with microphone.

Day 2- March 07, 2026
Saturday, GMT+11, Sydney Time

Opening Ceremony, Keynote Speeches
ZOOM ID: 848 8907 3693 Password: 827782
ZOOM Link: https://us02web.zoom.us/j/84889073693
Host: Prof. Wei Xiang, La Trobe University, Australia
Venue: Hyde Room - Level 5

09:00-09:05	**Welcome Speech** Prof. Wei Xiang, La Trobe University, Australia
09:05-09:50	**Keynote Speech I** Prof. Octavia A. Dobre *Fellow of the IEEE, Member of Academia Europaea* Memorial University, Canada ***Speech Title: Bridging Wireless Communications and Quantum Computing***
9:50-10:35	**Keynote Speech II** Prof. Xinghuo Yu *Fellow of the Australian Academy of Science, Honorary Fellow of Engineers Australia, Fellow of the IEEE* RMIT University, Melbourne, Australia ***Speech Title: Synergetic Interplay between Artificial Intelligence and Complex Networks***
10:35-11:05	**Break Time & Group Photo**
11:05-11:50	**Keynote Speech III** Prof. Yonghui Li *Fellow of the IEEE* University of Sydney, Australia ***Speech Title: Beyond 5G towards a Super-connected World***
11:50-13:30	**Lunch Time** (Hyde Room - Level 5)

Onsite Sessions (Venue: Hyde Room - Level 5)	
13:30-15:15	**Onsite Session 1 –Innovative Application of Artificial Intelligence in Intelligent Information Systems** Session Chair: TBA Invited Speaker I: Assoc. Prof. Miloslava (Mia) Plachkinova, Kennesaw State University, USA Invited Speaker II: Asst. Prof. Basheer M. Al-Ghazali, King Fahd University of Petroleum & Minerals, Saudi Arabia Invited Speaker III: Prof. Hans-Henrik Hvolby, act2learn, Denmark SN010, SN025, SN047
15:15-15:30	**Coffee Break**
15:30-18:05	**Onsite Session 2 –Wireless Communication and Network Security** Session Chair: Dr. Jacek Nazdrowicz, Fujitsu Global Delivery Center, IOWN GF, Poland Invited Speaker IV: Prof. Yutaka Ishibashi, Aichi Sangyo University, Japan Invited Speaker V: Asst. Prof. Mohammed Alaa Ala'anzy, SDU University, Kazakhstan Invited Speaker VI: Dr. Jacek Nazdrowicz, Fujitsu Global Delivery Center, IOWN GF, Poland Invited Speaker VII: Prof. Kazuyuki Shimizu, Meiji University, Japan SN016, SN037, SN041, SN014, SN034
18:20-20:00	**Dinner** **Location : The Grounds of the City**

Day 3- March 8, 2025
Sunday, GMT+11, Sydney Time

Online Sessions **ZOOM ID: 848 8907 3693 Password: 827782** **ZOOM Link: https://us02web.zoom.us/j/84889073693**	
9:30—11:55	**Online Session 1: Application of Machine Learning and Intelligent Computing Models in Information Systems** Session Chair: Prof. Herminiño Lagunzad, National University, Philippines Invited Speaker VIII: Prof. Herminiño Lagunzad, National University, Philippines SN044, SN007, SN048, SN040, SN033, SN042, SN046, SN052
11:55-14:00	**Lunch Time**
14:00-16:30	**Online Session 2: Emerging Network Technologies and Information Security** Session Chair: Asst. Prof. John Ivan C. Maurat, National University, Philippines Invited Speaker IX: Asst. Prof. John Ivan C. Maurat, National University, Philippines Invited Speaker X: Assoc. Prof. Wei-Min Huang, Graduate Institute of Healthcare Information Management, National Chung Cheng University Minxiong Township, Chia-Yi County, Taiwan Invited Speaker XI: Dr. J. JANET, Aarupadai Veedu Institute of Technology Chennai, India SN050, SN005, SN019, SN054, SN053, SN049

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ONSITE SESSIONS

Onsite Session 1: Innovative Application of Artificial Intelligence in Intelligent Information Systems

Time: 13:30-15:15 (GMT+11, Sydney Time), Saturday, March 7
Venue: Hyde Room - Level 5
Chaired by: TBA

Invited Speech I **13:30-13:50**	**Title:** AI and the Future of Critical Infrastructure **Author:** Mia Plachkinova **Invited Speaker:** Mia Plachkinova, Kennesaw State University, USA **Abstract:** Critical infrastructure systems underpin modern society, yet they are increasingly exposed to complex, fast-moving threats driven by digital transformation, geopolitical uncertainty, and climate-related disruptions. Artificial intelligence is rapidly becoming a defining force in how these systems are designed, operated, attacked, and defended. This talk examines the dual role of AI as both a source of new risk and a powerful tool for strengthening critical infrastructure resilience across sectors such as energy, transportation, healthcare, finance, and communications. The presentation explores how AI is reshaping threat detection, incident response, and system optimization, while also introducing new vulnerabilities related to automation, model dependence, data integrity, and adversarial manipulation. Drawing on real-world infrastructure environments, the talk highlights how AI-enabled tools can improve situational awareness, anticipate cascading failures, and support human decision-making under uncertainty, provided they are deployed with appropriate governance and oversight. The talk also addresses policy and operational challenges at the intersection of technology, regulation, and public trust, including accountability in automated decision-making, transparency in AI-driven control systems, and the need for human-in-the-loop safeguards. It concludes by outlining a practical framework for integrating AI into critical infrastructure security and resilience strategies in a way that balances innovation with safety, reliability, and societal impact. This perspective is intended to support infrastructure operators, policymakers, and researchers seeking to prepare for an AI-augmented future while managing systemic risk.
Invited Speech II **13:50-14:10**	**Title:** Automation in Tourism: The Role of Robotics and AI in Redefining Service Delivery **Author:** Basheer M. Al-Ghazali **Invited Speaker:** Basheer M. Al-Ghazali, King Fahd University of Petroleum & Minerals, Saudi Arabia **Abstract:** The tourism and hospitality sector is undergoing a significant transformation driven by the growing integration of robotics and automation technologies across various service domains. This paper provides a comprehensive systematic review of the global landscape—analyzing current trends, implementation challenges, and emerging opportunities related to the use of robotics and automation in tourism service environments. Based on an extensive review of recent scholarly research, industry reports, and real-world implementations, the study explores the

