

Machine Learning and AI Session

Welcome to our dedicated exploration of Machine Learning and Artificial Intelligence, where we pull back the curtain on the technologies shaping our digital future. This session theme delves into the latest breakthroughs in data science, moving beyond the buzzwords to highlight the powerful mathematical and statistical techniques that drive these advanced tools. From the foundational algorithms that allow machines to learn from data to the complex statistical models enabling predictive intelligence, attendees will gain a clear understanding of the science behind the AI revolution. Whether you are an industry professional or a curious enthusiast, join us to discover how deep mathematical insights are being transformed into intelligent, real-world applications.

Schedule:
9 July 2026 (Day 2)

| Time | Schedule |
|-------------------------|--|
| Machine Learning and AI | |
| 9:25 – 10:10 | <p>Keynote</p>  <p>Speaker: Prof. Alan Wee-Chung Liew Professor Griffith University</p> <p>Biography: Professor Alan Wee-Chung Liew is Head of the School of Information and Communication Technology at Griffith University, Australia. Before joining Griffith University in 2007, he was a Senior Research Fellow at the City University of Hong Kong and an Assistant Professor at the Chinese University of Hong Kong. His research spans artificial intelligence, machine learning, medical imaging, computer vision, and bioinformatics. Professor Liew has made extensive scholarly contributions in these areas, including two</p> |

monographs, more than 300 journal and conference papers, and two international patents. He is a Fellow of the Queensland Academy of Arts and Sciences, a Fellow of the Australian Computer Society, a Senior Member of IEEE, and is listed among Stanford University's "World's Top 2% Scientists" (in the sub-field of Artificial Intelligence & Image Processing) for career-long impact. He currently leads and co-leads the School's AI4Health Lab and TrustAGI Lab, through which he advances high-impact, industry-engaged research and supports the responsible development and adoption of AI.

Title: Trustworthy AI for Critical Systems and Health Innovation

Abstract: Artificial Intelligence is rapidly becoming a foundational technology for research, healthcare, industry, and public-sector decision-making. As AI systems move from experimental settings into high-stakes environments, performance alone is no longer sufficient; future AI systems must also be trustworthy, interpretable, robust, secure, privacy-aware, and suitable for responsible deployment. This presentation provides a high-level overview of AI research within the School of ICT at Griffith University, focusing on two complementary research directions represented by the TrustAGI Lab (<https://trust-agi.github.io/>) and the AI4Health Lab (<https://ai4healthlab.github.io/>). The TrustAGI component introduces the broader vision of trustworthy AI, including methods and systems that support reliable reasoning, responsible use of foundation models, predictive intelligence, graph intelligence, time-series learning, and AI-enabled scientific discovery. The presentation then connects this trustworthy AI perspective to health and biomedical innovation through selected work from the AI4Health Lab, illustrating how AI can support more accurate diagnosis, interpretable clinical decision-making, biomedical image analysis, non-invasive cell imaging, patient-risk modelling, and personalised healthcare. Together, the two labs highlight a coherent research agenda that links foundational AI advances with practical impact in health, science, and high-stakes decision-making.

10:10 – 10:40



Speaker: Prof. Chee Peng Lim
Professor
Swinburne University of Technology

Biography: Professor Lim Chee Peng received his Ph.D. degree from the University of Sheffield, UK, in 1997. His research focuses on CI-based models and their applications. With over 650 technical papers, he collaborates widely with researchers in the international arena with the support of numerous prestigious international fellowships. These include the Australia-India Senior Visiting Fellowship by Australian Academy of Science, Australia-Japan Emerging Research Leaders Exchange Program by Australian Academy of Technology and Engineering, UK Commonwealth Fellowship at University of Cambridge, US Fulbright Fellowship at University of California, Berkeley as well as Visiting Scientists Programs at both Harvard University and Stanford University.

