IEEE

UNIVERSITY
OF WOLLONGONG
AUSTRALIA

The 8th IEEE International Conference on Agents

University of Wollongong
Australia

December 4th-6th, 2024

Welcome to the 8th IEEE Conference on Agents 2024, where industry leaders and researchers explore advancements in agent-based systems.

Conference Introduction

The IEEE International Conference on Agents serves as a gathering point for scholars and professionals in all areas of agent research. IEEE ICA provides a platform to explore new theories, practices, and applications of intelligent and autonomous agents. Past IEEE ICA conferences have been held in Kyoto (2021, 2023), Adelaide (2022), Jinan (2019), Singapore (2018), Beijing (2017), and Matsue (2016). The Program Committee invites theoretical and technical papers on significant, original, and unpublished research in all areas of agent research.

Conference Schedule

Registration: Dec 3rd 3:00 to 5:00 and Dec 4th 8:30 to 9:00

December 4th, 2024
09:00 - 09:15: Opening Ceremony
09:15 - 10:15: Keynote Speech I
10:45 - 12:20: Trading Agent Session
14:00 - 15:30: BDI Agent Session
16:00 - 17:00: Poster Session

December 5th, 2024
09:00 - 10:00: Keynote Speech II
10:30 - 12:00: Agent Learning Session I
13:30 - 14:40: Agent Learning Session II
15:00 - 17:00: Agent Learning Session III
18:00 - 20:30: Conference Banquet

December 6th, 2024
09:00 - 10:00: Keynote Speech III
10:30 - 12:00: Agent Modelling and Simulation Session I
13:30 - 15:10: Agent Modelling and Simulation Session II
15:40 - 16:00: IEEE ICA 2025 Announcement
16:00 - 16:20: Award and Closing Ceremony

Introduction of Keynote Speaker I

Professor Chengqi Zhang

Chair Professor of Artificial Intelligence Dept of Data Science and Artificial Intelligence

Hong Kong Polytechnic University, Hong Kong

Keynote Title: The Impact of Generative AI (ChatGPT) on AI Research and Societal Development

Abstract

Generative AI, such as ChatGPT, represents a significant leap forward in the field of artificial intelligence, enabling the automatic generation of text, images, and more. It has not only reshaped our understanding of cognitive research in AI, but has also uniquely addressed critical issues in the field of cognitive science through its 'violent aesthetics.' Generative AI possesses a high level of intelligence in generating text and has broad application potential across various domains. From automated content creation to online customer support, translation services, and creative content generation, it enhances efficiency, saves time, and conserves resources, providing robust support for societal development.

However, Generative AI is not without limitations. Concerns exist regarding the correctness, authenticity, and reliability of the generated content. Therefore, careful consideration is essential when applying it. We must assess the sensitivity of a particular domain to erroneous results to determine whether the use of Generative AI is safe. In the future, Generative AI will continue to evolve, with more powerful models, expanded application domains, and improved management. It will persistently drive advancements in artificial intelligence technology, positively impacting society. However, prudent management is crucial to harness its potential to the fullest while mitigating potential risks.

Biography

Professor Chengqi Zhang has joined Dept of DS& AI, HK PolyU on 10 September 2024. He served as Pro Vice-Chancellor at the University of Technology Sydney since December 1, 2017, and was appointed as a Distinguished Professor in Artificial Intelligence at UTS on February 27, 2017. In 2019, he was named the General Chair of the International Joint Conference on Artificial Intelligence (IJCAI) for the year 2024. From 2021 to 2024, he has been invited to serve as a judge for the "TR35 Innovators Under 35" competition in China and the Asia-Pacific region, organized by MIT Technology Review.

Professor Zhang earned his Bachelor of Science degree from Fudan University in March 1982, followed by a Master of Science degree from Jilin University in March 1985. He completed his Doctor of Philosophy (PhD) degree at the University of Queensland in October 1991 and was later awarded a Doctor of Science (DSc) in October 2002 from Deakin University. All of his degrees are in the field of Computer Science, specifically in Artificial Intelligence.

To date, Professor Zhang has published over 390 research papers, with more than 100 of them appearing in top international journals such as AIJ, IEEE, and ACM Transactions. In 1992, he became the first author from mainland China to publish a paper in the world's top-tier AI journal, "Artificial Intelligence." According to Google Scholar, his papers have been cited more than 35,000 times, with an H-index of 71. He has been invited to deliver keynote speeches at international conferences more than 30 times.