application of technologies such as service robots, smart kiosks, autonomous delivery tools, and AI-enabled customer interaction platforms across diverse tourism contexts, including hotels, airports, restaurants, and tourist attractions. The analysis reveals that robotics and automation have the potential to improve operational efficiency, enhance service quality, offer personalized guest experiences, and mitigate labor shortages—especially those intensified by global disruptions like the COVID-19 pandemic. Nevertheless, the review also highlights significant obstacles to broader adoption, including high initial costs, inadequate infrastructure, employee resistance, and concerns related to the authenticity of service in human–robot interactions. Furthermore, the paper explores new frontiers in the development of smart tourism ecosystems, collaborative human–robot service models, edge-based AI applications, and adaptive service systems that respond to contextual variables. The review concludes by outlining a strategic roadmap for future research and industry practice, aimed at promoting ethical, human-centered, and sustainable automation in tourism. These insights serve as a valuable resource for scholars, technology providers, tourism managers, and policymakers seeking to navigate and shape the evolving role of automation in service delivery.

Invited Speech III

14:10-14:30

Title: Dynamic Storage Location Assignment in 3PL Warehouses: Empirical Challenges from Retail Operations and AI Perspectives

Authors: Hans-Henrik Hvolby, Kenn Steger-Jensen, Sven Vestergaard, Claudine Soosay, Jan Frick, Carsten Svensson
Invited Speaker: Hans-Henrik Hvolby, act2learn, UCN, Denmark

Abstract: Warehousing is pivotal in modern supply chains, buffering variability, consolidating goods, and enabling value-added services like returns handling. In third-party logistics (3PL) contexts, short contract horizons and multi-client diversity amplify challenges in storage location assignment (SLAP), particularly under dynamic demand. This paper reviews SLAP policies (e.g., class-based storage) and 3PL-specific hurdles like information silos and limited automation. An empirical case from a European retail 3PL reveals around 50% misalignment in SKU classifications, with opportunities for 5% travel time reductions via optimised forward picking. Findings underscore the need for dynamic, forecast-integrated processes and lessons for sustainable 3PL operations

SN010

14:30-14:45

Title: PM2.5 Forecasting in Almaty: A Benchmarking of Advanced Deep Learning and Hybrid Models
Authors: Khaled Mohamad, Nuray Dauletkhan, Amani Ibraheem, Mohammed Alaa Ala'Anzy
Presenter: Khaled Mohamad, Kazakh-British Technical University, Kazakhstan

Abstract: Accurate short-term forecasting of fine particulate matter ($PM_{2.5}$) is critical for public health protection in Almaty, Kazakhstan, where complex topography and meteorological conditions intensify pollution episodes. This study benchmarks statistical, tree-based, deep learning, and hybrid models for daily $PM_{2.5}$ prediction using 1,558 observations collected between February 2020 and May 2024. The evaluated methods include ARIMA, LightGBM with lag features, ARIMA+XGBoost, Wavelet+XGBoost, CNN–LSTM with wavelet smoothing, CNN–LSTM–Transformer, GRU, and a Seq2Seq GRU with attention. Missing values were handled using Multiple Imputation by Chained Equations (MICE), and model performance was assessed using MAE, RMSE, and R^2 under a chronological train–validation split. GRU-based

architectures achieved the highest accuracy (GRU: R^2 = 0.8896, RMSE = 0.2768; Seq2Seq+Attention: R^2 = 0.8889, RMSE = 0.2776), while wavelet preprocessing enhanced stability in convolutional and boosting models. The results highlight trade-offs between predictive accuracy, interpretability, and computational cost, and suggest future directions including multi-day forecasting, spatiotemporal extensions, explainability via SHAP and attention visualization, and real-time deployment

SN025

14:45-15:00

Title: AI Agents as the Next Business Workforce: From Automation to Autonomy
Author: Haithm Abdullah
Presenter: Haithm Abdullah, Amity University Haryana, India

Abstract: This study delves the loan approval process. It also introduced the AI agents in the decision making process. The novel model of Adaptive Intelligent Decision-Driven Autonomous Multi-Agent System (AID-AMAS) is proposed to achieve the shared goals. Generally, the AID-AMAS for the loan approval utilizes the network of specialized, and the autonomous AI agents to automate and manage the complete lending process. Rather than relying solely on the single, and the linear program, this architecture of the multi-agent permits the several agents in handling the unique tasks collaboratively and simultaneously, and it enables the rapid, accurate, and the adaptable decisions. To this, the study used the Frequentist, LSTM, and Petri Net Models for the simulation or the classification. This proposed model has been evaluated using the performance metrics such as, NGD, AEDD, REDD, CEDD, CTDD and achieved the better performance compared with the other exiting models. Finally, this study gives the better understanding about the AI agents in the loan approval process.

SN047

15:00-15:15

Title: A Closed-Form Finite-Population Loss Model for Multi-User Network Planning, with Application to HF ALE Systems
Authors: Paul Hirschausen, Brian Ng and Jack Sudarev
Presenter: Paul Hirschausen, The University of Adelaide, Australia

Abstract: High-frequency (HF) communication systems employ the Automatic Link Establishment (ALE) protocol to identify viable propagation paths between geographically separated nodes. Previous studies have analyzed the behavior of the secondgeneration (2G) ALE protocol using a node-centric Markov model for finite-population networks. These models assumed nodes acted exclusively as call generators or call receivers. The present work generalizes this approach by enabling nodes to function in both roles. This generalization is achieved by deriving a closed-form finite-population extension of the classical Engset loss formula, without numerical iteration, allowing the analysis of link establishment across multiple nodes. To validate the proposed closed-form solution, results are compared against a Monte Carlo simulator of an asynchronous ALE network. The strong agreement observed between the two confirms the firstorder estimation capability under the stated assumptions of the approach. The closed-form solution is further applied to evaluate qualityof- service (QoS) levels, demonstrating practical value for HF network planning and performance assessment.

