

# The 20<sup>th</sup> International Conference on Advanced Data Mining & Applications



## ADMA2024 Conference Program

3<sup>rd</sup> ~ 5<sup>th</sup> Dec 2024

Macquarie University, Sydney, Australia



## **Welcome:**

On behalf of the Organising Committee and affiliated Conference Chairs, we would like to thank everyone who has made ADMA2024 possible and successful. We have arranged a variety of academic activities to celebrate the 20<sup>th</sup> anniversary of the ADMA conference series. We hope you will find the conference an enjoyable, enlightening and valuable experience and trust it provides you an excellent opportunity for research networking. Welcome, and enjoy the next few days.

Prof. Michael Sheng, Prof. Gill Dobbie, and Prof. Jing Jiang – General Chairs  
Dr. Xuyun Zhang, Dr. Wei Zhang, and Prof. Yannis Manolopoulos – Program Chairs

## **Wi-Fi Information:**

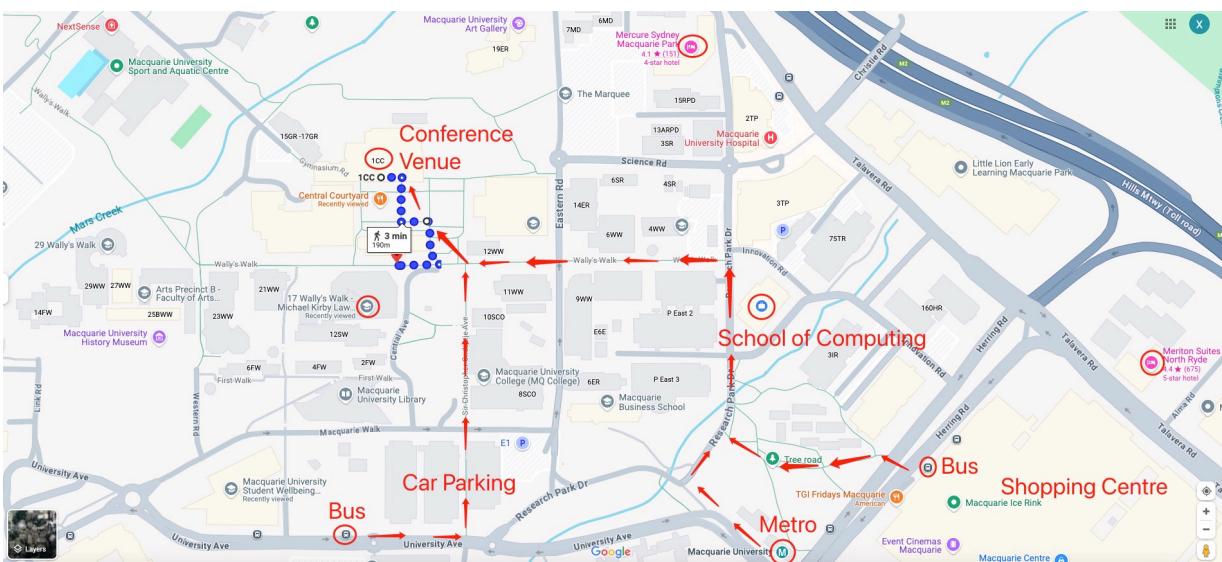
Complimentary Wi-Fi will be available throughout the conference

- » Network name: Macquarie Events
- » Browse to [www.mq.edu.au](http://www.mq.edu.au)
- » Passcode (valid from 3<sup>rd</sup> Dec to 5<sup>th</sup> Dec): adma2024

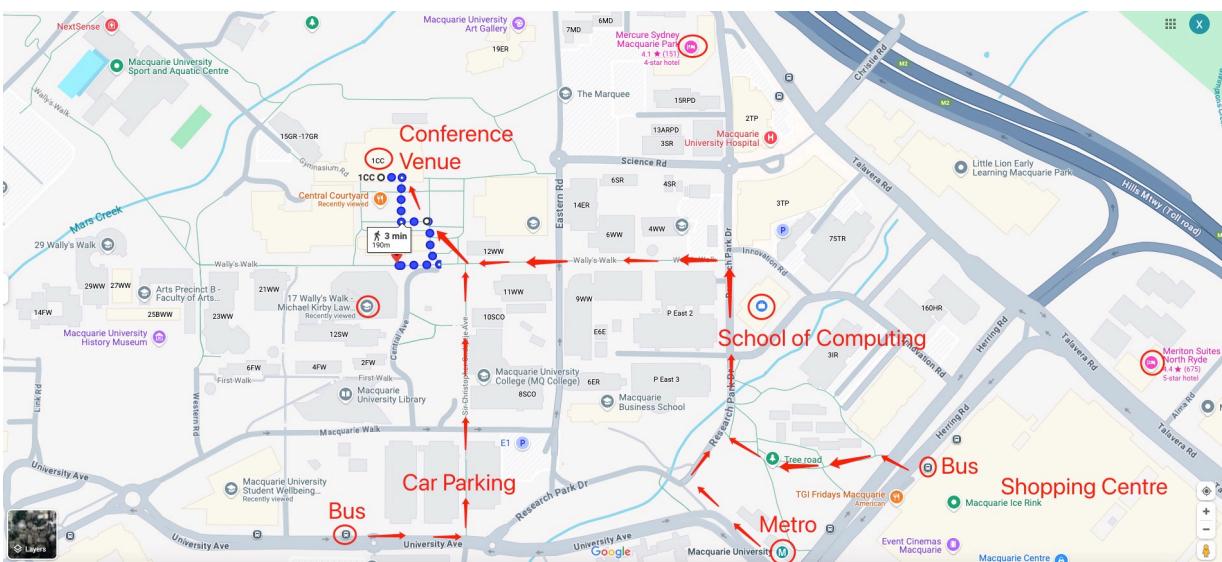
Please note that wireless internet might not be secure.

*Thank you for visiting Macquarie University, Sydney, Australia*

# ADMA2024: Day 0 (Dec 2<sup>nd</sup>, 2024)

Time	Events
14:00 - 18:00	<p><b>Registration</b> Location: Level 2 @ 1CC (1 Central Courtyard)</p> 
17:00 - 18:00	<p><b>Reception</b> Location: Corner between Rooms 210 and 214, Level 2 @ 1CC (1 Central Courtyard)</p> 

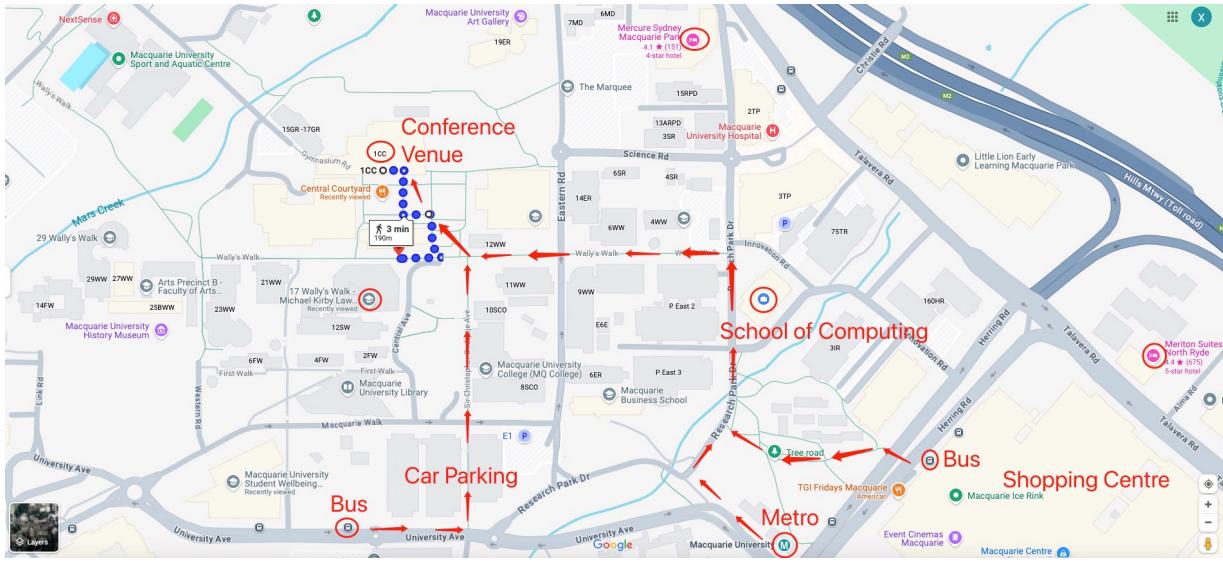
# ADMA2024: Day 1 (Dec 3<sup>rd</sup>, 2024)

