



THE 21ST AUSTRALASIAN DATA SCIENCE AND MACHINE LEARNING CONFERENCE

DECEMBER 11-13, 2023
AUCKLAND, NEW ZEALAND



This is the short version of the booklet for print use. Full abstracts with all authors, references, and figures can be found in the electronic version at <https://ausdm23.ausdm.org/>

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Messages from the Chairs

Message from the Steering Chairs

On the behalf of the AusDM Steering Committee, we are delighted to welcome you to the new edition of the conference. It is new in many aspects. The AusDM premium brand now stands for the Australasian Data Science and Machine Learning, which recognises the new iteration for data science, supported by the computational scaling of data analysis, brought by developments in data mining, and the key role of machine learning methods in contemporary science. AusDM facilitates the cross-disciplinary and cross-professions exchange of ideas, experience, and potential research and development directions. In response to the speedy “invasion” of the data-driven generative AI technologies, the forum this year has included a dedicated day for exploring the matter.

Another new aspect is that for our first time AusDM has left Australian shores, landing in New Zealand with its solid tradition in the field. Signalling a new direction for the next decade, AusDM aims to provide a platform for development of deeper connectivity and partnerships between academia, industry and communities. The theme of the conference this year emphasises the need for facilitating such broader dialog and relationship building.

We want to thank everyone involved in shaping and hosting AusDM 2023.

— **Simeon Simoff (Steering Committee Chairs), Graham Williams (Steering Committee Chairs)**

Message from the General Chair

On behalf of the 2023 organizing committee, we welcome you to Auckland and the 21st Australasian Data Science and Machine Learning Conference (AusDM). We have an exciting lineup to celebrate this milestone. We have organized a special program, including three exciting keynotes by Professor Michael Witbrock (NAOInstitute, University of Auckland), Professor Albert Bifet (Te Ipu o te Mahara AI Institute, University of Waikato), and Madeline Newman (AI Forum).

This year, there is a range of special roundtable and panels, including the Māori Algorithmic Sovereignty Roundtable: "Massive problems need MASov solutions" by Ben Ritchie (Nicholson Consulting), Dr. Kiri West (University of Auckland), Dr. Daniel Wilson (University of Auckland), Dr. Paul Brown (University of Waikato), and the Responsible AI Panel by Dr. Kevin Ross (PDH), Gabriela Mazorra de Cos (Xero), Dr. Alvaro Orsi (ESR), Dr. Kin Lung (KL) Chan (Callaghan Innovation), Dr. Daniel Wilson (University of Auckland), and the Generative AI Panel by Malcolm Frazer (The Collaborative), Trevor Kennedy (Amazon), Christopher Mende (Google).

On the agenda, there are three spotlight talks, including "Navigating the Academic Odyssey: Insights and Advice for Early Career Researchers" by Dr. Mingming Gong (University of Melbourne), "Machine Learning for Social Good in Aotearoa New Zealand" by Professor Gillian Dobbie (University of Auckland), and "A Voyage Through AI: From Biomedical Imaging to Insurance Chatbots and Beyond" by Dr. Ming Cheuk (ElementX). Additionally, we have a diverse range of research and application papers, two interesting tutorials, a doctoral consortium, two industry talks, and social events.

The theme of this year's conference is "Data Science and Machine Learning: Now part of everyone's everyday." This year, the conference is divided into three days: Data Science, Machine Learning, and AI Innovation Day; Green & Responsible ML and AI Day; Generative AI Day, and facilitates the cross-disciplinary exchange of ideas, experience, and potential research directions. AusDM'23 will be a meeting place for pushing forward the frontiers of data science and machine learning in academia and industry.

We want to thank the PC Chairs: Dr. Diana Benavides Prado (University Of Auckland), Associate Professor Sarah Monazam Erfani (The University Of Melbourne), Prof Philippe Fournier-Viger (Shenzhen University, Publication Chair Dr. Yee Ling Boo (RMIT University), Industry Chair Shivonne Londt (Amazon Web Services), Sponsorship Chair Annelies Tjetjep, Tutorial Chair Dr. Andrew Lensen (Victoria University of Wellington), Doctoral Symposium Chair Di Zhao (University of Auckland), and Dr. Asara Senaratne (University of South Australia), Web Chair, Bowen Chen (The University of Auckland), Publicity Chair, Dr. Nick Lim (The University of Waikato), Local Organizing Chairs Dr. Thomas Lacombe (The University of Auckland), and Tessa Campbell (The University of Auckland).