Onsite Session 2: Wireless Communication and Network Security

Time: 15:30-18:05 (GMT+11, Sydney Time), Saturday, March 7
Venue: Hyde Room - Level 5
Chaired by: Dr. Jacek Nazdrowicz, Fujitsu Global Delivery Center, IOWN GF, Poland

Invited Speech IV **15:30-15:50**	**Title:** Remote Robot Operation Using Visual-Haptic Fusion: Influence of Object Size **Authors:** Yutaka Ishibashi, Pingguo Huang, Hitoshi Ohnishi, Konstantinos E. Psannis **Invited Speaker:** Yutaka Ishibashi, Aichi Sangyo University, Japan **Abstract:** Remote robot operation systems with visual-haptic fusion enable cooperative manipulation by integrating visual information with force feedback. This paper investigates the influence of object size on cooperative manipulation using a simulation-based remote robot operation system with real haptic devices. The proposed system consists of two network-connected subsystems, each equipped with a haptic device, allowing cooperative manipulation of a virtual object using two robot hands. In the investigation, a single user operated two haptic devices simultaneously, while the object weight was kept constant and only its size was varied. The results show that object size significantly affects force characteristics and task performance, highlighting the importance of visual factors in visual-haptic remote robot operation.
Invited Speech V **15:50-16:10**	**Title:** In-Place Sorting Algorithms: A Comparative Analysis **Authors:** Mohammed Alaa Fadhil Al hadeethi, Amani Ibraheem, Khaled Mohamad **Invited Speaker:** Mohammed Alaa Ala'anzy, SDU University, Kazakhstan **Abstract:** In-place sorting algorithms are essential for optimizing performance in environments with limited memory resources. This study presents a detailed comparative analysis of thirteen in-place sorting algorithms, including widely used techniques such as quick sort and heap sort, as well as less conventional methods like pancake sort, Gnome sort, and Smooth sort. A dual-method approach is employed: theoretical evaluation assesses time and space complexity, stability, and algorithmic adaptability, while empirical experiments benchmark performance across varying input sizes, ranging from 10 to 100,000 elements, using uniformly distributed data. All algorithms were implemented in Java and tested under consistent conditions, with execution time measured using nanosecond precision. Results reveal that no single algorithm performs best across all scenarios. For example, quick sort and heap sort excel in large datasets, while simpler algorithms like bubble sort and insertion sort are more efficient for small or nearly sorted inputs. This research offers practical insights into the strengths and trade-offs of each algorithm, guiding developers and researchers in choosing the most suitable in-place sorting strategy based on data characteristics and resource constraints.
Invited Speech VI **16:10-16:30**	**Title:** IOWN: A Revolution in Future Communication – From Optical Fiber to Intelligent Networks **Author:** Jacek Nazdrowicz **Invited Speaker:** Jacek Nazdrowicz, Fujitsu Global Delivery Center, IOWN GF, Poland **Abstract:** The Innovative Optical and Wireless Network (IOWN) initiative represents a transformative leap in the evolution of digital communication. As the demands on global networks continue to grow—driven by artificial intelligence, immersive media, autonomous systems, and the Internet of Things—traditional architectures are reaching

their limits in terms of latency, bandwidth, and energy efficiency. IOWN addresses these challenges by introducing a new paradigm built on ultra-high-speed, low-latency optical transmission, advanced wireless technologies, and intelligent data processing frameworks. This presentation will explore the foundational components of IOWN, including the All-Photonics Network (APN), which replaces conventional electronic transmission with photonic communication to dramatically reduce latency and power consumption. We will also examine the role of Digital Twin Computing and Cognitive Foundation technologies in enabling real-time decision-making, predictive analytics, and seamless integration between cyber and physical systems. Real-world applications will be highlighted across key sectors such as industry (smart factories and predictive maintenance), healthcare (remote diagnostics and robotic surgery), transportation (autonomous mobility and traffic optimization), and education (immersive learning environments). These examples will illustrate how IOWN supports the development of inclusive, resilient, and sustainable digital societies. Finally, the talk will address the broader implications of IOWN for global infrastructure, including its alignment with environmental goals, its potential to accelerate 6G deployment, and its role in shaping a human-centric network era. Attendees will gain insight into how IOWN is not only redefining connectivity but also laying the groundwork for a smarter, more responsive, and ethically grounded digital future.

Invited Speech VII

16:30-16:50

Title: Designing Time: ESG Investment, Blockchain, and the Convergence of Mobility and Energy in the Digital Era
Author: Kazuyuki Shimizu
Invited Speaker: Kazuyuki Shimizu, Meiji University, Japan

Abstract: This study aims to clarify how technological innovation, ESG investment, and digital governance are reconstructing the foundations of capitalism through the convergence of time, energy, and information. Building on George Gilder's concept that "money is tokenized time," it redefines the traditional notion of "time is money" into "money (tokens) is time," interpreting capital as stored and exchangeable time and presenting a new relationship between productivity, sustainability, and ethical value creation. Theoretically, it adopts the perspective of Actor–Network Theory (ANT) to analyze interrelationships and empirically examines the interactions among ESG investment, Industrie 4.0, and blockchain technology through statistical analysis and case studies.

A comparative regional analysis revealed that ESG investment, supported by strong policy frameworks and infrastructure, has accelerated the spread of electric vehicles (EVs) in Europe and the United States, while Japan, Canada, and Australia exhibit weaker linkages due to fragmented capital flows and delayed institutional adaptation. Furthermore, case studies such as TRENDE's blockchain-based P2P electricity trading and the BIS "Project Genesis 2.0" demonstrate how blockchain and IoT technologies enhance the transparency of carbon-credit systems and decentralized energy markets.

These findings indicate the emergence of an "information-value economy," in which environmental data, renewable energy, and financial instruments are tokenized. This model of decentralized network capitalism transforms sustainability from a moral ideal into a data-driven architecture of value co-creation, presenting a new paradigm that integrally reshapes technological innovation, financial systems, and social structures.