Time	Events		
08:30 - 18:00	<p><b>Registration</b> Location: Level 2 @ 1CC (1 Central Courtyard)</p> 		
09:00 - 09:30	<p><b>Opening Ceremony</b> Location: Theatre G25 @ 17WW (17 Wally's Walk)</p>		
09:30 - 10:30	<p><b>Keynote Speech I</b> Speaker: Prof. Hussein Abbass <b>Title: Analytics in Decentralised Artificial Intelligence Enabled Autonomy</b> (Session Chair: TBA) Location: Theatre G25 @ 17WW (17 Wally's Walk)</p>		
10:30 - 11:15	<p><b>Walk to Level 2 @ 1CC (1 Central Courtyard)</b> <b>Morning Tea &amp; Poster Presentations</b> Location: Level 2 @ 1CC (1 Central Courtyard)</p>		
11:15 - 12:30	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;"> <b>Session 1A</b>  <b>Data Mining Fundamentals I</b>            Session Chair: TBA            Location: 1CC-214 (Room 214, Level 2 @ 1 Central Courtyard)             Papers: #35, #41, #99, #178, #236         </td> <td style="padding: 5px;"> <b>Session 1B</b>  <b>Graph Mining I</b>            Session Chair: TBA            Location: 1CC-215 (Room 215, Level 2 @ 1 Central Courtyard)             Papers: #43, #83, #170, #254, #270         </td> </tr> </table>	<b>Session 1A</b> <b>Data Mining Fundamentals I</b> Session Chair: TBA Location: 1CC-214 (Room 214, Level 2 @ 1 Central Courtyard)  Papers: #35, #41, #99, #178, #236	<b>Session 1B</b> <b>Graph Mining I</b> Session Chair: TBA Location: 1CC-215 (Room 215, Level 2 @ 1 Central Courtyard)  Papers: #43, #83, #170, #254, #270
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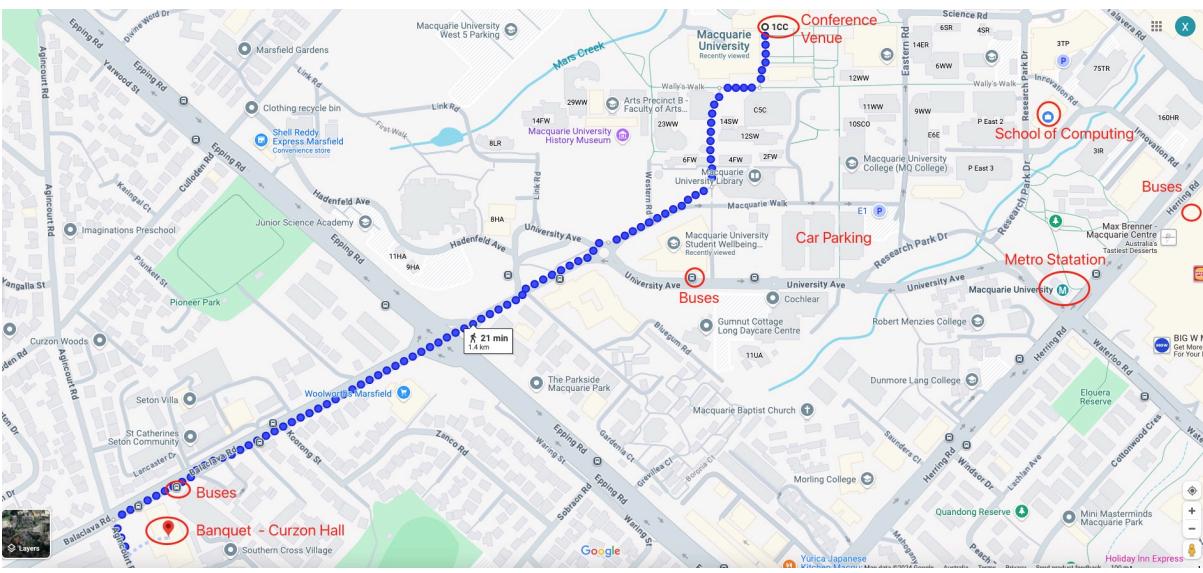
	<p><b>Session 1C</b>  <b>Health Informatics I</b>  Session Chair: TBA  Location: 1CC-216 (Room 216, Level 2 @ 1 Central Courtyard)</p> <p>Papers: #19, #160, #208, #216, #217,</p>	<p><b>Session 1D</b>  <b>Tutorials I</b>  Session Chair: TBA  Location: 1CC-204 (Room 204, Level 2 @ 1 Central Courtyard)</p>
	<p><b>Session 1E</b>  <b>Tutorials II</b>  Session Chair: TBA  Location: 1CC-205 (Room 205, Level 2 @ 1 Central Courtyard)</p>	<p><b>Session 1F</b>  <b>Encore Talks I</b>  Session Chair: TBA  Location: 1CC-210 (Room 210, Level 2 @ 1 Central Courtyard)</p>
	<p><b>Session 1G</b>  <b>Special Session on Data Intelligence &amp; Knowledge Mining</b>  Session Chair: TBA  Location: 1CC-201 (Room 201, Level 2 @ 1 Central Courtyard)</p> <p>Papers: #77, #128, #379, #413, #152</p>	
12:30 - 13:30	<b>Lunch</b> Location: Level 2 @ 1CC (1 Central Courtyard)	
13:30 - 14:00	<b>After Lunch Break, Walk to Theatre G25 @ 17WW (17 Wally's Walk)</b>	
14:00 - 15:00	<p><b>Keynote Speech II</b>  Speaker: Prof. Lei Chen  <b>Title: TBA</b>  (Session Chair: TBA)</p> <p>Location: Theatre G25 @ 17WW (17 Wally's Walk)</p>	
15:00 - 15:15	<b>Walk to Level 2 @ 1CC (1 Central Courtyard)</b>	
15:15 - 16:15	<p><b>Session 2A</b>  <b>Text Mining and NLP I</b>  Session Chair: TBA  Location: 1CC-214 (Room 214, Level 2 @ 1 Central Courtyard)</p> <p>Papers: #135, #205, #269, #278</p>	<p><b>Session 2B</b>  <b>Federated Learning</b>  Session Chair: TBA  Location: 1CC-215 (Room 215, Level 2 @ 1 Central Courtyard)</p> <p>Papers: #45, #122, #245, #282</p>

	<p><b>Session 2C</b>  <b>Spatial Data and Graph Mining</b>  Session Chair: TBA  Location: 1CC-216 (Room 216, Level 2 @ 1 Central Courtyard)</p> <p>Papers: #17, #181, #189, #334</p>	<p><b>Session 2D</b>  <b>Tutorials I (Cont'd)</b>  Session Chair: TBA  Location: 1CC-204 (Room 204, Level 2 @ 1 Central Courtyard)</p>
	<p><b>Session 2E</b>  <b>Tutorials II (Cont'd)</b>  Session Chair: TBA  Location: 1CC-205 (Room 205, Level 2 @ 1 Central Courtyard)</p>	<p><b>Session 2F</b>  <b>Encore Talks II</b>  Session Chair: TBA  Location: 1CC-210 (Room 210, Level 2 @ 1 Central Courtyard)</p>
	<p><b>Session 2G</b>  <b>Special Session on Federated Learning and Data Management</b>  Session Chair: TBA  Location: 1CC-201 (Room 201, Level 2 @ 1 Central Courtyard)</p> <p>Papers: #386, #309, #422, #387</p>	
16:15 - 16:45	<p><b>Afternoon Tea &amp; Poster Presentations</b>  Location: Level 2 @ 1CC (1 Central Courtyard)</p>	
16:45 - 18:00	<p><b>Distinguished Young Scientist Panel Discussion</b>  Panelists: Hongzhi Yin, Tongliang Liu, Weitong Chen, Jordan Pitt, Sen Wang  (Session Chair: TBA)  Location: 1CC-210 (Room 210, Level 2 @ 1 Central Courtyard)</p>	

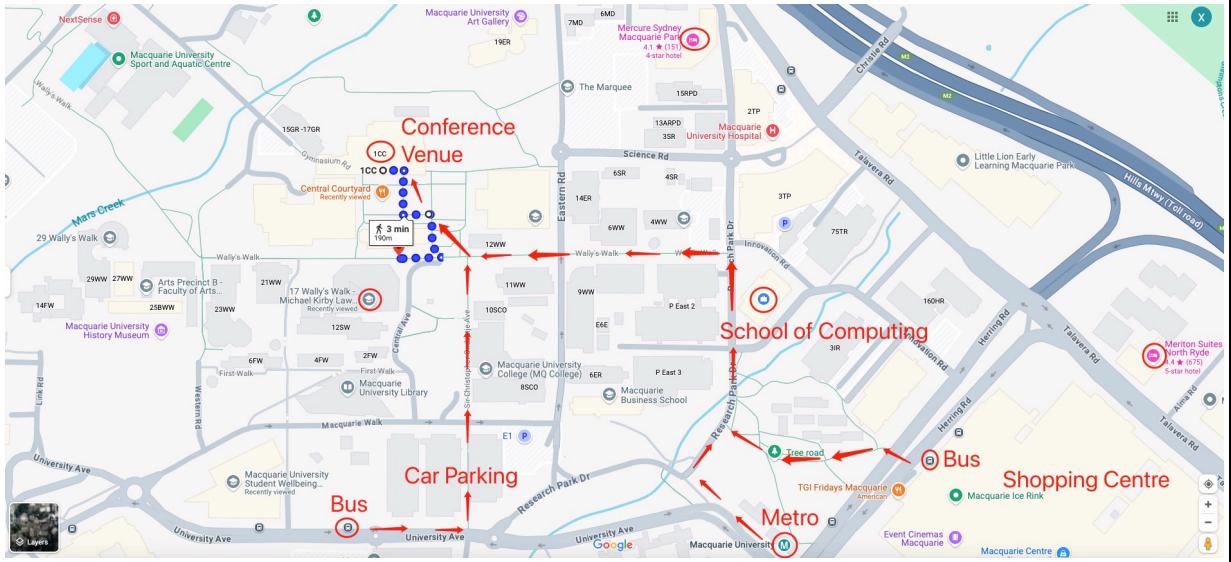
# ADMA2024: Day 2 (Dec 4<sup>th</sup>, 2024)

Time	Events
08:30 - 18:00	<p><b>Registration</b> Location: Level 2 @ 1CC (1 Central Courtyard)</p> 
09:30 - 10:30	<p><b>Keynote Speech III</b> Speaker: Prof. Ling Chen <b>Title: Fortifying Graph Neural Networks in Robustness, Anomaly Detection and Continual Learning</b> (Session Chair: TBA) Location: Theatre G25 @ 17WW (17 Wally's Walk)</p>
10:30 - 11:15	<p><b>Walk to Level 2 @ 1CC (1 Central Courtyard)</b> <b>Morning Tea &amp; Poster Presentations</b> Location: Level 2 @ 1CC (1 Central Courtyard)</p>
11:15 - 12:30	<p><b>Distinguished Women Scientist Panel Discussion</b> Panelists: Jing Jiang (ANU), Wenjie Zhang, Lina Yao, Jing Jiang (UTS), Jiaoqiao Jiang (Session Chair: TBA) Location: 1CC-210 (Room 210, Level 2 @ 1 Central Courtyard)</p>
12:30 - 13:30	<p><b>Lunch</b> Location: Level 2 @ 1CC (1 Central Courtyard)</p>
13:30 - 14:00	<p><b>After Lunch Break, Walk to Theatre G25 @ 17WW (17 Wally's Walk)</b></p>

14:00 - 15:00	<p style="text-align: center;"><b>Keynote Speech IV</b>  Speaker: Prof. Amin Beheshti  <b>Title: Generative Data Mining: Shaping the Future of Adaptive Intelligence in Complex Data Ecosystems</b>  (Session Chair: TBA)  Location: Theatre G25 @ 17WW (17 Wally's Walk)</p>		
15:00 - 15:15	<p style="text-align: center;"><b>Walk to Level 2 @ 1CC (1 Central Courtyard)</b></p>		
15:15 - 16:15	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"> <p><b>Special Sessions Keynote</b>  Speaker: Prof. Shui Yu  <b>Title: Mathematical Artificial Intelligence</b>  Session Chair: TBA  Location: 1CC-210 (Room 210, Level 2 @ 1 Central Courtyard)</p> </td> <td style="width: 50%;"> <p><b>Industry Keynote</b>  Speaker: Oscar Wahltinez  <b>Title: Responsible Artificial Intelligence</b>  Session Chair: TBA  Location: 1CC-201 (Room 201, Level 2 @ 1 Central Courtyard)</p> </td> </tr> </table>	<p><b>Special Sessions Keynote</b>  Speaker: Prof. Shui Yu  <b>Title: Mathematical Artificial Intelligence</b>  Session Chair: TBA  Location: 1CC-210 (Room 210, Level 2 @ 1 Central Courtyard)</p>	<p><b>Industry Keynote</b>  Speaker: Oscar Wahltinez  <b>Title: Responsible Artificial Intelligence</b>  Session Chair: TBA  Location: 1CC-201 (Room 201, Level 2 @ 1 Central Courtyard)</p>
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	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;"> <p><b>Session 3E</b>  <b>Special Session on AI in Healthcare and Medicine I</b>  Session Chair: TBA  Location: 1CC-205 (Room 205, Level 2 @ 1 Central Courtyard)</p> <p>Papers: #92, #354, #375, #377</p> </td> <td style="width: 50%; background-color: #cccccc;"></td> </tr> </table>	<p><b>Session 3E</b>  <b>Special Session on AI in Healthcare and Medicine I</b>  Session Chair: TBA  Location: 1CC-205 (Room 205, Level 2 @ 1 Central Courtyard)</p> <p>Papers: #92, #354, #375, #377</p>	
<p><b>Session 3E</b>  <b>Special Session on AI in Healthcare and Medicine I</b>  Session Chair: TBA  Location: 1CC-205 (Room 205, Level 2 @ 1 Central Courtyard)</p> <p>Papers: #92, #354, #375, #377</p>			
16:15 - 16:45	<p style="text-align: center;"><b>Afternoon Tea &amp; Poster Presentations</b>  Location: Level 2 @ 1CC (1 Central Courtyard)</p>		