Professor Zhang has also supervised more than 30 doctoral students, with 10 of them achieving the rank of full professor. He was awarded the Engineering and Information and Communication Technologies (ICT) category New South Wales Science and Engineering Award in 2011, as well as the Leadership Outstanding Researcher Vice-Chancellor's Award at the University of Technology Sydney in the same year. From 2012 to 2014, Professor Zhang served as a part-time expert for the Australian Research Council (ARC). He has also chaired three of the world's top AI conferences, including ICDM-2010, KDD-2015, and IJCAI-2024.

Introduction of Keynote Speaker II

Professor Kato Shohei

Nagoya Institute of Technology, Japan

Keynote Title: Could an Affective, Intelligent and Interactive Robot/Agent Make Well-Being and Longevity Society?

Abstract

The world is facing a rapid decline in the birthrate and an aging population, which has many challenges, including a decline in the productive workforce, a shortage of medical and welfare personnel for the elderly, and mental stress among people in the prime of their working lives. In this talk, through research and development of emotional conversational robots, affective interactive agents, and speech-analysis based dementia screening agent technology that we have been dedicated for the past 20 years, we will explore the technological possibilities for creating a well-being and longevity society in near future.

Biography

Shohei Kato is a Professor of Nagoya Institute of Technology (NItech), a Head of Computer Science, and a Director of NITech AI Research Center. He received the Doctor of Engineering from NITech, Japan, in 1998. He joined Toyota National College of Technology from 1998, and joined NITech as a Lecturer from 2002, as an Associate Professor from 2003, and as a Professor since 2015 to present. His current research interests include artificial intelligence and affective computing in robotics, machine learning, and computer engineering in medicine and biology.

Introduction of Keynote Speaker III

Professor Shah J Miah

Newcastle Business School, University of Newcastle, NSW, Australia

Keynote Title: Balancing Humans and Machines in designing AI-driven Decision-support

Abstract

Artificial intelligence (AI)-driven decision-support offers predictive insights for their decision-making harnessing power of AI techniques. When designing AI driven support, design researchers work with industry experts and managers to identify decision-making problems and design the solutions through prototyping and testing. We develop a new action design research method that provides guidance to ensure balancing human-AI collaboration and interaction in organizations. The keynote talk will demonstrate the method's application through a case study in the hospitality industry, illustrating its ability to meet emerging demands for human-AI balance demands in managerial decision-support.

Biography

Shah is a distinguished academic in the field of Business Analytics. He holds the position of Professor of Business Analytics at the Newcastle Business School, part of the University of Newcastle in New South Wales, Australia. He is an experienced academic in this leading role at this school which is one of the largest schools with almost 3,000 plus students and 200 staff. Prof Shah's vision is to reshape business leaders with data knowledge and practicality learning for sustainable business future. Building on existing strengths on business information systems, Shah's skills contribute to lead Business Analytics and Artificial Intelligence research, scholarship and educational provision in business higher education.

As the head of Business Analytics, Shah has brought to the role a globally excellent reputation that was evidenced through his team building activities to produce industry-focused high-quality postgraduate and undergraduate curriculum in the university. Shah has also produced world class research in leading academic journals. Shah has led major funding bids and have successfully managed resources to gain, execute and deliver successful research projects in industries. He has gained sufficient experience supervising PhD students and demonstrate understanding of how to attract high quality candidates to the area of business analytics and artificial intelligence. Shah has been serving as a mentor to early-career, junior and mid-career scholars and be willing to act as a leader in a formal capacity in future. Given this, Shah has effective demonstratable leadership skills and experience for academic excellence in higher education, in playing a key leadership role in advancing Artificial Intelligence and Data Analytics area in Business.