SN016 16:50-17:05	**Title:** Improving BGP-iSec against attacks and accidents **Authors:** Keishi Hashiba, Shingo Okamura **Presenter:** Keishi Hashiba, The University of Osaka, Japan **Abstract:** In recent years, BGP-iSec, a security mechanism as an extension of BGP security utilizing RPKI, has been proposed. This protocol is designed to prevent route hijacks and route leaks, which are difficult to prevent only with ROA/ROV. However, even with BGP-iSec, there are still attack and accidents that are difficult to prevent. In this study, we identify these issues such that BGP-iSec cannot prevent. We also present an improvement proposal that take into account existing issues, and discuss its effectiveness.
SN037 17:05-17:20	**Title:** Trust for Thrust **Authors:** Leonardus J.A. Jansen, Thomas Strang **Presenter:** Leonardus J.A. Jansen, German Aerospace Center (DLR), Germany **Abstract:** Trust is a fundamental concept across various domains, yet it has often been defined as an absolute value in binary terms: either an entity is trusted, or it is not. However, this simplicity neglects the complex subtleties that come with trust relations. We provide a new quantitative definition of amount of trust and apply this to different Public Key Infrastructures and trust models. These considerations are then applied to establishing secure connections in the context of aircraft-to-aircraft communication in civil aviation, showcasing its practical relevance in real-world scenarios.
SN041 17:20-17:35	**Title:** Leveraging GPT for Tail Risk Identification in Operational Risk Management **Authors:** Carsten Svensson, Hans Henrik Hvolby, Kenn Steger Jensen, Sven Vestergaard, Tingyun Chen, Marwa El Hajj **Presenter:** Mohamad Jezzini, Third Party Risk Officer, International Monetary Fund **Abstract:** Generative AI, such as GPT, introduces a transformative capability within Risk and Control Self-Assessments (RCSA) by advancing risk identification across the full spectrum of exposures, including latent and emerging risks. Through the synthesis of extensive internal documentation, institutional knowledge, and external data sources, it enables structured and efficient assessments that significantly reduce time and resource requirements. Critically, this approach strengthens the identification of tail risks, low-probability, high-impact events, thereby enhancing organizational resilience and supporting proactive risk management strategies. By integrating AI-driven insights into RCSA frameworks, enterprises can move beyond traditional methodologies toward a more structured, dynamic, data-driven approach to risk governance.
SN014 17:35-17:50	**Title:** Localization of Wireless Sensor Networks Using Deep Learning **Author:** Saroja Kanchi **Presenter:** Saroja Kanchi, Kettering University, United States of America **Abstract:** In this paper, we present a localization algorithm for localizing nodes of wireless sensor networks by training a Graph Convolution Network. The locations of the anchor nodes of the wireless sensor network are used for training the Graph Convolution Network and locations of all other nodes are determined by the trained Graph Convolution Network model. The node features include identity of the node and identity of nodes within sensor radius of the node. We test the model on wireless sensor networks of various node density, sensor radii and varying number of anchors, and, we find that model proves to be very effective in localizing the nodes. The model demonstrates high performance in terms of low localization error.

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SN034 **17:50-18:05**	**Title:** Comparison Of Fast Computing Algorithms **Authors:** Babacar Isaac Diop, Amadou Dahirou Gueye, Alassane Isaac Diop **Presenter:** Babacar Isaac Diop, Alioune Diop, University, Sénégal **Abstract:** Machines slow down when performing complex and lengthy calculations. The solution has been to design countless algorithms and increasingly powerful machines. Following this approach, we propose to compare a prototype fast calculation algorithm with those of the Fast Inverse Square Root and Square and Multiply algorithms. These results will be useful for future users in making informed choices.

Sydney, Australia   March 6-8, 2026

ONLINE SESSIONS

Online Session 1: Application of Machine Learning and Intelligent Computing Models in Information Systems

Time: 9:30-11:55 (GMT+11, Sydney Time), Sunday, March 8
Zoom ID: 848 8907 3693
Password: 827782
https://us02web.zoom.us/j/84889073693
Chaired by: Prof. Herminiño Lagunzad, National University, Philippines

Invited Speech VIII **9:30-9:55**	**Title:** Machine Learning Model for Forecasting Material Costs in School Construction Projects **Authors:** Warren Panizales, Herminiño Lagunzad, Napoleon Solo Dela Cruz, Carl Edgar Ambray **Invited Speaker:** Herminiño Lagunzad, National University, Philippines **Abstract:** This study develops and evaluates a transparent baseline for early construction cost estimation using Linear Regression on a dataset of 178 projects. To address right-skew and heteroskedasticity in costs, the model is trained on log1p(Total_Project_Cost) and coupled with a reproducible pipeline: unit/currency harmonization, inflation adjustment to a base year, one-hot encoding for categorical attributes (e.g., school level, structural/ project type, location), and lightweight feature engineering (e.g., area-per-classroom, footprint = area/floors, and floors×area). Performance is assessed using leakage-safe 5-fold out-of-fold (OOF) predictions, yielding an MAE of ₱21.84M, an RMSE of ₱33.09M, and an R^2 of 0.915, representing a substantial improvement over naïve OLS on raw cost (R^2 = 0.189). Diagnostics indicate that project scale, particularly Total_Floor_Area_m2, is the dominant driver; additional variables, such as the number of floors/classrooms, mainly capture density effects once area is controlled. VIF $\approx$ 1 across features indicates negligible multicollinearity, supporting the stability and interpretability of the coefficients. While typical OOF errors fall in the $\pm 5 - 15\%$ band, occasional outliers (~$20 - 25\%$) suggest unmodeled premiums/discounts (e.g., site constraints, procurement route, award-month price dynamics). Overall, the pipeline provides an auditable, deployment-ready baseline suitable for conceptual budgeting, with clear upgrade paths. It adds duration procurement type, month-level indices, and site-complexity flags to further tighten tail errors without sacrificing interpretability.
SN044 **9:55-10:10**	**Title:** INTENTION TO CONTINUE USING INFORMATION TECHNOLOGY IN ACCOUNTING INFORMATION SYSTEMS – THE MEDIATING ROLE OF INFORMATION TECHNOLOGY MINDFULNESS **Authors:** Thuan Luong Duc, Huong Truong Thi Thu **Presenter:** Thuan Luong Duc, University of Economics Ho Chi Minh City, Vietnam **Abstract:** The study applies the Expectation Confirmation Model (ECM) to investigate the impact of key factors on the intention to continue using the Information Technology (IT) of accountants and users of Accounting Information System (AIS) at public educational institutions in Vietnam. The research employs a quantitative method, surveying 171 participants. The Partial Least Squares Structural Equation Modeling (PLS-SEM) technique, utilizing SmartPLS 4.1 software, is employed to analyze the data. The research results clarify the relationships in the proposed model, where all