16:45 - 17:45	<p align="center"><b>20<sup>th</sup> Anniversary Panel Discussion</b></p> <p align="center">Panelists: Chengqi Zhang, Xue Li, Xiaofang Zhou, Jie Lu, Wen Hu (Session Chair: Michael Sheng)</p> <p align="center">Location: 1CC-210 (Room 210, Level 2 @ 1 Central Courtyard)</p>
17:45 - 18:15	<p align="center"><b>Walk to Banquet Venue – Curzon Hall</b></p> 
18:15 - 21:30	<p align="center"><b>Banquet</b></p> <p align="center">Location: Curzon Hall, 53 Agincourt Road, Marsfield, NSW 2122</p> 

# ADMA2024: Day 3 (Dec 5<sup>th</sup>, 2024)

Time	Events
8:30-18:00	<p align="center"><b>Registration</b> Location: Level 2 @ 1CC (1 Central Courtyard)</p> 
09:30 - 10:30	<p align="center"><b>Keynote Speech V</b> Speaker: Prof. Zhifeng Bao</p> <p align="center"><b>Title: Harnessing Tabular Data Lakes: A Systematic Guide to Discovering and Assembling Data</b> (Session Chair: TBA)</p> <p align="center">Location: Theatre G25 @ 17WW (17 Wally's Walk)</p>
10:30 - 11:15	<p align="center"><b>Walk to Level 2 @ 1CC (1 Central Courtyard)</b></p> <p align="center"><b>Morning Tea &amp; Poster Presentations</b></p> <p align="center">Location: Level 2 @ 1CC (1 Central Courtyard)</p>
11:15 - 12:30	<p align="center"><b>Session 4A</b> <b>Mining for IoTs</b> Session Chair: TBA</p> <p align="center">Location: 1CC-214 (Room 214, Level 2 @ 1 Central Courtyard)</p> <p align="center">Papers: #60, #85, #123, #274, #276</p> <p align="center"><b>Session 4B</b> <b>Industry Data Mining</b> Session Chair: TBA</p> <p align="center">Location: 1CC-215 (Room 215, Level 2 @ 1 Central Courtyard)</p> <p align="center">Papers: #143, #156, #251, #252, #373</p>

	<p><b>Session 4C</b>  <b>Recommendation Systems I</b>  Session Chair: TBA  Location: 1CC-216 (Room 216, Level 2 @ 1 Central Courtyard)  Online Presentation: TBA   Papers: #21, #65, #163, #223, #392</p>	<p><b>Session 4D</b>  <b>Tutorials III</b>  Session Chair: TBA  Location: 1CC-204 (Room 204, Level 2 @ 1 Central Courtyard)</p>
	<p><b>Session 4E</b>  <b>Tutorials IV</b>  Session Chair: TBA  Location: 1CC-205 (Room 205, Level 2 @ 1 Central Courtyard)</p>	<p><b>Session 4F</b>  <b>Encore Talks III</b>  Session Chair: Emma Xue  Location: 1CC-210 (Room 210, Level 2 @ 1 Central Courtyard)</p>
	<p><b>Session 4G</b>  <b>Special Session on AI in Healthcare and Medicine II</b>  Session Chair: TBA  Location: 1CC-201 (Room 201, Level 2 @ 1 Central Courtyard)   Papers: #72, #343, #73, #400, #168</p>	
12:30 - 13:30	<p><b>Lunch</b>  Location: Level 2 @ 1CC (1 Central Courtyard)</p>	
13:30 - 14:00	<p><b>Break</b></p>	
14:00 - 15:00	<p><b>Session 5A</b>  <b>Anomaly Detection</b>  Session Chair: TBA  Location: 1CC-214 (Room 214, Level 2 @ 1 Central Courtyard)  Online Presentation: TBA   Papers: #39, #68, #228, #237</p>	<p><b>Session 5B</b>  <b>Stream and Multimodal I</b>  Session Chair: TBA  Location: 1CC-215 (Room 215, Level 2 @ 1 Central Courtyard)  Online Presentation: TBA   Papers: #71, #91, #109, #326</p>
	<p><b>Session 5C</b>  <b>Data Mining Algorithms</b>  Session Chair: TBA  Location: 1CC-216 (Room 216, Level 2 @ 1 Central Courtyard)  Online Presentation: TBA   Papers: #26, #182, #281, #325</p>	<p><b>Session 5D</b>  <b>Tutorials III (Cont'd)</b>  Session Chair: TBA  Location: 1CC-204 (Room 204, Level 2 @ 1 Central Courtyard)</p>

	<p><b>Session 5E</b>  <b>Tutorials IV (Cont'd)</b>  Session Chair: TBA  Location: 1CC-205 (Room 205, Level 2 @  1 Central Courtyard)</p>	<p><b>Session 5F</b>  <b>Special Session - EEG and Health Informatics</b>  Session Chair: TBA  Location: 1CC-210 (Room 210, Level 2  @ 1 Central Courtyard)  Online Presentation: TBA   Papers: #346, #401, #412, #416</p>
	<p><b>Session 5G</b>  <b>Special Session - Medical AI and Knowledge I</b>  Session Chair: TBA  Location: 1CC-201 (Room 201, Level 2 @  1 Central Courtyard)  Online Presentation: TBA   Papers: #259, #350, #406, #411</p>	
<b>15:00</b> - <b>15:15</b>		<b>Break</b>
<b>15:15</b> - <b>16:15</b>	<p><b>Session 6A</b>  <b>Health Informatics II</b>  Session Chair: TBA  Location: 1CC-214 (Room 214, Level 2 @  1 Central Courtyard)  Online Presentation: TBA   Papers: #155, #211, #243, #248</p>	<p><b>Session 6B</b>  <b>Recommendation Systems II</b>  Session Chair: TBA  Location: 1CC-215 (Room 215, Level 2  @ 1 Central Courtyard)  Online Presentation: TBA   Papers: #190, #224, #230, #271</p>
	<p><b>Session 6C</b>  <b>Data Mining for Security and Privacy</b>  Session Chair: TBA  Location: 1CC-216 (Room 216, Level 2 @  1 Central Courtyard)  Online Presentation: TBA   Papers: #202, #273, #275, #304</p>	<p><b>Session 6D</b>  <b>Data Mining Applications II</b>  Session Chair: TBA  Location: 1CC-204 (Room 204, Level 2  @ 1 Central Courtyard)  Online Presentation: TBA   Papers: #361, #22, #348, #366</p>

	<p><b>Session 6E</b>  <b>Special Session -- Contrastive Learning</b>  Session Chair: TBA  Location: 1CC-205 (Room 205, Level 2 @  1 Central Courtyard)  Online Presentation: TBA    Papers: #112, #157, #344, #360,</p>	<p><b>Session 6F</b>  <b>Federated Learning and Networking</b>  <b>Data Mining</b>  Session Chair: TBA  Location: 1CC-210 (Room 210, Level 2  @ 1 Central Courtyard)  Online Presentation: TBA    Papers: #93, #247, #297, #347</p>
	<p><b>Session 6G</b>  <b>Special Session on Medical AI and Knowledge II</b>  Session Chair: TBA  Location: 1CC-201 (Room 201, Level 2 @  1 Central Courtyard)  Online Presentation: TBA    Papers: #70, #356, #415, #417</p>	
16:15 - 16:45	<p><b>Afternoon Tea &amp; Poster Presentations</b>  Location: Level 2 @ 1CC (1 Central Courtyard)</p>	
16:45 - 18:00	<p><b>Session 7A</b>  <b>Data mining Applications III</b>  Session Chair: TBA  Location: 1CC-214 (Room 214, Level 2 @  1 Central Courtyard)  Online Presentation: TBA    Papers: #40, #46, #67, #44, #310</p>	<p><b>Session 7B</b>  <b>Information Extraction</b>  Session Chair: TBA  Location: 1CC-215 (Room 215, Level 2  @ 1 Central Courtyard)  Online Presentation: TBA    Papers: #24, #31, #153, #231, #32</p>
	<p><b>Session 7C</b>  <b>Data Mining Fundamentals II</b>  Session Chair: TBA  Location: 1CC-216 (Room 216, Level 2 @  1 Central Courtyard)  Online Presentation: TBA    Papers: #144, #238, #239, #291, #481</p>	<p><b>Session 7D</b>  <b>Spatial Data Mining</b>  Session Chair: TBA  Location: 1CC-204 (Room 204, Level 2  @ 1 Central Courtyard)  Online Presentation: TBA    Papers: #74, #137, #171, #256, #290</p>

	<p><b>Session 7E</b>  <b>Graph Mining II</b>  Session Chair: TBA  Location: 1CC-205 (Room 205, Level 2 @  1 Central Courtyard)  Online Presentation: TBA</p> <p>Papers: #49, #63, #102, #191, #279</p>	<p><b>Session 7F</b>  <b>Text Mining and NLP III</b>  Session Chair: TBA  Location: 1CC-210 (Room 210, Level 2  @ 1 Central Courtyard)  Online Presentation: TBA</p> <p>Papers: #33, #90, #147, #201, #414</p>
	<p><b>Session 7G</b>  <b>Special Session on Data Mining for  Privacy and Information Security</b>  Session Chair: TBA  Location: 1CC-201 (Room 201, Level 2 @  1 Central Courtyard)  Online Presentation: TBA</p> <p>Papers: #116, #119, #136, #340, #359</p>	
<b>18:00</b> -	<p><b>Closing</b>  Location: 1CC-210 (Room 210, Level 2 @ 1 Central Courtyard)</p>	