Finally, we thank all the sponsoring organizations for their generous financial support. We look forward to coming together in person in December for an inspiring annual conference.

— **Yun Sing Koh (University of Auckland)** —

Message from the Programme Chairs

The 21st Australasian Data Science and Machine Learning Conference (AusDM 2023) attracts researchers and practitioners of data science and machine learning from academia and industry, and presents state-of-the-art approaches to the most challenging problems in these areas. This year's conference, hosted in Auckland, New Zealand, is a meeting place for pushing forward the frontiers of data science and machine learning in the Australasian region.

It is our pleasure to present the proceedings of AusDM 2023. The research track of the conference was very competitive, with 31 full paper submissions of which 13 were accepted for publication. Similarly, the application track received 16 submissions, of which 7 were accepted for publication. Therefore, the conference provided a 40% acceptance rate for each track. Each submission was reviewed by at least two program committee members, and the acceptance decisions were made based on the reviewers' scores and comments. The reviewing process was double-blind (both reviewers and authors were not revealed to each other) to reduce bias. Authors had the possibility to submit their contribution as a general paper, or as a paper in one of three special topics: ethics and society, generative modelling or interdisciplinary applications of machine learning and data science. The accepted papers cover a variety of topics such as graph neural networks, metalearning, anomaly detection, sequential modelling, among many others. Each of the accepted papers will be presented at the conference. The conference program also includes keynote talks from Professor Michael Witbrock (University of Auckland) and Professor Albert Bifet (University of Waikato), along with tutorials, panels, industry and spotlight talks. The final day of the conference will be dedicated to Generative AI, including a keynote by Madeline Newman (AI Forum NZ) and a panel on this topic. We thank everyone involved in the conference, including authors, speakers and panellists, for their contributions, their efforts and time to share their knowledge with the Australasian data science and machine learning community. We also thank the program committee for their time, effort, insightful reviews, and feedback. It is these joint efforts that make AusDM 2023 a success.

Planning and running the conference required the expertise and dedication of many. We thank the Special Session Chairs Mingming Gong (University of Melbourne), Jiamou Liu (University of Auckland) and Amanda J Williamson (Deloitte NZ), Industry Chair Shivonne Londt (Amazon Web Services), Tutorial and Workshop Chair Andrew Lensen (Victory University), Diversity, Equity, and Inclusion Chair Richi Nayak (Queensland University of Technology), Publication Chair Yee Ling Boo (RMIT University), Sponsorship Chair Annelies Tjetjep (Data Science Evangelist, ex-PWC), Doctoral Symposium Chairs Di Zhao (University of Auckland) and Asana Senaratne (University of South Australia), Web Chair Bowen Chen (University of Auckland), Publicity Chair Nick Lim (University of Waikato), and Local Organising Chairs Nickylee Anderson (University of Auckland) and Thomas Lacombe (University of Auckland). We also specially thank the Steering Committee Chairs, Simeon Simoff (Western Sydney University) and Graham

Williams (Australian National University), and General Chair Yun Sing Koh (University of Auckland). Finally, we thank the AusDM community for supporting this premier conference. We hope you enjoy this year's conference program, and find the proceedings a valuable resource for your current and future research and practice in data science and machine learning.

— **Diana Benavides-Prado (Lead PC Chair), Sarah M. Erfani (PC Chair - Research Track), Philippe Fournier-Viger (PC Chair - Application Track)**



The Australasian Data Science and Machine Learning Conference formerly known as the Australasian Data Mining Conference has established itself as the premier Australasian meeting for both practitioners and researchers in data mining. It is devoted to the art and science of intelligent analysis of (usually big) data sets for meaningful (and previously unknown) insights. This conference will enable the sharing and learning of research and progress in the local context and new breakthroughs in data mining algorithms and their applications across all industries.

Since AusDM'02 the conference has showcased research in data mining, providing a forum for presenting and discussing the latest research and developments. Built on this tradition, AusDM'23 will facilitate the cross-disciplinary exchange of ideas, experience and potential research directions. Specifically, the conference seeks to showcase: Research Prototypes; Industry Case Studies; Practical Analytics Technology; and Research Student Projects. AusDM'23 will be a meeting place for pushing forward the frontiers of data mining in academia and industry. The theme of the conference this year is Data Science and Machine Learning: Now part of everyone everyday.