Conference Agenda Day 1

Time	Day 1 (4th of Dec. 2024, Room 1, Building 20, University of Wollongong)
08:30 - 09:00	**Registration**
	The registration is also available between 3 pm and 5 pm on the 3rd of Dec. in Building 20
09:00 - 09:15	**Opening Ceremony (Chair: Professor Jun Yan)**
09:15 - 10:15	**Keynote Speech I - Professor Chengqi Zhang (Chair: Professor Jun Yan)**
	Title: The Impact of Generative AI (ChatGPT) on AI Research and Societal Development
10:15 - 10:45	**Coffee Break**
10:45 - 12:20	**Trading Agent Session (Chair: Dr Guoxin Su)**
10:45 - 11:10	Paper (Online): Exploring Epistemic and Distributional Uncertainties in Algorithmic Trading Agents *(Justin Teng Hao Loh, Li Rong Wang, Chang Liu, Chanwoo Choi, Siyuan Liu and Xiuyi Fan)*
11:10 - 11:35	Paper: Achieving Preferable Agreement by Utilizing offline Negotiation dialogue on Decision Transformer *(Yuta Ohno and Sachiyo Arai)*
11:35 - 12:00	Paper: Event Sourcing in Jason Event-Driven State Reconstruction for BDI Agents *(Curtis Davies and Babak Esfandiari)*
12:00 - 12:20	Short Paper: TraderTalk: An LLM Behavioral Agent Based Model, applied to Simulating Human Bilateral Trading Interactions *(Alicia Vidler and Toby Walsh)*
12:20 - 14:00	**Lunch Break**
	ICA'24 provides lunch for all registered participants. Please collect your lunch ticket from the reception desk each day at the lunch break time.
14:00 - 15:30	**BDI Agent Session (Chair: Dr Hui Luo)**
14:00 - 14:25	Paper: A BDI Agent-Based Asynchronous Scheduling Framework for Cloud Computing *(Yikun Yang, Fenghui Ren, Minjie Zhang, Jun Yan, Fei Xie and Weiwei Gao)*
14:25 - 14:45	Short Paper: BDI Agents Based Dynamic Resource Allocation in Emergency Scenarios *(Junhui Shang, Jun Yan and Fenghui Ren)*
14:45 - 15:05	Short Paper: An Adaptive BDI Agent-based System Design for Distributed 3D-Container Loading *(Yikun Yang, Fenghui Ren, Minjie Zhang, Jun Yan, Shujin Jia and Jing Wen)*
15:05 - 15:30	Paper: A Multiple Nash-SA Mediator for Huge Design Utility Spaces in Automated Negotiations *(Takayuki Ito)*
15:30 - 16:00	**Coffee Break**
08:00 - 18:00	**Zoom Link for the Online Participants (Host: Dr Yikun Yang)**
	Meeting Name: The 8th IEEE ICA'24 Conference (4th of Dec - 6th of Dec, 2024)
	Meeting Link: https://uow-au.zoom.us/j/81883719027?pwd=KM7wsuJUJyAbrItq0pUXXpIXs0286i.1
	Meeting ID: 81883719027
	Meeting Passcode: ica2024

Poster Session

16:00 - 17:00	Poster Session (Chair: Dr Yikun Yang)
	Improving the Execution Time of a Path Negotiation Method Using a Task-based Utility Function *(Takahiro Uchiya and Ichi Takumi)*
	An Agent-Based Decentralised Approach to Disturbances in Rail Systems *(Kevin Malysiak, Fenghui Ren and Bo Du)*
	Multi-Agents Approach for Dynamic Research Insight Path Generation *(Jinghong Li, Prarinya Siritanawan, Wen Gu and Shinobu Hasegawa)*
	A Framework Design of a Personalized Learning Pathway Recommendation *(Feilai Zhou and Lei Niu)*
	LLM-based Agent for Recommending Information Related to Web Discussions at Appropriate Timing *(Takayoshi Sakurai, Shun Shiramatsu and Ryosuke Kinoshita)*
	Action-Integrated QAttn: Introducing Action Values into Value Decomposition for Effective Cooperation among Heterogenous Agents *(Naohiro Takakuwa and Sachiyo Arai)*
	Inverse Bayesian Inference for Player Agents in Computer Daihinmin Game *(Ayano Ibuka and Kazuto Sasai)*
	(Online) LLM-based Automated Facilitator for Building Effective Consensus on Mission and Vision Definition *(Qilin Liu and Shun Shiramatsu)*
	Study on Automated Sewing Inspection System using AI *(Ming Liu and Shohei Kato)*
	Evaluating Government Incentives and Social Network Effects on Evacuation Decisions in Disaster Events: An Agent-Based Model and Evolutionary Game Theory Approach *(Made Krisnanda, Kirill Glavatskiy, Yang Yang, Manuel Chica Serrano, Raymond Chiong)*
	Optimization of Product Placement Using BLPSO to Improve Picking Efficiency *(Takahiro Suzuki, Ayaka Sugiura, Koya Ihara, Takuto Sakuma, Shohei Kato)*
08:00 - 18:00	Zoom Link for the Online Participants (Host: Dr Yikun Yang)
	Meeting Name: The 8th IEEE ICA'24 Conference (4th of Dec - 6th of Dec, 2024)
	Meeting Link: https://uow-au.zoom.us/j/81883719027?pwd=KM7wsuJUJyAbrItq0pUXXpIXs0286i.1
	Meeting ID: 81883719027
	Meeting Passcode: ica2024