hypotheses are accepted. Notably, IT mindfulness has the strongest influence on the intention to continue using IT. The research results propose theoretical implications and practical management implications to enhance perceived usefulness and IT mindfulness in maintaining the use of IT at public educational institutions in Vietnam.

SN007
10:10-10:25

Title: From Crowds to Gridlock: A Joint Early-Warning Model Linking Mall Crowding to Corridor Congestion in Metro Manila
Author: Herminiño Lagunzad, Warren Panizales, Mikee Gonzaga, Romalyn Purificacion, Maribel Ruiz, Kris Garcia
Presenter: Warren Panizales, National University, Philippines

Abstract: Urban traffic congestion in rapidly urbanizing metropolitan areas is increasingly driven by short-horizon demand surges originating from major activity centers such as shopping malls, rather than by recurrent commuter flows alone. This study proposes the Joint Early-Warning Algorithm (JEWA), a real-time, multi-source modeling framework that links mall crowding dynamics to downstream corridor congestion in Metro Manila. JEWA integrates mall activity indicators (entries, exits, dwell time, and parking occupancy), traffic sensor data, weather conditions, and calendar effects into a unified pipeline that produces calibrated congestion risk probabilities and future speed predictions at 30 and 60-minute horizons using a two-headed gradient-boosting architecture. Empirical evaluation shows that JEWA consistently outperforms traffic-only and persistence baselines across all metrics. At the 30-minute horizon, JEWA achieves a PR-AUC of 0.62, Recall@τ of 0.87, and F1@τ of 0.68, while reducing prediction error to 3.2 kph MAE and 6.8 kph P10-MAE. At the 60-minute horizon, JEWA maintains superior performance with a PR-AUC of 0.54, Recall@τ of 0.83, and F1@τ of 0.61, alongside the lowest Brier score (0.126) and MAE (3.9 kph) among all models. In contrast, traffic-only and persistence models exhibit lower discrimination, weaker calibration, and substantially higher errors, particularly under longer lead times. These results confirm that mall crowding serves as a strong leading indicator of near-term roadway congestion and significantly extends the effective early-warning window beyond what traffic-only models can provide. The proposed JEWA framework offers a scalable, operationally robust approach to anticipatory congestion management, enabling proactive interventions in dense urban environments such as Metro Manila.

SN048
10:25-10:40

Title: Min-Tx-Power Joint Optimization for RSMA-UAV Multicast
Authors: Dongzhi Liu, Dongyu Wang
Presenter: Dongzhi Liu, School of Artificial Intelligence Beijing University of Posts and Telecommunications Beijing, China

Abstract: Rate-Splitting Multiple Access (RSMA) splits each user's message into a common stream and a private stream, employing successive interference cancellation (SIC) for efficient signal decoding. Unlike conventional non-orthogonal multiple access (NOMA), RSMA eliminates idle slots and relaxes strict power allocation constraints. In post-disaster scenarios, battery-powered unmanned aerial vehicles (UAVs) must serve numerous users with limited energy. This scheme jointly optimizes 3D UAV deployment and RSMA precoding to minimize transmit power while guaranteeing each user's target data rate. An alternating optimization framework is proposed: UAV positioning is solved via an enhanced particle swarm optimization (PSO) algorithm, while precoder design is obtained through successive convex approximation (SCA) with CVX. Simulation results demonstrate that the proposed RSMA scheme achieves a reduction in UAV transmit power compared to baseline RSMA, NOMA, and orthogonal multiple access (OMA) schemes.

SN040 10:40-10:55	**Title:** Predicting First-Choice Academic Program of NU Fairview Applicants Using Random Forest Classification on Admissions Data **Authors:** Corazon Rebong, Herminiño Lagunzad, Warren Panizales, Patricia Kerstin Zamora **Presenter:** Corazon Rebong, National University, Philippines **Abstract:** The increasing availability of admissions data in higher education institutions presents opportunities for applying predictive analytics to support data-driven enrollment planning and academic decision-making. One critical challenge faced by universities is accurately anticipating applicants' first-choice academic program, as program selection is influenced by a complex interaction of demographic, academic, and socio-economic factors. This study proposes a machine learning–based approach for predicting the first-choice academic program of applicants to NU Fairview using a Random Forest classification model trained on cleaned admissions data. The dataset includes applicant demographic attributes, senior high school background, academic track, school type, and socio-economic indicators, with the declared first-choice program serving as the target variable. Model performance was evaluated using precision, recall, F1-score, confusion matrices, and precision–recall analysis to account for class imbalance across programs. Experimental results demonstrate consistently strong and balanced performance across major academic programs, with high F1-scores and average precision values, particularly for programs with more distinct academic pathways. Misclassifications were found to be largely intra-cluster and semantically meaningful, occurring primarily among academically related programs. The findings confirm that the proposed Random Forest model is robust, interpretable, and suitable as a decision-support tool for admissions analytics, program demand forecasting, and data-driven academic advising.
SN033 10:55-11:10	**Title:** Energy-Efficient and Resilient (DCR) PIC-like Receiver for Joint MAI/Crosstalk Mitigation in 2D-OCDMA/DWDM-PON Systems **Author:** OCTAVE RINGAR **Presenter:** OCTAVE RINGAR, UNIVERSITY OF MOUNDOU MOUNDOU, CHAD **Abstract:** This paper proposes an iterative detection technique that provides high energy efficiency and low complexity for DWDM-PON networks employing 2D-OCDMA systems. While employing an iterative detection scheme, this method combines both multi-pulse 2D-OOC codes with the Parallel Interference Cancellation (PIC) architecture, to simultaneously cancel two of the principal performance limiting factors faced by DWDM-PONs in dense optical access—crosstalk caused by narrow channels, and multi-user interference due to the heavy involvement of multiple users. The technique integrates intrinsic fault tolerance and is inspired by contemporary spectral/spatial OCDMA systems. By providing better bit-error-rate (BER) performance below 10^{-9} under high user loads, increased crosstalk tolerance, and lower power consumption under 100 mW, integrating Dynamic Channel Reconfiguration (DCR) for fault resilience, simulations demonstrate BER performance of 10^{-9} - 10^{-11} (vs 10^{-4} - 10^{-6} for SIC), power consumption < 100 mW (vs 140-170 mW for SIC), and 70% reduction in downtime compared to conventional architectures. The energy efficiency, resilience, and continuity of service are important aspects of Next-Generation optical access networks and as such the proposed architecture provides a scalable and fault-resilient solution to provide these characteristics.
	Title: AI-Enhanced Flood Hazard Identification Using Predictive Analytics for Philippine Communities