Diversity, Equity and Inclusion Statement: AusDM'23 promotes an inclusive environment and encourages the open expression and exchange of ideas, free from all forms of discrimination, retaliation, and harassment. AusDM'23 is committed to empowering diverse, equitable, and inclusive participation.

Conference Programme

11th December 2023

Data Science, Machine Learning, and AI Innovation Day MC: Shivonne Londt		
8:30	Registration Open	
9:00-9:30	Opening Room: OGGB 4	
9:30-10:30	Keynote: Prof. Michael Witbrock Title: NAOI – Improving Science by Integrating Strong AI Room: OGGB 4 (Session Chair: Dr. Diana Benavides Prado)	
10:30-10:50	Morning Tea	
10:50-11:40	Māori Algorithmic Sovereignty Roundtable: <i>Massive problems need MASov solutions</i> Room: OGGB 4 Ben Ritchie (Nicholson Consulting), Dr. Kiri West (University of Auckland), Dr. Daniel Wilson (University of Auckland), Dr. Paul Brown (University of Waikato)	
11:40-13:00	Session 1A (4 research papers) Room: OGGB 4 (Session Chair: Dr. Diana Benavides Prado)	Industry Talk: Scott Spence (CC Learning) Room: OGGB 5 Title: Transitioning from research topic to business solution using project management methods (Session Chair: Shivonne Londt)
		Industry Talk: Dr. Jiamou Liu (SoverEx) Room: OGGB 5 Title: Democratizing Data AI Technology for a Smarter, More Connected World (Session Chair: Shivonne Londt)
13:00-13:30	Lunch	
13:30-15:30	Session 2A (4 research papers) Room: OGGB 4 (Session Chair: Dr. Andrew Lensen)	Tutorial 1 Speaker: Dr Guilio Valentino Dalla Riva (University of Canterbury) Room: Case Room 3 Title: Spatial and Complex Network Data Analysis using Julia
15:30-15:50	Afternoon Tea	
15:50-17:30	Session 3A (5 Research papers) Room: OGGB 4 (Session Chair: Dr. Nick Lim)	Doctoral Symposium Room: Case Room 3 (Session Chair: Di Zhao)

12th December 2023

Green and Responsible AI and ML Day MC: Prof. Graham Williams	
8:30	Registration Open
9:00-10:00	Keynote: Prof. Albert Bifet (University of Waikato) Title: TAIAO – Green AI in Green Aotearoa Room: OGGB 4 (Session Chair: A/Prof. Yun Sing Koh)
10:00-10:20	Morning Tea
10:20-11:20	Responsible AI Panel Room: OGGB 4 Moderator: Prof Gillian Dobbie (University of Auckland) Dr. Kevin Ross (PDH), Gabriela Mazorra de Cos (Xero) Dr. Kin Lung (KL) Chan (Callaghan Innovation), Dr Daniel Wilson (University of Auckland)
11:20-12:20	Spotlight: Dr Mingming Gong (University of Melbourne) Room: OGGB 4 Title: Navigating the Academic Odyssey: Insights and Advice for Early Career Researchers (Session Chair: Asara Senaratne)
	Spotlight: Prof. Gillian Dobbie (University of Auckland) Room: OGGB 4 Title: Machine Learning for Social Good in Aotearoa New Zealand (Session Chair: Professor Simeon Simoff)
12:20-13:00	Lunch
13:00-14:00	Session 4A (3 application papers) Room: OGGB 4 (Session Chair: Asara Senaratne)
14:00-15:30	Session 5A (4 application papers) Room: OGGB 4 (Session Chair: Dr Mingming Gong)
15:30-16:00	Afternoon Tea
16:00-17:00	Responsible AI Paper Launch Room: OGGB 4
17:00-18:00	Tutorial 2 Speakers: Dr Anushka Vidnage, Dr. Jessica Moore, Prof. Graham Williams (ANU, Australia) Room: Case Room 3 Title: Data Privacy: Access and Consent Management using Personal Online Datastores – A Hand's on Prime
17:00-18:00	Tutorial 2 (cont.)
17:00-18:00	Walking bus to banquet
18:00-20:00	Banquet Wintergarden