Conference Agenda Day 2

Time	Day 2 (5th of Dec. 2024, Room 1, Building 20, University of Wollongong)
9:00 - 10:00	**Keynote Speech II - Professor Shohei Kato (Chair: Dr Fenghui Ren)**
	Title: Could an Affective, Intelligent and Interactive Robot/Agent Make Well-Being and Longevity Society?
10:00 - 10:30	**Coffee Break**
10:30 - 12:00	**Agent Learning Session I (Chair: A/Professor Quan Bai)**
10:30 - 10:55	Paper: Autonomous Driving Agents for Safe Road Junctions Through Deep Reinforcement Learning *(Jie Yun and Zehong Cao)*
10:55 - 11:20	Paper: Disentangled Task Representation Learning for Offline Meta Reinforcement Learning *(Shan Cong, Chao Yu, Yaowei Wang, Dongmei Jiang and Xiangyuan Lan)*
11:20 - 11:40	Short Paper: Self-refinement of reward function by utilizing failure trajectories *(Kota Minoshima and Sachiyo Arai)*
11:40 - 12:00	Short Paper: Causality-Guided Exploration for Multi-Agent Reinforcement Learning *(Zhonghai Ruan and Chao Yu)*
12:00 - 13:30	**Lunch Break**
	ICA'24 provides lunch for all registered participants. Please collect your lunch ticket from the reception desk each day at the lunch break time.
13:30 - 14:40	**Agent Learning Session II (Chair: A/Professor Lei Niu)**
13:30 - 13:55	Paper: RGD: Multi-LLM Based Agent Debugger via Refinement and Generation Guidance *(Haolin Jin, Zechao Sun and Huaming Chen)*
13:55 - 14:20	Paper: A Comparison of the Performance of ResNet and DenseNet for Obstacle Avoidance and Path Following on a Mobile Robot Using Embedded GPUs *(Shengjun Ma, Pawan Sudhir Karkal, Jing Ma and Fakhrul Alam)*
14:20 - 14:40	Short Paper: KANStock: A KAN-Integrated Reinforcement Learning Approach for Predictive Portfolio Management with Dynamic Risk Control *(Xiawei Wu, Chao Yu and Weiqi Luo)*
14:40 - 15:00	**Coffee Break**
15:00 - 17:00	**Agent Learning Session III (Chair: Professor Chao Yu)**
15:00 - 15:25	Paper: Smart Crystal Ball on a Budget: Reinforcement Learning and Prediction for Budget-Friendly Comfort *(Narjes Nourzad, Bhaskar Krishnamachari and Matthew Kahn)*
15:25 - 15:50	Paper: Event-triggered Reinforcement Learning to Obtain Stable Train Operation Strategies *(Hayato Chujo and Sachiyo Arai)*
15:50 - 16:15	Paper: Synaptic Weight Optimization for Oscillatory Neural Networks: A Multi-Agent RL Approach *(Shuhao Liao, Xuehong Liu, Junyu Zhang, Haopeng Wang, Rongye Shi and Wenjun Wu)*
16:15 - 16:35	Short Paper: Density-Based Hysteretic Learning for Fully Decentralised Environments *(Brighter Agyemang, Fenghui Ren and Jun Yan)*
16:35 - 16:55	Short Paper: The Collaborative Intelligence Mathematics Tutoring Agent Platform *(Hao Meng, Qian Zhao, Xiaosong Wang, Jun Shen, Yunheng Luo and Fei Xie)*
18:00 - 20:30	**Banquet**
	Address: Harbour Front Seafood Restaurant, Endeavour Drive Wollongong, NSW 2500
8:00 - 18:00	**Zoom Link for the Online Participants (Host: Dr Yikun Yang)**
	Meeting Name: The 8th IEEE ICA'24 Conference (4th of Dec - 6th of Dec, 2024)
	Meeting Link: https://uow-au.zoom.us/j/81883719027?pwd=KM7wsuJUJyAbrItq0pUXXpIXs0286i.1
	Meeting ID: 81883719027
	Meeting Passcode: ica2024