# ADMA2024 Keynote Speeches

## Keynote Speech I

**Time:** Day 1 (Dec 3<sup>rd</sup>, 2024) 09:30-10:30

**Location:** Macquarie Theater @ 21WW (21 Wally's Walk)

**Speaker:** Prof. Hussein Abbass

School of Systems and Computing

The University of New South Wales – Canberra, Australia

**Title:** Analytics in Decentralised Artificial Intelligence Enabled Autonomy

**Abstract:** TBA



**Biography:** Dr. Hussein Abbass is a full professor with the School of Systems and Computing, University of New South Wales, Canberra. He is a Fellow of the Institute of Electrical and Electronics Engineering (IEEE) USA, a Fellow of the Australian Computer Society, a Fellow of the UK Operational Research Society, a Fellow of the Australian Institute of Managers and Leaders, and a Graduate Member of the Australian Institute of Company Directors. Hussein was the National President (2016-2019) for the Australian Society for Operations Research, the Vice-President for Technical Activities (2016-2019) for the IEEE Computational Intelligence Society, and an ExCom and AdCom member (2016-2019) of the IEEE Computational Intelligence Society. Hussein is a Distinguished Lecturer for the IEEE Computational Intelligence Society and the Founding Editor-in-Chief of the IEEE Transactions on Artificial Intelligence. Hussein is the chair of the IEEE Conference on AI Steering Committee, the incoming chair of the IEEE Frank Rosenblatt Award committee (equivalent to the technical medal in computational intelligence) and is the vice-chair for the Working Group on the IEEE P7018 Standard for Security and Trustworthiness Requirements in Generative Pretrained Artificial Intelligence (AI) Models. Hussein is a UAV pilot and a mental health first-aid officer and has completed various executive professional development training. Following ten years in industry and academia, in 2000, he joined the University of New South Wales campus in Canberra (UNSW-Canberra) at the Australian Defence Force Academy. He has been a full professor since 2007 and has served in various university leadership roles. His current research focuses on trusted quantum-enabled human-AI-swarm teaming systems and distributed and trusted machine learning and machine education systems and algorithms.

## Keynote Speech II

**Time:** Day 1 (Dec 3<sup>rd</sup>, 2024) 14:00-15:00

**Location:** Macquarie Theater @ 21WW (21 Wally's Walk)

**Speaker:** Prof. Lei Chen

Department of Computer Science and Engineering

Hong Kong University of Science and Technology

**Title:** TBA

**Abstract:** TBA



**Biography:** Dr. Lei Chen is a chair professor in the data science and analytic thrust at HKUST (GZ), Fellow of the IEEE, and a Distinguished Member of the ACM. Currently, Prof. Chen serves as the dean of information hub, the director of Big Data Institute at HKUST (GZ), the director of Guangzhou Municipality Lab of Big Data Intelligence. Prof. Chen's research interests include Data-driven AI, knowledge graphs, blockchains, data privacy, crowdsourcing, spatial and temporal databases and query optimization on large graphs and probabilistic databases. He received his BS degree in computer science and engineering from Tianjin University, Tianjin, China, MA degree from Asian Institute of Technology, Bangkok, Thailand, and PhD in computer science from the University of Waterloo, Canada. Prof. Chen received the SIGMOD Test-of-Time Award in 2015, Best research paper award in VLDB 2022, The system developed by Prof. Chen's team won the excellent demonstration award in VLDB 2014. Prof. Chen had served as VLDB 2019 PC Co-chair and an executive member of the VLDB endowment. Currently, Prof. Chen serves as general co-chairs of VLDB 2024 and Editor-in-chief of IEEE Transaction on Data and Knowledge Engineering.

### Keynote Speech III

**Time:** Day 2 (Dec 4<sup>th</sup>, 2024) 09:30-10:30

**Location:** Macquarie Theater @ 21WW (21 Wally's Walk)

**Speaker:** Prof. Ling Chen

Faculty of Engineering and IT

University of Technology Sydney

**Title: Fortifying Graph Neural Networks in Robustness, Anomaly Detection and Continual Learning**

**Abstract:** Graphs are ubiquitous and widely used to model complex relationships between instances across various domains, such as social networks, biology, and chemistry. Due to the great capacity of modeling graph data, Graph Neural Networks (GNNs) have been extensively utilized for graph learning. Despite achieving remarkable achievement, GNNs have raised several concerns in real applications, including vulnerability to adversarial attacks, sensitivity to anomalous data, and lack of generality to continually expanded graphs. For example, attackers can fool the GNNs into giving the outcome they desire with unnoticeable perturbation on the training graph and the performance of GNNs would be significantly deteriorated with the existence of anomalous graph data. To address these concerns, we aim to fortify GNNs in robustness, anomaly detection and continual learning. Specifically, by developing novel defense mechanisms, we aim to improve the robustness of GNNs against attacks and noises. Moreover, to prevent the graph data from being contaminated by the anomaly, graph anomaly detection aims to identify abnormal graphs that exhibit deviant structures and node attributes compared to the majority in a graph set. Lastly, to accommodate the continually expanding graphs and enhance the effectiveness of GNNs, graph continual learning would continually adapt GNNs to the expanded graph of the current task while maintaining the performance over the graph of previous tasks.



**Biography:** Dr. Ling Chen is a Professor in the School of Computer Science at UTS, Sydney, Australia. She received her PhD in Computer Engineering from Nanyang Technological University (NTU), Singapore, and undertook postdoctoral training at Leibniz University Hannover (L3S Research Centre), Germany. As the Deputy Head of School (Research) for the School of Computer Science, Ling is leading major research & development activities across different disciplines and research institutes/centres within the school. Ling also leads the Data Science and Knowledge Discovery Laboratory (The DSKD Lab) within the Australian Artificial Intelligence Institute (AAII) at UTS. Ling's research interests mainly include (i) discovering regularities (e.g., patterns) and irregularities (e.g., outliers or novelties) from various types of data (e.g., structured/unstructured data, single-modal/multimodal data, and static/dynamic data etc.); (ii) data representation learning, including both hash-based and learning-based methods for graph structured data and spatio-temporal data; (iii) social media and social network mining, including event detection, information diffusion modelling and user profiling for recommendation; (iv) dialogue and interactive systems, including reinforcement learning (for POMDP) and continual learning. Ling has secured multiple competitive research grants, including ARC DP/LP/LIEF. Ling's research has also been recognised and funded by the industry, including Facebook and TPG Telecom. Ling is an Editorial Board member for the IEEE Journal of Social Computing, and the Elsevier Journal of Data and Knowledge Engineering.

## Keynote Speech IV

**Time:** Day 2 (Dec 4<sup>th</sup>, 2024) 14:00-15:00

**Location:** Macquarie Theater @ 21WW (21 Wally's Walk)

**Speaker:** Prof. Amin Beheshti

School of Computing

Macquarie University

**Title: Generative Data Mining: Shaping the Future of Adaptive Intelligence in Complex Data Ecosystems**

**Abstract:** This keynote will explore the frontier of generative data mining as it evolves from a tool for pattern discovery into a foundational technology for creating synthetic data, predicting future states, and enhancing adaptive intelligence. Focusing on applications in areas like predictive finance, healthcare diagnostics, and smart cities, the talk will highlight how generative models can transform static data assets into dynamic, interactive resources. By delving into advancements in generative adversarial networks (GANs), probabilistic models, and reinforcement learning, this keynote will illuminate how these methods enable systems to not only interpret but also generate meaningful scenarios that enhance forecasting and decision-making capabilities in real time. Emphasis will also be placed on the ethical frameworks and technical strategies needed to ensure generative models operate within secure, transparent, and bias-aware ecosystems.



**Biography:** Prof. Amin Beheshti is a Full Professor of Data Science at Macquarie University, and an Adjunct Professor of Computer Science at UNSW Sydney, Australia. Amin is the founder and director of the Centre for Applied Artificial Intelligence, the head of the Data Science Lab, and the founder of the Big Data Society at Macquarie University, Sydney, Australia. Amin completed his PhD and Postdoc in Computer Science and Engineering at UNSW Sydney, and holds a Master's and Bachelor's degree in Computer Science, both with First Class Honours. Before starting his PhD in 2009, Amin had over a decade of industry experience as a founder and CEO, consultant, and Solution Architect in national and international organizations. Alongside his teaching activities, Amin has made significant contributions to research projects and successfully secured 50+ research projects (Over \$38 million in Research Funding). Amin received Prestigious Awards, including Excellence Award (Macquarie University, 2023), Excellence in Research Innovation, Partnership Entrepreneurship (Macquarie University, 2022), National Security Impact Award (D2D CRC, 2016 and 2017), Recognition Award (D2D CRC, 2016 and 2017), Australian Postgraduate Award (APA 2009-2012), and several Best Paper awards. In 2021, due to his outstanding performance, Amin was promoted from Senior Lecturer to Full Professor at Macquarie University. As a distinguished researcher in Data and AI Science, Amin has been invited to serve as a Keynote Speaker, General-Chair, PC-Chair, Organisation-Chair, and program committee member of top international conferences. He is also a leading author of several authored books in data, social, and process analytics, co-authored with other high-profile researchers. Amin was named a finalist in the prestigious Australian AI Awards 2024 in three categories: AI Academic / Researcher of the Year, AI Leader of the Year – Enterprise, and AI Rising Star of the Year – Enterprise. Amin has been invited to serve as a Distinguished Jury member for prestigious awards, including the "Aegis Graham Bell Award, recognizing his leadership in AI and significant contributions and involvement in commercialization efforts.

## Keynote Speech V

**Time:** Day 3 (Dec 5<sup>th</sup>, 2024) 09:30-10:30

**Location:** Macquarie Theater @ 21WW (21 Wally's Walk)

**Speaker:** Prof. Zhifeng Bao

School of Computing Technologies

RMIT University

**Title: Harnessing Tabular Data Lakes: A Systematic Guide to Discovering and Assembling Data**

**Abstract:** Data lakes have emerged as vital repositories for storing vast quantities of heterogeneous data, presenting immense opportunities as well as significant challenges for data-driven research and applications. This talk introduces a systematic guide to effectively harnessing tabular data in data lakes, focusing on three key tasks: 1) Dataset Discovery – identifying relevant datasets that align with various user intents and inputs; 2) Dataset-Level Assemblage – assembling the discovered datasets into a unified and comprehensive resource that meets various user requirements; 3) Data Points-Level Assemblage – optimizing the selection of data points from the assembled dataset, curating a subset most effective for typical downstream tasks such as machine learning model training. By addressing these tasks, our guided framework transforms fragmented raw data into high-quality, application-ready datasets. The talk will cover problem formulations, challenges, and methodologies involved, and will highlight open questions where effective and efficient data preparation is crucial. Ultimately, we aim to explore the potential for developing an intelligent, personalized data preparation agent to automate and optimize these processes for real-world applications.