	Generative AI Day MC: A/Prof. Yun Sing Koh	
8:30	Registration Open	
9:00-10:00	Keynote: Madeline Newman (AI Forum) Title: What might an AI Strategy for Aotearoa look like? Room: OGGB 4 (Session Chair: Prof. Giovanni Rusello)	
10:00-10:30	Morning Tea	
10:30-11:30	Generative AI Panel Room: OGGB 4 Moderator: Shivonne Londt (AWS) Malcolm Frazer (The Collaborative), Trevor Kennedy (Amazon) and Christopher Mende (Google)	
11:30-11:50	Spotlight: Dr Ming Cheuk (ElementX) Room: OGGB 4 Title: A Voyage Through AI: From Biomedical Imaging to Insurance Chatbots and Beyond (Session Chair: Varvara Vetrova)	
11:50-12:00	Closing	
12:00-14:00	Networking & Drinks	Showcase

List of Abstracts – Talks

KS: Keynote Session, **IS:** Industry Session, **SS:** Spotlight Session, **TS:** Tutorial Session.

Data Science, Machine Learning, and AI Innovation Day Monday, December 11th



NAOI – Improving Science by Integrating Strong AI

Michael Witbrock, University of Auckland

KS

Science generally, and biology, ecology and economics in particular, has sought to model ever more complex systems ever more precisely and accurately. Processing limitations of human individuals and of human teams limit our ability to do this effectively. We are now seeing signs of genuine intellectual power in AI systems, along with some limitations that make current systems unreliable as partners in scientific teams. However, these limitations are not irreducible, and are far more subject to engineering correction than human cognitive limitations. In this talk, I'll describe some ways that near-future AI may help us greatly accelerate the work of science, while improving quality and impact, and what is being done to get it to that state.

Michael Witbrock received his BSc(Hons) in Physiological Psychology from Otago University, and his PhD in Computer Science (AI) from Carnegie Mellon University. He previously held positions at Lycos, Cypcorp and IBM Research, and currently is a full professor at the University of Auckland, where he leads a research group, the Strong AI Lab, at the intersection of machine learning, reasoning and natural language understanding, with an additional focus on maximising the near-term benefit of AI to Aotearoa/NZ, and more generally achieving the best global social and civilizational impacts of increasingly powerful AI. While maintaining a strong interest in knowledge-capture and natural language understanding, his current research goals involve the development and use of systems that learn to perform careful reasoning and carry out complex tasks. He is the founding director of the NAOInstitute which studies Natural, Artificial and Organisational Intelligence, and how they interact.

Māori Algorithmic Sovereignty Roundtable

Massive problems need MASov solutions

Roundtable speakers:



Ben Ritchie

(Nicholson Consulting)



Kiri West

(University of Auckland)



Daniel Wilson

(University of Auckland)



Paul Brown

(University of Waikato)



Transitioning from research topic to business solution using project management methods

Scott Spence, CC Learning

IS

The application of Artificial Intelligence has recently undertaken urgency in government and business sectors. To avoid unnecessary expenditure and wasted resources, efforts to implement AI solutions in these projects need experimental environments and careful management. Organisations need to avoid a gold rush mentality that throws the majority of funds at endeavours that are less likely to lead to commercial and societal benefits. For those commercializing Artificial Intelligence projects, we propose applications of project management best practices. This includes the application of project management methods such as agile delivery, defined business cases and curated governance structures. Managing these investments to balance entrepreneurial endeavours and planned outcomes requires structure and organisational adoption of an AI strategic framework. Managing expectations from customers, staff, and management is part of the mix, as is defining core competencies and organisational values. We will propose a roadmap for organisation adoption and items to be considered when integrating with existing project investments. A New Zealand perspective will, in particular, be considered based on past successes and failures by government and private sector organisations.



Democratizing Data & AI Technology for a Smarter, More Connected World

Jiamou Liu, SoverEx

IS

Jiamou Liu is a Senior Lecturer at the University of Auckland. He works in the field of artificial intelligence, with a specific interest in multi-agent systems and graph learning. Dr. Liu has written over 120 research publications and his research has been supported by the Marsden Fund. His recent work in data pricing and data marketplaces has led to the establishment of SoverEx, a company dedicated to building a Web3-based data marketplace that enables the secure trading of private data. The company was co-founded by Jiamou Liu along with Louisa Choe (Otago), Alex Zhang (BIT), and Michelle Zhang (Durham). Dr. Liu also serves as the deputy director of the Master of AI program at the University of Auckland, and a local chair for AAMAS 2024, to be held in Auckland in May 2024. SoverEx is an exchange, built in the Web3 ecosystem, to empower the next generation of Internet users and businesses with enhanced data sovereignty and access to cutting-edge technologies. We envision a world where people have full control over their personal data, can make informed decisions about its use, and are fairly rewarded for sharing it.