Conference Agenda Day 3

Time	Day 3 (6th of Dec. 2024, Room 1, Building 20, University of Wollongong)
9:00 - 10:00	**Keynote Speech III - Professor Shah J. Miah (Chair: Dr Guoxin Su)**
	Title: Balancing Humans and Machines in designing AI-driven Decision-support
10:00 - 10:30	**Coffee Break**
10:30 - 12:00	**Agent Modelling and Simulation Session I (Chair: Dr Weihua Li)**
10:30 - 10:55	Paper: HGAttack: Transferable Heterogeneous Graph Adversarial Attack *(He Zhao, Zhiwei Zeng, Yongwei Wang, Deheng Ye and Chunyan Miao)*
10:55 - 11:20	Paper: Can curiosity enhance the quality of on-demand delivery services? *(Riku Yoshioka, Koichi Moriyama and Yuko Sakurai)*
11:20 - 11:40	Short Paper: A modularized agent-based framework for causal-based policy-making *(Shuang Chang)*
11:40 - 12:00	Short Paper: Heterogeneity and Isomerism based Improved Sugarscape Modeling for Real Estate Market Cycles *(Wei Deng, Lan Wang, Xinyu Meng and Guoyin Wang)*
12:00 - 13:30	**Lunch Break**
	ICA'24 provides lunch for all registered participants. Please collect your lunch ticket from the reception desk each day at the lunch break time.
13:30 - 15:10	**Agent Modelling and Simulation Session II (Chair: Professor Takahiro Uchiya)**
13:30 - 13:55	Paper (Online): Fair Influence Maximization in Social Networks: A Group-Fairness-aware Multi-Objective Grey Wolf Optimizer *(Ziying Zhao, Weihua Li, Jing Ma, Jianhua Jiang and Quan Bai)*
13:55 - 14:20	Paper: User Equipment Privacy and Security Issues in 5G Network *(Danish Khan, Xujuan Zhou, Jianming Yong and Xiaohui Tao)*
14:20 - 14:45	Paper: Large size magic square generation using multi-stage evolutionary strategy cascaded by satisfiable individuals for magic sum *(Kazuki Takemi, Takuto Sakuma and Shohei Kato)*
14:45 - 15:10	Paper (Online): Multi-Agent-Based Decomposition and Coordination for Solving Non-Convex Constrained Optimization in Cogeneration System with Transmission Loss *(Dechen Jiang, Chixin Xiao and Maoxin He)*
15:10 - 15:40	**Coffee Break**
15:40 - 16:00	**IEEE ICA 2025 (Chair: Dr Fenghui Ren)**
	IEEE ICA 2025 Announcement (A/Professor Lei Niu)
16:00 - 16:20	**Awards and Closing Ceremony (Chair: Professor Jun Yan)**
8:00 - 18:00	**Zoom Link for the Online Participants (Host: Dr Yikun Yang)**
	Meeting Name: The 8th IEEE ICA'24 Conference (4th of Dec - 6th of Dec, 2024)
	Meeting Link: https://uow-au.zoom.us/j/81883719027?pwd=KM7wsuJUJyAbrItq0pUXXpIXs0286i.1
	Meeting ID: 81883719027
	Meeting Passcode: ica2024