Title: Computational Intelligence-based Systems: Advances and Applications

Abstract: Computational intelligence (CI) is a broad discipline that encompasses a variety of methodologies inspired by human and/or natural intelligence. In this talk, advances in research and innovation pertaining to CI-based models will be presented. Specifically, various CI-based models for data analytics, knowledge inference/reasoning, and multi-objective optimisation will be explained. Several useful properties of CI-based models for decision support applications, which include knowledge elicitation and trust measurement, will be exemplified. Applications CI-based models to real-world environments will be demonstrated.

10:40 – 10:55

Break

10:55 – 11:25



Speaker: Prof. Keming Yu
Professor
Brunel University

Biography: Professor Keming Yu is Professor of Statistics at Brunel University of London, where he also serves as the Director of Engagement and Impact (E&I) of Research Excellence Framework (REF) for the unit of mathematical science at Brunel University, and course Director of MSc programme in Statistics and Data Analytics. He is a Fellow of the Royal Statistical Society (RSS). He is widely regarded as one of the pioneers of the topic of Bayesian quantile regression. He was also listed as a Top 2% Scientist of the World (Stanford/Elsevier, single-year data sets) in 2021, 2022, 2023 and 2025. Professor Yu has served as an Associate Editor for several prestigious international journals, including the Journal of the American Statistical Association (A&CS), Journal of the Royal Statistical Society: Series A and Series C.

Title: Semi-Supervised Learning for Extremile Regression

Abstract: Labeling data is often expensive and time-consuming, particularly in extreme data analysis, whereas unlabeled data are typically abundant. Semi-supervised learning leverages a small amount of labeled data together with a large amount of unlabeled data to improve model performance. Extremile regression, as a least-squares analogue of quantile regression, provides a potentially powerful tool for modeling and understanding the extreme tails of a distribution. However, existing extremile regression methods, largely nonparametric in nature, may encounter challenges in high-dimensional settings due to data sparsity, computational inefficiency, and the risk of overfitting.

In this talk, we introduce a novel formulation of extreme regression along with a corresponding estimation methodology. To address the limitations of high-dimensional modeling, we propose a semi-supervised learning approach that effectively incorporates unlabeled data to enhance estimation efficiency and mitigate overfitting, even when the assumed linear extreme regression model is misspecified. Simulation studies and real data applications demonstrate the favorable finite-sample performance of the proposed methods.

11:25 – 11:55



Speaker: Prof. Thomas Lee
Professor
University of California, Davis

Biography: Professor Thomas C. M. Lee is Distinguished Professor of Statistics and Associate Dean in the Faculty of Mathematical and Physical Sciences, College of Letters and Science, at the University of California, Davis, USA. He received a B.App.Sc. (Mathematics) in 1992 and a B.Sc. (Hons) in Mathematics with the University Medal in 1993 from the University of Technology, Sydney, in Australia. He earned his Ph.D. in 1997 through a joint program between Macquarie University and CSIRO Mathematical and Information Sciences in Australia.

Professor Lee's research interests include astro-statistics, fiducial inference, machine learning, and statistical image and signal processing.

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| | <p>Professor Lee is an elected Fellow of the American Association for the Advancement of Science, American Statistical Association, and Institute of Mathematical Statistics. He served as Editor-in-Chief of the Journal of Computational and Graphical Statistics (2013–2015), Chair of the Department of Statistics at UC Davis (2015–2018), and Review Editor for the Journal of the American Statistical Association (2023–2025).</p> <p>Title: Learning from Delayed Feedback: Bandits and Real-World Decision Making</p> <p>Abstract: Many modern AI systems, such as online recommendation, advertising, and clinical decision-making, must learn from sequential interactions while receiving only partial and often delayed feedback. The multi-armed bandit framework provides a principled way to study such problems, balancing exploration and exploitation to improve decisions over time. In this talk, I will first introduce the bandit problem in an accessible way. I will then discuss recent advances that address a key practical challenge: delayed feedback, where the outcome of an action may only be observed after some time. Lastly, I will present intuition behind new algorithms that remain effective despite such delays, and illustrate their relevance in real-world applications.</p> |
| 11:55 – 12:25 | Open Discussion |