SN042 **11:10-11:25**	**Authors:** Warren Panizales, Herminiño Lagunzad, Corazon Rebong, Carolyn Samonteza, Arnel Balasta, Melvin Ferrer **Presenter:** Warren Panizales, National University, Philippines **Abstract:** Flooding is one of the most frequent and destructive natural hazards in the Philippines, causing extensive economic losses, infrastructure damage, and displacement of vulnerable communities each year. Conventional flood hazard mapping and early warning systems, while widely implemented, often face limitations in predictive accuracy, spatial coverage, and timeliness due to reliance on historical hydrological data and static models. In response, Artificial Intelligence (AI) and predictive analytics have emerged as promising tools to enhance flood hazard identification by processing large, heterogeneous datasets such as rainfall, river discharge, topography, land use, and satellite imagery. This research proposes an AI-enhanced flood hazard identification framework tailored to Philippine communities. The system integrates predictive models such as Long Short-Term Memory (LSTM), Convolutional Neural Networks (CNNs), and ensemble learning with geospatial data and local hydrological records. Data sources include PAGASA hydrometeorological reports, Project NOAH hazard maps, and real-time sensor networks deployed in flood-prone river basins. Preprocessing involves extraction and normalization to ensure accurate model training. Predictive outputs are visualized through dynamic hazard maps that update with real-time inputs, enabling more effective risk communication to local governments and residents. The expected contribution of this study is twofold: (1) advancing the application of AI-driven predictive analytics for localized flood hazard identification in the Philippines, and (2) supporting disaster risk reduction and climate resilience efforts by providing an adaptive, data-driven decision-support tool for communities and policymakers. This framework is envisioned to strengthen early warning capabilities, minimize flood-related damages, and improve preparedness in high-risk areas.
SN046 **11:25-11:40**	**Title:** Analyzing Student Retention in Educational Institutions Through Predictive Analytics Using Random Forest Classifier and Microsoft Power BI **Authors:** Arnel Balasta, Herminiño Lagunzad, Warren Panizales, Melvin Ferrer, Carolyn Samonteza, Crimgene Villanueva **Presenter:** Arnel Balasta, National University, Philippines **Abstract:** Student retention remains a critical concern for educational institutions, requiring data-driven approaches to identify at-risk students and support timely interventions. This study presents a predictive analytics framework for analyzing student retention by integrating machine learning and business intelligence tools. Student-level academic data, aggregated from multiple subject records, were preprocessed and used to train a Random Forest classifier to predict retention outcomes. The model demonstrated strong classification performance, achieving 83.80% accuracy, 85.29% precision, 97.89% recall, and an F1-score of 91.15%, indicating its effectiveness in identifying retained students. Although the ROC–AUC values (0.515) suggest limited discriminative power with a minimal feature set, cross-validation results confirmed model stability and generalizability. To enhance practical applicability, predictive outputs and descriptive analytics were integrated into Microsoft Power BI, enabling interactive visualization of retention factors, semester-based outcomes, year-level distributions, and retention rate trends. These dashboards provide actionable insights for academic administrators and decision-makers by transforming complex analytical results into management-ready decision support tools. Overall, the study demonstrates that combining ensemble machine learning techniques with business intelligence platforms can strengthen institutional retention strategies and support proactive student success initiatives. Future work may focus on incorporating additional behavioral and

	engagement-related features to improve predictive performance further.
SN052 **11:40-11:55**	**Title:** A Blockchain-Based Decentralized Security Framework for Wireless LAN Networks **Authors:** Saradha S, Bavithra R, Jeyavarshini S, Deva Sri M G **Presenter:** Saradha S, Anna University/Thiagarajar College of Engineering, India **Abstract:** Wireless local area networks (WLAN) are key elements of current digital communications systems. However, the centralized authentication server architecture makes WLANs susceptible to single points of failure, unauthorized access, and data tampering and this is a growing concern. This paper discusses a decentralized WLAN security framework which is based on blockchain technology and aims to increase the security, transparency and reliability of WLANs. The framework will use peer-to-peer (P2P) blockchain networks for authentication in which each device will act as a node in the distributed ledger. The proposed approach eliminates the need for a central authority, provides tamper-proof authentication data, and enhances both the robustness and scalability of the WLAN. The experimental data indicates that authentication delays in the proposed framework will be reduced by approximately 30%, and that the proposed framework is capable of extending protection against spoofing and man-in-the-middle attacks.