**Biography:** Prof. Zhifeng Bao leads the Big Data and Database Group at RMIT University and is an Honorary Senior Fellow at The University of Melbourne. In the past he co-directed the RMIT Center of Information Discovery and Data Analytics. He obtained his PhD in Computer Science from National University of Singapore and received the Best PhD Thesis Award. His recent research focuses on data management and governance, particularly in DB4AI and AI4DB. In DB4AI, he investigates how to identify suitable datasets, uncover hidden relationships, tackle data quality issues, and meet diverse user needs. In AI4DB, he studies how machine learning can optimize database operations, including index selection, query optimization, and cardinality estimation for both low- and high-dimensional data. He has received several honors, including the Australasian Research Council Future Fellowship, the Computing Research and Education Association of Australasia (CORE) Award for Outstanding Research, the Google Faculty Research Awards, and Best Paper Award Runner-up at KDD'19. He is the PC Co-chair of full paper track at CIKM'24 and has served as the Associate Editor of PVLDB, SIGMOD, and ICDE. He also chairs the Data Management and Data Science field for the CORE 2026 conference ranking committee. In addition to academic work, he provides consultancy to various organizations, including the City of Melbourne on its Smart City Project and the Victoria Department of Health and Human Services on data quality initiatives.

## Special Sessions Keynote Speech

**Time:** Day 2 (Dec 4<sup>th</sup>, 2024) 15:15-16:15

**Location:** 1CC-210 (Room 210, Level 2 @ 1 Central Courtyard)

**Speaker:** Prof. Shui Yu

School of Computer Science

University of Technology Sydney

**Title:** Mathematical Artificial Intelligence

**Abstract:** Artificial Intelligence is a leading topic in both academia and industry, and explainable AI (XAI) is a critical and hot topic of the field. However, we noticed that XAI is not the core of the business, and we expect deterministic AI models. In this talk, we will report the current landscape of XAI, and then introduce the next stage after XAI – Mathematical AI (MAI). We will mainly present how the mathematical tools, such as differential geometry and group theory, are used build deterministic AI models. At the end of the talk, we will present some cases of the application of MAI. We hope the talk will shed light on the promising field for interested audience.



**Biography:** Dr. Shui Yu is a Professor of School of Computer Science, University of Technology Sydney, Australia. His research interest includes Cybersecurity, Network Science, Big Data, and Mathematical Modelling. He has published seven monographs and edited two books, more than 600 technical papers at different venues, such as IEEE TDSC, TPDS, TC, TIFS, TMC, TKDE, TETC, ToN, and INFOCOM. His current h-index is 78. Professor Yu promoted the research field of networking for big data since 2013, and his research outputs have been widely adopted by industrial systems, such as Amazon cloud security. He is currently serving the editorial boards of IEEE Communications Surveys and Tutorials (Area Editor) and IEEE Internet of Things Journal (Editor). He is a Distinguished Visitor of IEEE Computer Society, and an elected member of Board of Governors of IEEE VTS and IEEE ComSoc, respectively. He is a member of ACM and AAAS, and a Fellow of IEEE.

## Industry Keynote Speech

**Time:** Day 2 (Dec 4<sup>th</sup>, 2024) 15:15-16:15

**Location:** 1CC-201 (Room 201, Level 2 @ 1 Central Courtyard)

**Speaker:** Oscar Wahltinez

Google Research, Australia

**Title:** Responsible AI

**Abstract:**



**Biography:** Over 10 years of industry experience, including leading engineering teams at Google and deploying software to billions of users as part of Windows and Android. Experienced in technical outreach and partnerships, responsible AI development, and foundation models as part of the Responsible AI team at Google.

# ADMA2024 Technical Program

Note: Paper presentation time is 15 minutes including Q&A time

## Parallel Sessions 1

### Session 1A -- Data Mining Fundamentals I

#### #35: Evaluating Model Robustness Using Adaptive Sparse L0 Regularization

Authors: Weiyou Liu, Zhengyang Li, and Weitong Chen

#### #41: Expert-Guided Model Cultivation: CoTeaching to Resolve Abstruseness and Enhance Learning Performance

Authors: Siqi Zhang, Feng Zhou, Zhidong Li, Yang Wang, Donglian Qi, and Shuming Li

#### #99: A Cluster-Based Approach to kNN Join Over Batch Dynamic High-Dimensional Data

Authors: Nimish Ukey, Guangjian Zhang, Zhengyi Yang, Xiaoyang Wang, Binghao Li, Serkan Saydam, Wenjie Zhang

#### #178: Boosting Adversarial Transferability by Uniform Scale and Mix Mask Method

Authors: Tao Wang, Qianmu Li, Zhichao Lian, Zijian Ying, Fan Liu, and Shunmei Meng

#### #236: OPMUS: A Win-Win Pricing Strategy for Machine Unlearning Service

Authors: Mingjian Tang, Weiqi Wang, Shui Yu

### Session 1B -- Graph Mining I

#### #43: Veriable Graph-Based Approximate Nearest Neighbor Search

Authors: Chenzhao Wang, Jilian Zhang, Xuyang Liu, Kaimin Wei, and Bingwen Feng

#### #83: FCMH: Fast Cluster Multi-Hop Model for Graph Fraud Detection

Authors: Rui Zhang, Wenbo Li, Xiaodong Ning, Dawei Cheng, Li Han, and Heguo Yang

#### #170: Multi-task Learning of Heterogeneous Hypergraph Representations in LBSNs

Authors: Dong Duc Anh Nguyen, Minh Hieu Nguyen, Phi Le Nguyen, Jun Jo, Hongzhi Yin, Thanh Tam Nguyen

#### #254: Feature-Aware Unsupervised Detection of Important Nodes in Graphs

Authors: Mohammadreza Ghanbari, Saeed Asadi Bagloee, Jianzhong Qi, Majid Sarvi

#### #270: HHP: A Hybrid Partitioner for Large-scale Hypergraph

Authors: Junlin Shang, Zhenyu Zhang, Wenwen Qu, and Xiaoling Wang

### Session 1C -- Health Informatics I

#### #19: Exploring the Advantages and Limitations of Association Rule Mining and Decision Trees for Pattern Mining in Heart Disease Data

Authors: Sadeq Darrab, Florian Kleinert, David Broneske, and Gunter Saake

#### #160: Topological Knowledge Enhanced Personalized Ranking Model for Sequential Medication Recommendation

*Authors: Yanda Wang, Lin Yue, Ying Li*

**#208: Detecting Fetal Growth Restriction in Early Pregnancy**

*Authors: Yiheng Zhang, Ke Yu, Xiaowei Huang, Yunni Xia, Weiling Li*

**#216: A Unified Deep Learning-based EEG Biometric Authentication System for Cross-session Scenarios**

*Authors: Yijing Gong, Min Wang, Yu Zhang, Wenjie Zhang, Shuchao Pan*

**#217: Automatic Summarization of Life-Critical Situations by Generative AI**

*Authors: Yuxuan Sun, Xue Li*

## Session 1D -- Tutorials I

**Title: Graph Self-Supervised Learning: Taxonomy, Frontiers, and Applications**

*Speakers: Yixin Liu (Monash University); Yizhen Zheng (Monash University); Shirui Pan (Griffith University)*

## Session 1E -- Tutorials II

**Title: Anomaly Detection Based on Isolation Mechanisms**

*Speakers: Ye Zhu (Deakin University); Haolong Xiang (Hong Kong Polytechnic University); Yang Cao (Deakin University); Xin Han (Deakin University)*

## Session 1F -- Encore Talks I

**Title: Detecting Machine-Generated Texts by Multi-Population Aware Optimization for Maximum Mean Discrepancy**

*Speakers: Yiliao Song (University of Adelaide)*

**Title: ProgDiffusion: Progressively Self-Encoding Diffusion Models**

*Speakers: Xuhui Fan (Macquarie University)*

## Session 1G -- Special Session on Data Intelligence & Knowledge Mining

**#77: Advancing Aspect-Based Sentiment Analysis through Deep Learning Models**

*Chen Li, Huidong Tang, Jinli Zhang, Xiujing Guo, Debo Cheng, Yasuhiko Morimoto*

**#128 Analysis of computer virus propagation in Social Internet of Things**

*Authors: Luis Martes Calderon, Chenquan Gan, Wei Yang, Deepak Kumar Jain*

**#379: Graph Data Understanding and Interpretation Enabled by Large Language Models**

*Zongli Jiang, Chen Feng, Jinli Zhang, Xiaolu Bai*

**#413: A Multimodal Knowledge Distillation Framework for Sleep Physiological Data**

*Zongting Xie, Heng Liang, and Ziyu Jia*

**#152: Tailored Federated Learning: Leveraging Direction Regulation & Knowledge Distillation**

*Huidong Tang, Chen Li, Huachong Yu, Sayaka Kamei, Yasuhiko Morimoto*

## Parallel Sessions 2

### Session 2A -- Text Mining and NLP I

#### #135: Recent Advances on Multi-modal Dialogue Systems: A Survey

*Authors: Fenghua Cheng, Xue Li, Haoyang Wu, Jiacheng Sang, Wenqi Zhao*

#### #205: AttRel: Single Module based Joint Entity and Relation Extraction with Attention Enhanced Text Embedding

*Authors: Mengmeng Cui, Chenbin Li, Haolong Xiang, Lianyong Qi, Wanchun Dou, Xiaolong Xu*

#### #269: LE-NER: A Chinese NER Model Based on Lexical Enhancement

*Authors: Dong Li, Shumei Du, Peixuan Li, Baoyan Song, Zhicong Liu, Yue Kou*

#### #278: Towards Adaptive Context Management for Intelligent Conversational Question Answering

*Authors: Manoj Madushanka Perera, Adnan Mahmood, Kasun Eranda Wijethilake, Quan Z. Sheng*

### Session 2B -- Federated Learning

#### #45: Efficient Clustered Federated Learning by Locality Sensitive Hashing

*Authors: Lishan Yang, Alireza Seyed Shakeri, Liangxi Pu, and Weitong Chen and Yanjun Shu*

#### #122: Heterogeneous Federated Learning Method Based on Dual Teachers Knowledge Distillation

*Authors: Siyuan Wu, Hao Tian, Weiran Zhang, Tingtong Zhu, Fuwen Tian, Zhehong Wang, and Wanchun Dou*

#### #245: Towards Efficient Decentralized Federated Learning: A Survey

*Authors: Saqr Khalil Saeed Thabet, Behnaz Soltani, Yipeng Zhou, Quan Z. Sheng, Shiting Wen*

#### #282: UFL: Unlinkable Federated Learning through Shuffle and Shamir's Secret Sharing

*Authors: Jingxue Chen, Zhiwei Si, Jingcheng Song, Manoranjan Mohanty, Weiqi Wang, Hu Xiong*