International Collaborative Symposium for Informatics (ICSI) 2024

| Time	Day 2 (5th of Dec. 2024, Room 2, Building 20, University of Wollongong)
10:30 – 11:15	**Keynote Speech – Professor Jun Shen**
	Title: Computational Intelligence Applications in Multi-discipline and Multi-Domains
11:15 – 12:00	**Keynote Speech – Professor Yuko Sakurai**
	Title: Game Theoretic Approaches in Multi-Agent Systems: Applications and Challenges
12:00 - 13:30	**Lunch Break**
13:30 - 14:30	**JDP Students Symposium**
13:30 - 13:50	Preference-aware Influence Maximization in Large Social Networks *(Xiaoxue Liu)*
13:50 - 14:10	Scalability Issues in Multi-agent Reinforcement Learning *(Dingbang Liu)*
14:10 - 14:30	Automatic Depression Detection via a Speech Analysis Approach *(Minggang Wang)*
14:30 - 15:00	**Coffee Break**
15:00 - 16:00	**NITech and UOW Researchers Symposium**
15:00 - 15:30	Cooperation, Reward, and Utility *(A/Prof. Koichi Moriyama, NITech)*
15:30 - 16:00	Deep learning-based Micro Navigation for Vision-impaired People *(Dr. Thanh Le Hoang)*
16:00 - 16:55	**NITech Students Symposium**
16:00 - 16:15	Parkinson's Disease Detection Based on the Speech Analysis during Reading Tasks *(Yuki Ito)*
16:15 - 16:30	Adaptive Block-Sparse Regularization under Arbitrary Linear Transform *(Takanobu Furuhashi)*
16:30 – 16:35	Study on Automated Sewing Inspection System using AI *(Ming Liu)*
16:35 - 16:40	Large Size Magic Square Generation Using Multi-Stage Evolutionary Strategy Cascaded by Satisfiable Individuals for Magic Sum *(Kazuki Takemi)*
16:40 - 16:45	Can Curiosity Enhance the Quality of On-demand Delivery Services? *(Riku Yoshioka)*
16:45 – 16:50	Optimization of Product Placement Using BLPSO to Improve Picking Efficiency – Implementation in an actual warehouse and field demonstration of picking *(Takahiro Suzuki)*
16:50 – 16:55	LLM-based Agent for Recommending Information Related to Web Discussions at Appropriate Timing *(Takayoshi Sakurai)*

UOW Address: University of Wollongong, 1 Northfields Ave, Wollongong NSW 2522, Australia

UOW Map

Bus Stop

Food Court

Transportation Routes
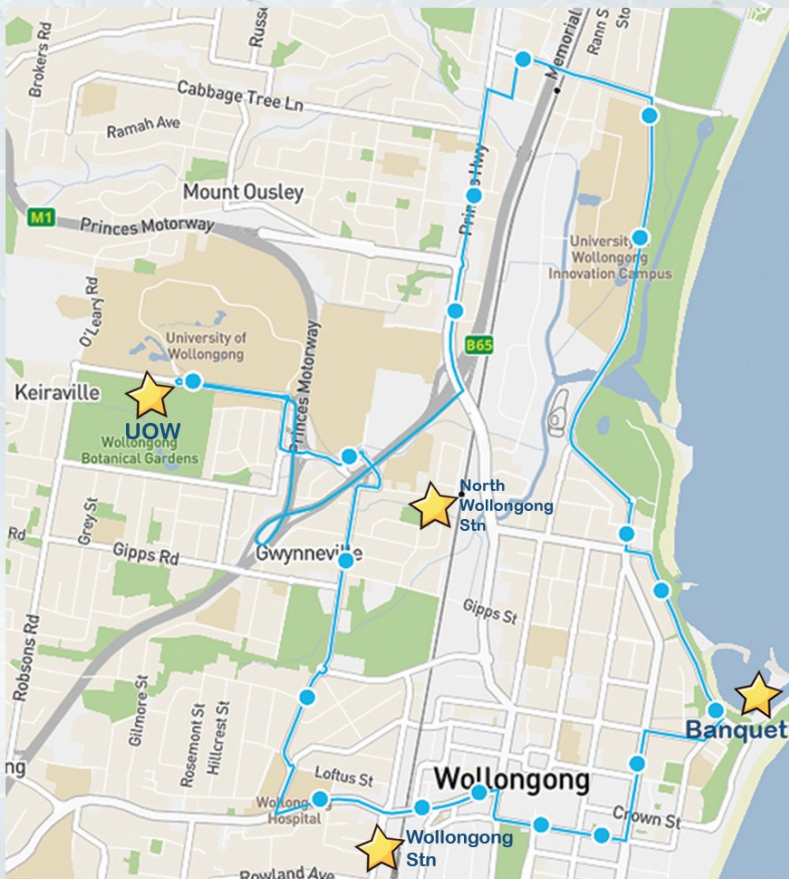
55 A/C Route Map

You can take the Wollongong City Free Bus (55A or 55C) to the University of Wollongong, banquet restaurant, or your accommodation.

Banquet Address:
Harbourfront Seafood Restaurant, 2 Endeavour Dr, Wollongong NSW 2500
Free Bus: 55 A/C from the University of Wollongong to Cliff Rd after Harbour St.

Shaping Tomorrow with Intelligent Agents

General Chairs
- Prof. Jun Yan, University of Wollongong, Australia
- A/Prof. Rafik Hadfi, Kyoto University, Japan

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- Dr Fenghui Ren, University of Wollongong, Australia
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- Dr Yikun Yang, University of Wollongong, Australia

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https://attend.ieee.org/ica-2024