Online Session 2: Emerging Network Technologies and Information Security

Time: 14:00-16:30(GMT+11, Sydney Time), Sunday, March 8
Zoom ID: 848 8907 3693
Password: 827782
https://us02web.zoom.us/j/84889073693
Chaired by: Asst. Prof. John Ivan C. Maurat, National University, Philippines

Invited Speech IX **14:00-14:25**	**Title:** Predicting At-Risk Students Using Machine Learning Models on the OULAD Dataset: A Comparative Analysis **Author:** John Ivan C. Maurat **Invited Speaker:** John Ivan C. Maurat, National University, Philippines **Abstract:** The Open University Learning Analytics Dataset is used in this study to evaluate the application of machine learning approaches to predict at-risk pupils. Traditional class record systems primarily document attendance and grades, but they lack the analytical capabilities to provide early warning signals. To close this gap, this study creates a data-driven predictive paradigm that incorporates behavioral, evaluation, demographic, and social interaction characteristics. Four supervised models (Logistic Regression, Random Forest, Neural Network, and XGBoost) were trained and tested using accuracy, F1-score, confusion matrices, and ROC-AUC metrics. The results demonstrate that XGBoost outperformed the other algorithms in terms of capturing nonlinear interactions in student behavior and learning patterns. Explainable AI approaches, notably SHAP values, were utilized to enhance model transparency, revealing that total clicks, assessment scores, and forum participation are the most reliable predictors of academic success. The study reveals how predictive analytics can help identify students who are likely to fail or withdraw, allowing for proactive academic assistance. The findings highlight the importance of integrating learning analytics, machine learning, and interpretable models into institutional early warning systems to enhance student retention and informed educational decision-making. Future research should focus on developing real-time prediction pipelines, incorporating additional behavioral indicators, and implementing adaptive intervention mechanisms.
Invited Speaker X **14:25-14:50**	**Title:** Determinants of Family Members' Adoption of Long-Term Care Mobile Applications: An Integration of TAM and ISSM **Authors:** Pei-Yi Lin, Wei-Min Huang, Li-Chiu Lee, Yi-Ting Lin, Chia-Fang Yang and Bing-Cong Chen **Invited Speaker:** Wei-Min Huang, Graduate Institute of Healthcare Information Management, National Chung Cheng University Minxiong Township, Chia-Yi County, Taiwan **Abstract:** As Taiwan enters a super-aged society, mobile applications play a vital role in long-term care communication. This study integrates the Technology Acceptance Model (TAM) and Information System Success Model (ISSM) to examine family members' adoption intentions. An online survey of 164 respondents analyzed with SEM shows that service quality and information quality enhance perceived usefulness, while system and service quality improve ease of use. Ease of use and convenience significantly drive adoption, whereas perceived usefulness and privacy risk are not significant. Results highlight convenience and service quality as key factors, guiding app design to improve usability and family–institution interaction.

Invited Speaker XI 14:50-15:15	**Title:** Advanced Computational Science and Applications for E-Education: Scalable AI, Learning Analytics & Secure Platform **Author**: J. JANET **Invited Speaker:** J. JANET, Aarupadai Veedu Institute of Technology Chennai, India **Abstract:** TBA
SN050 15:15-15:30	**Title:** Influence of Network Delay on Human Weight Perception in Haptic Virtual Environments **Authors:** Pingguo Huang, Yutaka Ishibashi **Presenter:** Pingguo Huang, Gifu Shotoku Gakuen University, Japan **Abstract:** Using AI technology to predict optimal parameters for Quality of Service (QoS) control is expected to be an effective method for improving its efficiency. In our previous study, we developed a networked golden dolphin system with haptic feedback and an AI server that generates optimal QoS control parameters through data-driven training. As the next step in our research, we aim to clarify human perceptual thresholds relevant to QoS efficiency and collect training data for the AI server. Specifically, this study investigates the influence of network delay on human weight perception. Experimental results show that participants were able to perceive weight differences when the variation exceeded approximately 40 gf, regardless of the network delay conditions.
SN005 15:30-15:45	**Title:** Performance Evaluation of SDN-Driven AQM Schemes using Open vSwitch for Delay Reduction **Authors:** Azmat Ali Shah, Siva Chandrasekaran **Presenter:** Azmat Ali Shah, Swinburne University of Technology, Melbourne, Australia **Abstract:** Industrial Internet of Things (IIoT) applications demand ultra-low latency and high reliability to support the mission-critical monitoring and control. The default First-In-First-Out (PFIFO) queuing mechanism in Open vSwitch (OVS) suffers from bufferbloat during congestion, resulting in excessive delay and jitter that degrades system performance. This study evaluates Software-Defined Networking (SDN)-controlled Active Queue Management (AQM) in OVS, with a focus on reducing delay for IIoT traffic. Three AQM algorithms, Random Early Detection (RED), Proportional Integral controller Enhanced (PIE), and Dual Queue Proportional Integral Enhanced (DualPI2) were integrated into OVS and compared to the PFIFO baseline using a physical SDN testbed. The evaluation considered round-trip time (RTT), jitter, packet loss, and throughput under both congested and uncongested network conditions. The results indicate that RED produced high packet loss (13%) and elevated average queueing delay (38 milliseconds). In contrast, PIE and DualPI2 maintained near-baseline RTT (2 milliseconds), sub-millisecond jitter, negligible packet loss, and full link utilization. This work provides the first comparative evaluation of RED, PIE, and DualPI2 integrated into Open vSwitch (OVS) under SDN control, demonstrating that software-based AQM can substantially reduce delay and enhance reliability in IIoT networks without the need for specialized hardware.
SN019 15:45-16:00	**Title:** Systematic Literature Review on Wearable Devices as a Gateway for Cyberattacks **Authors:** Madilaine Claire B. Nacianceno, Aaron John C. Alegre, Carl Joseph R. David, Jhamil G. Gutierrez, Jorelle P. Jarabelo **Presenter:** Madilaine Claire B. Nacianceno, Aaron John C. Alegre, Carl Joseph R. David, Jhamil G. Gutierrez, Jorelle P. Jarabelo **Abstract:** Earables are increasingly common in daily lives; especially healthcare,

however they face security challenges due to their connections to multiple networks. This paper reviews research on the security weaknesses of wearables within digital systems, following Kitchenham's evidence-based guidelines and using the SALSA framework to ensure a reliable methodology. Of the 104 papers found, 85 met the predetermined quality assessment criteria and were included in the review. Using descriptive statistics and thematic analysis, the study classified wearable devices, attack types, and security solutions. Results show that devices with low processing power and Bluetooth Low Energy are especially vulnerable, posing a greater risk to system security. Although promising solutions such as lightweight cryptography, federated learning, and anomaly detection exist, they still face scalability and efficiency challenges. The paper highlights the urgent need to update security strategies to effectively support the growing use of wearables within current resource constraints and regulatory frameworks.