### Session 2C -- Spatial Data and Graph Mining

#### #17: A Transformer Based Malicious Traffic Detection Method in Android Mobile Networks

*Authors: Yuhao Sun, Hao Peng, Yingjun Chen, Botao Jiang, Shuhai Wang, Yongxin Qiu, Hongkun Wang, and Xiong Li*

#### #181: Towards Unified Spatio-Temporal Index for Hybrid Trajectory Search

*Authors: Tianyao Wen, Shengkun Zhu, Yiming Wang and Sheng Wang*

#### #189: RWEM: An In-memory Random Walk Based Node Embedding Framework on Multiplex User-Item Graphs

*Authors: Yao Hu, and Qian Huang*

#### #334: MUSE: Integrating Multi-Knowledge for Knowledge Graph Completion

*Authors: Pengjie Liu*

### Session 2D -- Tutorials I (Cont'd)

**Title: Graph Self-Supervised Learning: Taxonomy, Frontiers, and Applications**

*Speakers: Yixin Liu (Monash University); Yizhen Zheng (Monash University); Shirui Pan (Griffith University)*

**Session 2E -- Tutorials II (Cont'd)****Title: Anomaly Detection Based on Isolation Mechanisms**

*Speakers: Ye Zhu (Deakin University); Haolong Xiang (Hong Kong Polytechnic University); Yang Cao (Deakin University); Xin Han (Deakin University)*

**Session 2F -- Encore Talks II****Title: Periformer: Periodic Transformer for Seasonal and Irregularly Sampled Time Series**

*Speakers: Xiaobin Ren (University of Auckland); Katerina Taskova (The University of Auckland); Patricia Riddle (University of Auckland); Kaiqi Zhao (University of Auckland); Liyanan Li (University of Auckland)*

**Session 2G -- Special Session on Federated Learning and Data Management****#386: A Chinese Hypernymy Detection Method Cross-Lingually Supervised by English Hypernyms**

*Authors: Zhipeng Xie, Shui Xie*

**#309: An Active Learning Method via Expected Model Loss Reduction**

*Authors: Yahe Li and Zhipeng Xie*

**#422 FairEquityFL – A Fair and Equitable Client Selection in Federated Learning for Heterogeneous IoV Networks**

*Authors: Fahmida Islam, Adnan Mahmood, Noorain Mukhtiar, Kasun Eranda Wijethilake, Quan Z. Sheng*

**#387: Weak-Evidence Aggregation for the Choice of Plausible Alternatives Task**

*Authors: Zhipeng Xie, Guorong Li*

**Parallel Sessions 3****Session 3A -- Text Mining and NLP II****#34: Enhancing Chemistry-Domain Scientific Paper Summarization by Knowledge Graphs**

*Authors: Yutong Qu, Jian Yang, Weitong Chen, Yan Jiao, Lishan Yang, Congbo Ma*

**#42: Identification of Targets in Disinformation News Articles using Supervised Machine Learning**

*Authors: Sadam Hussain, Akmal Saeed Khattak and Tony Russell-Rose and Venkata L. Raju Chinthalapati*

**#54: Attend2trend: Attention-Based LSTM Model for Detecting and Forecasting of Trending Topics**

*Author: Ahmed Saleh*

**#227: Query Exploration based on Knowledge Reasoning**

*Authors: Tian Xie, Qi Song, Qi Zhao, Hao Jiang, YiJie Li, TongJing Zhu*

## Session 3B -- Data Mining Applications I

### #30: Enhancing Financial Market Predictions: Causality-Driven Feature Selection

*Authors: Wenhao Liang, Zhengyang Li, and Weitong Chen*

### #86: Aligning Bytes with Bliss: Integrating Happiness Computing with Sociological Insight

*Authors: Xiaohua Wu, Lin Li, Xiaohui Tao, Yuefeng Li*

### #176: Adaptive Disentangled Contrastive Collaborative Filtering

*Authors: Sujie Yu, Junnan Zhuo, Lvying Chen, Hailian Yin, and Bohan Li*

### #212: PDC-FRS: Privacy-preserving Data Contribution for Federated Recommender System

*Authors: Chaoqun Yang, Wei Yuan, Liang Qu, Thanh Tam Nguyen*

## Session 3C -- Critical Mining Applications

### #140: BiF-AC: A bidirectional feedback actor-critic framework for UAV-UGV graph-based search and rescue operations

*Authors: Xin Cao, He Luo, Guoqiang Wang, Shan Xue, Jian Yang, Jia Wu, Amin Beheshti*

### #240: Optimizing Recreation in Yellow River Mouth Park based on Reference-Dependent Analysis

*Authors: Qin Gao, Linke Qin, Hao Meng, Jun Shen, Xiaosong Wang, Songsong Cui, Zhenrui Li*

### #318: Adaptformer: An Adaptive Multimodal Deep Decomposition Approach for Power Consumption Forecasting

*Authors: Nan Yang, Yuning Zhang, Yunqi Wang, Dahao Tang, Yanli Li, and Dong Yuan*

### #336: Semantic-Integrated Online Audit Log Reduction for Efficient Forensic Analysis

*Authors: Wenhao Liao, Jia Sun, Haiyan Wang, Zhaoquan Gu, Jianye Yang*

## Session 3D -- Data Stream and Time Series

### #37: Correlation Analysis of Adversarial Attack in Time Series Classification

*Authors: Zhengyang Li, Wenhao Liang, Chang Dong, Weitong Chen, and Dong Huang*

### #38: Improving Time Series Classification with Representation Soft Label Smoothing

*Authors: Hengyi Ma and Weitong Chen*

### #80: P2S-Sketch: A Sketch Family for Priority-aware Per-flow Spread Measurement in Network Data Stream

*Authors: Shaolong Zhou, Guojun Gao, Yu-e Sun, He Huang, Yang Du, Yihuai Wang and Jun Lu*

### #349: Kolmogorov-Arnold Networks (KAN) for Time Series Classification and Robust Analysis

*Authors: Chang Dong, Liangwei Zheng, Weitong Chen*

## Session 3E -- Special Session on AI in Healthcare and Medicine I

### #92: RPE-Diff: A Relative Position Encoding Diffusion Model for Perirenal Fat Segmentation in Metabolic Syndrome

*Authors: Shuai Ye, Tianming Du, Frank Kulwa, Xiangyu Meng, Md Mamunur Rahaman, Marcin Grzegorzek, Ning Xu, Tao Jiang, Hongzan Sun, Chen Li*

**#354: MSAomaly: Time Series Anomaly Detection with Multi-Scale Augmentation and Fusion**

*Authors: Tao Yin, Zhibin Zhang, Shikang Hou, Huan Zhao, Lijiao Zheng, Yifei Zhou, Jin Xie and Meng Yan*

**#375: Facilitating Feature Selection and Extraction in Clinical Trials with Large Language Models**

*Jiaji Guo, Wen Sun, Shi-ting Wen, Di Wu, Yipeng Zhou*

**#377: When Molecular GAN Meets Byte-Pair Encoding**

*Huidong Tang, Chen Li, Yasuhiko Morimoto*

## Parallel Sessions 4

### Session 4A -- Mining for IoTs

**#60: Enhancing IoT Security: Hybrid Machine Learning Approach for IoT Attack Detection**

*Authors: Alavikunhu Panthakkan, S M Anzar, Dina J. M. Shehada, Wathiq Mansoor, and Hussain Al Ahmad*

**#85: Distributed Industrial Digital Twinning Scheme in 6G Future Scenarios**

*Authors: Yibo Sun, Enliang Wang, Bingyu Yang, Jin Gong, Weitong Chen, Zhe Sun*

**#123: An Inference Acceleration Approach for Boosting DNN Cold Start in Cloud-Edge Computing**

*Authors: Hao Tian, Haolong Xiang, Tingtong Zhu, Siyuan Wu, Cheng Chen, Zheng Li, Mingxu Jiang, Wanchun Dou*

**#274: FedCLF – Towards Efficient Participant Selection for Federated Learning in Heterogeneous IoV Networks**

*Authors: Kasun Eranda Wijethilake, Adnan Mahmood, Quan Z. Sheng*

**#276: PheScale: Leveraging Transformer Models for Proactive VM Auto-Scaling**

*Authors: Yanqin Zheng, Wang Zhou, Changjian Wang, Jingya Zhang, Wenda Tang, Liang Qi, Tianxiang Ai, Guanghui Li, Bin Yu, Xin Yang*

### Session 4B -- Industry Data Mining

**#143: Path-aware Siamese Graph Neural Network for Link Prediction**

*Authors: Jingsong Lv, Zhao Li, Hongyang Chen, Ting Li*

**#156: GEM-GNN: Group Enhanced Multi-relation Graph Neural Networks for Fraud Detection**

*Authors: Longxun Wang, Ziyang Cheng, Mengmeng Yang, Li Han, Dawei Cheng, Li Xie, Huaming Tian*

**#251: A Data-Driven Framework for Identifying Abnormal Status in Natural Gas Wells**

*Authors: Yang Cao, Yixiao Ma, Xichen Tang, Razeen A Rasheed, Hong Xian Li*

**#252: Enhancing Wind Speed and Direction Prediction with a Mean Squared Error Neural Network**

*Authors: Qian Zhao, Anbang Guo, Yong Wang, Hao Meng, Jun Shen*

**#373: Learning and Mapping Academic Topic Evolution - Evolving Topics in the Australian National Disability Insurance Scheme**

*Authors: Wensi Jiang, Yu Zhang, Huadong Mo, Min Wang, Wenjie Zhang*

## **Session 4C -- Recommendation Systems I (Online)**

### **#21: New Contrastive Learning Method Using Embedding Space Data Augmented for Sequence Recommendation**

*Authors: Zhenhai Wang, Yunlong Guo, Weimin Li, and Hongyu Tian*

### **#65: Context-augmented Contrastive Learning Method for Session-based Recommendation**

*Authors: Xianlan Sun, Xiangyun Gao, Subin Huang, Haibei Zhu, Chen Xu, Pingfu Chao, and Chao Kong*

### **#163: Graph Contrastive Learning for Multi-Behavior Recommendation**

*Authors: Haiying li, Huihui Wang, Shunmei Meng, Xingguo Chen*

### **#223: Explicit and Implicit Counterfactual Data Augmentation for Sequential Recommendation**

*Authors: Zhouying Xu, Xuejun Liu, Zhuoya Xing, Jiasheng Cao, Tao He, Xiaoyang Huang*

### **#392: Multi-Attribute Sequential Recommendation**

*Authors: Shuhan Qiu, Shanming Wei and Qianmu Li*

## **Session 4D -- Tutorials III**

### **Title: Online Algorithms for Decision-Making in the Absence of Future Data**

*Speakers: Wei Bao (University of Sydney); Binghan Wu (University of Sydney); Ruoyu Wu (University of Sydney)*