SN054
16:00-16:15

Title: An End-to-End Deep Learning Approach to Intelligent Steganography for Data Hiding

Authors: Aperna Eswari Saravanan, Muthukumar M D

Presenter: Aperna Eswari Saravanan, Thiagarajar College of Engineering, Tamil Nadu, India

Abstract: The necessity for safe and undetectable commu- nication methods has increased in the digital age due to the quick expansion of data sharing over open communication channels. This problem is addressed by steganography, which hides both the content and the existence of communication in digital media. However, conventional steganographic methods frequently fail to strike a balance between robustness, payload capacity, and imperceptibility, leaving them open to detection and image processing attacks. An end-to-end deep learning-based architecture for intelligent image steganography that combines data extraction and embedding into a single model is presented in this research. The suggested method achieves great visual fidelity and robustness against distortions like compression, noise, and cropping by using Convolutional Neural Networks (CNNs) and Generative Adversarial Networks (GANs) to directly learn adaptive concealing strategies from image data. Imperceptibility, payload capacity, and data recovery accuracy are all improved by jointly optimizing reconstruction, perceptual, and adversarial loss functions. In terms of Peak Signal-to-Noise Ratio (PSNR), Structural Similarity Index Measure (SSIM), and Bit Error Rate (BER), experimental results on benchmark datasets show superior performance over current methods, demonstrating the efficacy of deep learning-driven steganography for safe and flexible covert communication.

SN053
16:15-16:30

Title: PracAPR: A Test-Free, Execution Trace-Driven Automated Program Repair Framework

Authors: Harsita S. S., Jamuna Devi S., Sathyapriya S., Jeniba S., Sheerin Sitara N.

Presenter: Harsita S. S., Thiagarajar College of Engineering, India

Abstract: Software debugging is frequently laborious and tedious. The majority of Automated Program Repair (APR) tools rely on test cases to determine whether a fix is effective, despite their attempts to lessen this effort. Test cases may be absent, insufficient, or expensive to run repeatedly in actual projects. Additionally, because AI-generated fixes are often unclear, devel-opers are reluctant to trust them. A test-free and comprehensible program repair system called PracAPR (Practical Automated Program Repair) is presented in this paper. Rather than utilizing test cases, PracAPR uses AI reasoning to identify errors and produce fixes by analyzing execution traces gathered

during program runtime. Instead of running complete tests, the fixes are verified using a lightweight sandbox simulation. Additionally, PracAPR helps developers comprehend and trust the solution by explaining why each fix was created. All things considered, the framework provides a useful, transparent, and developer-friendly method of automated debugging that is appropriate for learning environments and real-time use.

SN049 **16:30-16:45**	**Title:** An Incentive Mechanism for Task Offloading in Mobile Edge Computing Based on Multi-Dimensional Contract **Authors:** Zipeng Hu, Yuqi Fan **Presenter:** Arnel Balasta, National University, Philippines **Abstract:** The strategy of offloading users' computing tasks is crucial for the utilization of edge's resources in mobile edge computing (MEC) systems. Most existing research on computing offloading assumes complete information. That is, both the edge and the users share all relevant information regarding the service provisioning and service requirements, which is not valid in real applications. The limited research based on information asymmetry overlooks user heterogeneity in terms of sensitivities to task offloading cost and latency, etc., resulting in the underutilization of edge's computing resources. In this paper, we propose a multi-dimensional contract based incentive mechanism to encourage heterogeneous users to offload tasks to the edge under information asymmetry. First, we formulate the contract design problem to maximize edge utility. Second, we transform the problem into an equivalent simplified form through theoretical analyses. Finally, we propose an iterative adjusted optimal contract algorithm (IAOC) to drive the optimal contract. Simulation results show that the proposed incentive mech-anism effectively enhances edge utility and computing resource utilization in MEC systems.

About Sydney

Sydney is the capital city of the state of New South Wales and the most populous city in Australia. A city of iconic attractions and brilliant beaches, Sydney is a destination you'll never forget. Sydney is home to must-visit icons like the Sydney Harbour Bridge and Opera House, but this Harbour City is constantly evolving. New rooftop bars, theatre shows and designer shops pop up at every turn, and the urban excitement is perfectly balanced by afternoons spent lying on the sand. Plus, with diverse destinations at its doorstep, Sydney is the perfect base for day trips and weekends away.

Sydney Opera House

Sydney Opera House is one of the most iconic landmarks in Australia and a UNESCO World Heritage Site. Located on the shores of Sydney Harbour, its distinctive sail-shaped design makes it one of the most recognizable buildings in the world. The Opera House hosts a wide range of performances, including opera, concerts, theatre, and dance. Visitors can join guided tours to explore the interior or simply enjoy the stunning harbour views from the surrounding area.million in research grants.

Sydney Harbour Bridge

Sydney Harbour Bridge is one of the most famous landmarks in Australia and an engineering masterpiece. Opened in 1932, the bridge connects Sydney's central business district with the North Shore across Sydney Harbour. Known locally as "The Coathanger" because of its arch shape, it offers spectacular views of the harbour and the Sydney Opera House. Visitors can walk or cycle across the bridge, and adventurous guests can join the BridgeClimb experience to reach the top for panoramic views of the city.

Bondi Beach

Bondi Beach is one of Australia's most famous beaches and a popular destination for both locals and tourists. Located just a short drive from central Sydney, it is known for its golden sand, clear blue water, and excellent surfing conditions. Bondi Beach is also home to vibrant cafés and restaurants, making it a perfect place to relax and enjoy the coastal atmosphere. Visitors can take the scenic Bondi to Coogee coastal walk for stunning ocean views.

Memo