## **Session 4E -- Tutorials IV**

### **Title: Vision-and-Language Navigation for Embodied AI**

*Speakers: Yuankai Qi (Macquarie University)*

## **Session 4F -- Encore Talks III**

### **Title: One-for-All: Generalist Graph Anomaly Detection with In-Context Learning**

*Speakers: Yixin Liu (Monash University)*

### **Title: EEiF: Efficient Isolated Forest with e Branches for Anomaly Detection**

*Speakers: Haolong Xiang (Hong Kong Polytechnic University)*

## **Session 4G -- Special Session on AI in Healthcare and Medicine II**

### **#72: MRes-CNN: A Multi-branch Residual CNN for Colorectal Histopathological Image Classification**

*Authors: Lingling Yuan, Md Mamanur Rahaman, Hongzan Sun, Xiaoyan Li, Marcin Grzegorzek, Ning Xu, and Chen Li*

### **#343: A Boundary Aware dual-branch Neural Network for Lung Nodule Segmentation**

*Authors: Zongli Jiang, Qingzhou Zhao, Jinli Zhang, Xiaolin Du, Tingting Zhu*

### **#73: An Extended Few-Shot Learning-Based Approach for Histopathological Image Classification of Pan-Cancer in the Digestive System**

*Authors: Rui Li, Md Mamanur Rahaman, Xiaoyan Li, Hongzan Sun, Jinzhu Yang, Minghe Gao1, Marcin Grzegorzek, Tao Jiang, and Xinyu Huang, Chen Li*

### **#400: DHDC: A Comprehensive Disaster House Damage Dataset for Classification**

*Xing Zi; Yunxiao Shi; Taoyuan Zhu; Kairui Jin; Xian Tao; Jun Li; Karthick Thiagarajan; Mukesh Prasad*

### **#168: RBMO-Att-Bi-LSTM: A Red-billed Blue Magpie Optimiser-self-attention Mechanism based Optimisation of Bi-directional Long- and Short-term Memory Networks for Classification of COVID-19 CT Images**

*Authors: Yihao Sun, Tianming Du, Hongzan Sun, Jian Xu, Md Mamanur Rahaman, Xinghao Wang, Xinyu Huang, Tao Jiang, Marcin Grzegorzek, Ning Xu, Chen Li*

## **Parallel Sessions 5**

### **Session 5A -- Anomaly Detection (Online)**

#### **#39: Application of Oversampling Techniques under Neyman-Pearson Paradigm on Credit Card Fraud Detection**

*Authors: Chujun Huang, Suijing Chen, You Wu, Anyan Liu, Ping He, and Min Zhou*

#### **#68: An Ensemble Learning Method based on Neighborhood Random Super-Reduct for Software Defect Number Prediction**

*Authors: Yuqi Sha, Yixuan Jiang, Junwei Du, Qiang Hu, and Feng Jiang*

#### **#228: ITRMD: A Dimensionality Reduction Framework for Accurate and Efficient Multivariate KPI Anomaly Detection**

*Authors: Tianrun Gao, Decheng Zuo, Yanjun Shu, Zhan Zhang, Dongxin Wen, Yutong Qu*

#### **#237: Anomaly Detection Representation Learning Framework towards Mixed Time Series with Scalable Multivariate Fusion**

*Authors: Yanfang Zhang, Chen Gong*

### **Session 5B -- Stream and Multimodal (Online)**

#### **#71: PiqSketch: An Efficient Sketching Algorithm for Per-key Tail Quantile Estimation in Large-scale Data Streams**

*Authors: Yuheng Zhou, Guoju Gao, Yu-E Sun, He Huang, Yang Du, and Yihuai Wang*

#### **#91: Inter-Modal Shifting and Intra- Adaptation for Multimodal Sentiment Analysis**

*Authors: Ke Liu, Donghong Han, Deji Zhao, Jing Li, Baiyou Qiao, and Gang Wu*

#### **#109: Cross-modal Sentiment Analysis Based on Fine-grained Feature Interaction Learning**

*Authors: Ye Sun, Guozhe Jin, Yahui Zhao, Rongyi Cui, Yin Hui*

#### **#326: Truth Discovery in Social Sensing Based on Propagation Pattern and Multi-Modal Semantic Consistency Analysis**

*Authors: Xiu Fang, Haiyan Zhuo, Quan Z. Sheng, Yihong Zhang, Tiancheng Zhu, Xinyang Du, Guohao Sun*

## **Session 5C -- Data Mining Algorithms (Online)**

### **#26: Structure-Aware Style Transfer based on Multi-Scale and Edge Texture**

*Authors: Hanadi AL-Mekhlafi and Shiguang Liu*

### **#182: A Differential Privacy Decision Forest Algorithm for Reducing the Effect of Noise**

*Authors: Runfei Liu, Mingze Chu, Yuming Jiang, Xuefeng Ding, Yuncheng Shen, Dasha Hu*

### **#281: FreqAT: An Adversarial Training Based on Adaptive Frequency-Domain Transform**

*Authors: Denghui Zhang, Yanming Liang, Qiangbo Huang, Xin Huang, Peixin Liao, Ming Yang, Liyi Zeng*

### **#325: VQPulsar: Pulsar Candidate Analysis via Deep Generative Model**

*Authors: Haoxi Wang, Junyu Li*

## **Session 5D -- Tutorials III (Cont'd)**

### **Title: Online Algorithms for Decision-Making in the Absence of Future Data**

*Speakers: Wei Bao (University of Sydney); Binghan Wu (University of Sydney); Ruoyu Wu (University of Sydney)*

## **Session 5E -- Tutorials IV (Cont'd)**

### **Title: Vision-and-Language Navigation for Embodied AI**

*Speakers: Yuankai Qi (Macquarie University)*

## **Session 5F -- Special Session - EEG and Health Informatics (Online)**

### **#346: GKF-mQA: Generative Knowledge Fusion Based on Large Language Models for Enhancing Medical Question Answering**

*Authors: Xinpai Li, Man Wu*

### **#401: Spatial-Temporal Mamba Network for EEG-based Motor Imagery Classification**

*Authors: Xiaoxiao Yang, Ziyu Jia*

### **#412: Empowering Comprehensive Biomedical Information Analysis with Large Language Models**

*Authors: Yiming Zhao, Jie Chen, Nannan Wu, Wenjun Wang*

### **#416: ECG Signal Classification with a Multi-Stage Model Integrating CNN, SNN, and ResNet**

*Authors: Xiangyu Shi, Dianjing Cheng, Xingyu Wu, Ping Ye, Jingqi Jia, Jiqiang Liu, and Wenjia Niu*

## **Session 5G -- Special Session on Medical AI and Knowledge I (Online)**

### **#259: TBRL: Trajectory-Based Reinforcement Learning for Flexible Job-shop Scheduling Problem**

*Authors: Zheng Chen, Ruijin Wang, Ye Zhu, Chao Tang, Donglin He, Jiachen Wang, Fengli Zhang*

### **#350: Layer Transformer-Powered Graph Convolutional Networks for Enhanced Recommendation**

*Authors: Shicong Lin, Zhilong Shan, Su Mu*

### **#406: SDM-GAT: StylisticFP Detection Method Based on Graph Attention Network**

*Authors: Xiaoxi Wang, Wei Liu, Chunyang Zheng, Xinyu Liu, Yaqin Cao, Qixu Liu*

**#411: Adaptive Plug-and-Play Framework for Time Series Anomaly Detection with Temporal Drift**

*Authors: Chao Zhong, Chen Xiong, Zhaoyang Ma, Junxiu Ran, Shikuan Shao, Tongkun Xing, Jing Wang*

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### Session 6A -- Health Informatics II (Online)

**#155: PViT: Pooling Vision Transformer for Active Trachoma Image Classification**

*Authors: Mulugeta Shitie Zewudie, Shengwu Xiong, Xiaohan Yu, Xiaoyu Wu, Aminu Onimisi Abdulsalam and Mengjiao Wang*

**#211: An Analyses of the Impact of Climatic and Environmental Conditions on COVID-19 Prevalence in Epidemic Areas in Australia, South Korea, and Italy**

*Authors: Yuxi Liu, Zhenhao Zhang, Shaowen Qin, Jun Shen, Jiang Bian*

**#243: ADDM: Adversarial Defenses with Diffusion Model for Medical Imaging Data Mining**

*Authors: Yimin He, Shuchao Pang, Anan Du, Hechang Chen, Lele Cong, Mehmet Orgun*

**#248: ResGAT: Embedding Adjacent Connectivity of Brain Regions from fMRI for Accurate Parkinson's Disease Recognition**

*Authors: Shuyang Li, Yu Yang, Yichen Lv, Jiangnan Xia, Xin Wang*

### Session 6B -- Recommendation Systems II (Online)

**#190: UID-Net: Enhancing Click-Through Rate Prediction in Trigger-Induced Recommendation through User Interest Decomposition**

*Authors: Jiazen Lou, Zhao Li, Hong Wen, Jingsong Lv, Jing Zhang, Fuyu Lv, Zulong Chen, Jia Wu*

**#224: Attention-based Causal Graph Convolutional Collaborative Filtering**

*Authors: Youhan Qi, Xinglin Liu, Chenyu Li, Ying Wang*

**#230: Sequential Recommendation with Diverse Supervised Contrastive Views**

*Authors: Zitong Zhu, Meixiu Long, Junfa Lin, Jiahai Wang*

**#271: Disentangled Causal Embedding With Unbiased Knowledge Distillation for Recommendation**

*Authors: Nan Liu, Shunmei Meng, Xiao Liu, Qianmu Li, and Yu Jiang*

### Session 6C -- Data Mining for Security and Privacy (Online)

**#202: CDGM: Controllable Dataset Generation Method for Cybersecurity**

*Authors: Yushun Xie, Haiyan Wang, Runnan Tan, Xiangyu Song, Zhaoquan Gu*

**#273: Enhancing privacy in big data publishing:  $\eta$ -inference model**

*Authors: Zhenyu Chen, Lin Yao, Guowei Wu, Shisong Geng*

**#275: Secure Why-Not Spatial Keyword Top-k Queries in Cloud Environments**

*Authors: Teng Yiping, Li Miao, Wang Shiqing, Wang Huan, Zong Chuanyu, Fan Chunlong*

**#304: Enhancing Network Intrusion Detection with VAE-GNN**

*Authors: Junyu Li, Haoxi Wang*

**Session 6D -- Data Mining Applications II (Online)**

**#361: Enhancing Embedding and Hierarchical Reward Shaping for Multi-Hop Reasoning with Reinforcement Learning**

*Authors: Heng Li, Jinhui Wei, Jicheng Yu, Yuncheng Jiang*

**#22: Deep Trading: A Novel Framework for Trading in Volatile Markets**

*Authors: Zhenyi Shen, Chao Wang, Dan Zhao, Shuangxue Zhao*

**#348: Region-Based Imaging Correction for Enhanced Image Quality in Lenslet Arrays Near-Eye Light Field Displays**

*Authors: Bi Ye, Tianwen Hou, Lei Zhao, Chaohao Wang, Xinzhu Sang, and Chengrui Le*

**#366: LTSMamba: A Long-term Time Series Forecasting Model based on Mamba-2**

*Authors: Xiyang Peng, Ruoxin Ni, Yuncheng Jiang*

**Session 6E -- Special Session – Contrastive Learning (Online)**

**#112: Emergency Entity and Relationship Extraction based on a Multimodal Deep Learning Method**

*Authors: Peng Wu, Yu Li, Liang Ni*

**#157: GCS: A Graph-augmented Semi-supervised Contrastive Learning Approach for Imbalanced Dissolved Gas Analysis in Power Transformers**

*Authors: Ke Shu, Huifang Ma, Li Yu, Qibin Zhang*

**#344: ConMix: Contrastive Learning with Mixup Augmentation for Dialogue Summarization**

*Authors: Zequan Chen, Jing Xiao*

**#360: Contrastive Learning Based on Bipartite Graphs for Interpretable Knowledge Tracing**

*Authors: Kai Chen, Shun Mao, Qiwen Zheng, Yuncheng Jiang*

**Session 6F -- Federated Learning and Networking Data Mining (Online)**

**#93: Lotus: Loading Cost-Aware Joint Mining Service Caching, Request Routing, and Bandwidth Orchestration in Cooperative MEC Networks**

*Authors: Yulin Huang, Long Chen, Yalan Wu, and Jigang Wu*

**#247: A Communication-Concerned Federated Learning Framework based on Clustering Selection**

*Authors: Weifeng Sun, Ailian Wang, Zunjing Gao, Yipeng Zhou*

**#297: A Differential Privacy Federated Learning Approach for Diabetic Retinopathy Detection**

*Authors: Yicheng Li, Yijia Zhang, Guantong Liu, Mingyu Lu*

**#347: Secure Privacy-preserving SMOTE for Vertical Federated Learning**

*Authors: Wenyu Du, Haihang Wang, Jiaming Shen, Guanglei Meng, Yuming Guo, Wei Zhou*

## **Session 6G -- Special Session on Medical AI and Knowledge II (Online)**

### **#70: Graph Contrastive Learning for Dissolved Gas Analysis**

*Authors: Yingyue Zhang, Huifang Ma, Di Zhang, Ke Shu, and Xiaolong Li*

### **#356: Intra- and Inter-User Data Augmentation Methods for Energy Disaggregation**

*Authors: Shijie Yang, Jie Jiang, Qiuqiang Kong*

### **#415: Nightfall Deception: A Novel Backdoor Attack on Traffic Sign Recognition Models via Low-Light Data Manipulation**

*Authors: Yalun Wu, Qiong Li, Yingxiao Xiang, Jinkai Zheng, Xingyu Wu, Zhen Han, Jiqiang Liu, Wenjia niu*

### **#417: Anomaly Aligned Subgraphs Detection on Multi-Layer Static Attributed Networks**

*Authors: Yuqi Liu, Nannan Wu, Wenjun Wang*

## **Parallel Sessions 7**

### **Session 7A -- Data Mining Applications III (Online)**

#### **#40: IRKT: Integrating Relationships from Internal Features and External Manifestations for Knowledge Tracing**

*Authors: Junliang He and Zhilong Shan*

#### **#46: An Algorithm for Discovering Prevalent Co-location Patterns with Considering both Density and Connectivity**

*Authors: Dinhson tung Ta, Phan Ha, Vanha Tran, and Vanhieu Bui*

#### **#67: Research on Vehicle and Cargo Loading Mode based on Improved Ant Colony Algorithm**

*Authors: Zhao Zewei, Sun Zhixin, Sun Zhe*

#### **#44: DEKT: Difficulty Representation Enriched Knowledge Tracing**

*Authors: Rui Wang and Zhilong Shan*

#### **#310: Multi-Dimensional Classification via Global and Local Label Correlation**

*Authors: Zan Zhang, Jialin Zhou*

### **Session 7B -- Information Extraction (Online)**

#### **#24: SWET: A dictionary-assisted multi-feature fusion symptom entity attribute extraction model"**

*Authors: Jinlian Du, Wenhong Jia, Xueyun Jin, Xiaolin Du*

#### **#31: A Chinese inter-sentence relation extraction method based on cascading pointer network**

*Authors: Keyan Wen; Wanting Ji; Su Li; Junlu Wang; Baoyan Song*

#### **#153: Prompt Contrastive Learning Relation Extraction Method by Updating the Representation of Relation Label Words**

*Authors: Yuanru Wang; Yahui Zhao; Guozhe Jin; Zhenguo Zhang; Fei Yin; Rongyi Cui; Man Li*

#### **#231: SFDG-RE: Self-Feedback Description Generation based on LLMs for Enhanced Zero-Shot Relation Extraction**

*Authors: Cheng Linya; Zhang Chunhong; Tang Xiaosheng*

**#32: A Relation Extraction Method based on Multi-layer Index and Cascading Binary Framework**

*Authors: Wanting Ji, Keyan Wen, Linlin Ding, Baoyan Song*

**Session 7C -- Data Mining Fundamentals II (Online)**

**#144: Informative Sample Labeling with Conditional Variational Deep Embedding for Active Learning**

*Authors: Zhao Li, Qinxue Meng, Haitao Xu, Jiaming Huang, Yangbohan Jiao, and Buqing Cao*

**#238: APRNet: Cardinality Estimation Method Based on Attention Mechanism**

*Authors: Zhengxuan Yang, Yutong Han, Jianxin Zhang*

**#239: WALK: A Workload-Aware Learned Kd-Tree**

*Authors: Na Guo, Fei Cai, Wenli Sun, Xiufeng Xia*

**#291: PaD-DBSCAN: Enhancing Parallel DBSCAN Clustering with Density Peak Detection**

*Authors: Yu Wang, Junhua Fang, Rong Fu, Pingfu Chao*

**#481: Deep Contrastive Multi-view Clustering under Semantic Feature Guidance**

*Authors: Siwen Liu, Hanning Yuan, Ziqiang Yuan, Lianhua Chi, Jinyan Liu, Jing Geng, Shuliang Wang*

**Session 7D -- Spatial Data Mining (Online)**

**#74: When Road Networks Make a Difference: User Identity Linkage with Trajectory Data**

*Authors: Sitian Xu, Wei Chen, Lei Zhao*

**#137: STA: Enhancing Spatio-temporal Crowd Flow Prediction using Attention-based Deep Learning and Feature Similarity**

*Author: Xiujuan Xu, RenJie Liu, Jiaxin Ai, Yu Liu, Xiaowei Zhao*

**#171: ESNet: Perceptive Spatial-Spectral Fusion with Multi-stage Reconstruction for Pansharpening**

*Authors: Chao Li; Zixuan Xu; Juntao Gu; Moule Lin; Weipeng Jing*

**#256: Efficient Shortest Time Query in Public Transportation Networks**

*Authors: Ying Zhao, Songxu Xu, Jiajia Li, Yu Yang, Jing Zhang, Chengcheng Chen*

**#290: Regional Food Culture Preference Mining Based on Restaurant POI**

*Authors: Ziyi Zhang, Xu Chen, Hao Huang, Guojia Wan, Xuan Zhou, Shuang Li, Yuhao Lin, Jiawei Jiang*

**Session 7E -- Graph Mining II (Online)**

**#49: Depth-Enhanced Contrast Attribute Graph Clustering**

*Authors: Xilong Guo and Bing Kong*

**#63: Integrating Graph Temporal-Structural Dependencies and Textual Semantics for Outdated Fact Detection**

*Authors: Haoxuan Feng, Yuhuan Zheng, Zhuoheng Ma, Rui Meng, Yongqi Zhang, and Chen Zhang*

**#102: Emotion Graph Augmentation for Detecting Fake News in Online Social Networks**

*Authors:* Xing Su, Yuchen Zhang, Jian Yang, Jia Wu

**#191: Periodic Patterns and Long-term Dependencies based Temporal Knowledge Graph Completion**

*Authors:* Penghui Ge, Wei Chen, Xi Chen, Qingzhi Ma, and Lei Zhao

**#279: Graph Fusion based Autoencoder for Node Clustering**

*Authors:* Ci Nie, Yujing Liu, Jian Wei, Guoqiu Wen

## Session 7F -- Text Mining and NLP III (Online)

**#33: GeoGLUE: A Chinese GeoGraphic Language Understanding Evaluation Benchmark**

*Authors:* Dongyang Li, Ruixue Ding, Qiang Zhang, Zheng Li, Boli Chen, Pengjun Xie, Yao Xu, Xin Li, Ning Guo, Fei Huang, and Xiaofeng He

**#90: Empathetic Dialogue Generation with Emotional Enhancement and Knowledge Refinement**

*Authors:* Pengfei Zhang, Donghong Han, Deji Zhao, Xuesong Bai, Baiyou Qiao, and Gang Wu

**#147: Balanced Knowledge Distillation with Open-Domain Unlabeled Data for Named Entity Recognition**

*Authors:* Chenxiao Wu, Wenjie Ye, Jiajun Liu, Peng Wang, Wenjun Ke

**#201: Application of BERT-GraphSAGE Model in Text and Paper Classification Tasks**

*Authors:* Junwen Lu, Lingrui Zheng, Moudong Zhang

**#414: Text Generation for Social Media Based on Generative Adversarial Networks: Focusing on Wellness Content**

*Authors:* Xuan Ge, Peng Wu

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**#116: An Intrusion Detection Model Based on CNN-BiLSTM**

*Authors:* Liang Zhang, Jiatian Zhang

**#119: A network information hiding method against link prediction**

*Authors:* Jie Yang, Yu Wu

**#136 Which Store Should I Choose? A Comparative Study of Third-Party Mobile App Store Based on Quality Evaluation**

*Authors:* Herve Dimitri MOTSAKOU GANDZE, Pengfei Wang, Yangyu Hu, Jiahao Yang, Kefei Cheng

**#340: A Multi-View Framework for Fake News Detection Utilizing Dynamic User Propagation Structures, Temporal Changes, and Personal Attributes**

*Authors:* Nan Liu, Fengli Zhang, Ye Zhu, Ruijing Wang, Chao Tang, Xikai Pei

**#359: Enhancing Unsupervised Anomaly Detection in Multivariate Time Series with Variational Autoencoders and Multiresolution LSTM**

*Authors:* Song Sun, Yan Zhou, Suyan Yao, Jingbing Xu