Spatial and Complex Network Data Analysis using Julia

Giulio Valentino Dalla Riva, University of Canterbury

TS

Giulio Valentino Dalla Riva is a Senior Lecturer in Data Science in the School of Mathematics and Statistics, University of Canterbury, and he is the founder of Baffelan – Data Climbing, a boutique data consultancy company. His research explores and tries to make sense of what happens in complex, dynamical networks. He is interested in ecological networks and the evolutionary processes that modify them in time. Giulio develops mathematical and statistical tools to study the relationship between ecological biodiversity and evolutionary diversity. He is also interested in social networks, especially online, and trying to understand what makes them work in the way they work.

This tutorial explores Complex Network and Spatial Data Analysis in Julia, targeting data miners, spatial scientists, network analysts, urban planners, and researchers. Initially, it covers network analysis foundations with `Graphs.jl` and `LightGraphs.jl`, advancing to community detection and visualization using `CommunityDetection.jl` and `GraphPlot.jl`. Subsequently, it delves into spatial data analysis, elucidating data manipulation and visualization with `GeoIO.jl`, `Makie.jl`, and `GeoMakie.jl`, and exploring spatial statistics with `GeoStats.jl`. The final segment unveils the interplay between spatial and network data through case studies, emphasizing spatial proximity evaluation and `SpatialGraphs.jl` for handling geospatially embedded networks. Through hands-on exercises, attendees will gain practical insights into leveraging Julia for complex network and spatial data analysis.



TAIAO – Green AI in Green Aotearoa

Albert Bifet, University of Waikato

KS

In this talk, we will talk about Green AI, focusing on its two main aspects: using AI to tackle environmental issues and making AI systems more environmentally friendly. using incremental approaches. As AI becomes increasingly important for problem-solving and research, it is essential to integrate it into sustainability efforts. We will examine how AI is not only giving researchers a competitive advantage but also playing a key role in creating a more sustainable future.

Albert Bifet is the Director of the Te Ipu o te Mahara AI Institute at the University of Waikato and Co-chair of the Artificial Intelligence Researchers Association (AIRA). His research focuses on Artificial Intelligence, Big Data Science, and Machine Learning for Data Streams. He is leading the TAIAO Environmental Data Science project and co-leading the open source projects MOA Massive On-line Analysis, StreamDM for Spark Streaming and SAMOA Scalable Advanced Massive Online Analysis. He is the co-author of a book on Machine Learning from Data Streams published at MIT Press. He is one of the winners of the best paper award at the ACM Conference on Fairness, Accountability, and Transparency (ACM FAccT) 2023, and he will be the general co-chair of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD) 2024.

Responsible AI panel

Panel speakers:



Kevin Ross
(Precision Driven
Health)



**Gabriela Mazorra
de Cos**
(Xero)



Kin Lung (KL) Chan
(Callaghan Innovation)



Daniel Wilson
(The University of
Auckland)



**Moderator:
Gillian Dobbie**
(The University of
Auckland)



Navigating the Academic Odyssey: Insights and Advice for Early Career Researchers

Mingming Gong, University of Melbourne

SS

Dr. Mingming Gong is a Senior Lecturer in Data Science at the University of Melbourne, and an affiliated associate professor at Mohamed Bin Zayed University of Artificial Intelligence. His research focuses on modeling the causal generative process of real-world complex data by connecting graphical models and deep learning, with applications to computer vision, healthcare, etc. He has authored and co-authored 80+ research papers on top venues such as ICML, NeurIPS, ICLR, CVPR, ICCV, AACL, IJCAI. He has been invited to serve as area chairs for top conferences and action editors for prestigious journals. He received the ARC Discovery Early Career Researcher Award in 2021 and the Australasian AI Emerging Research Contribution Award in 2022.



Machine Learning for Social Good in Aotearoa New Zealand

Gillian Dobbie, University of Auckland

SS

Professor Gillian Dobbie is widely recognised for her research in database systems and artificial intelligence. She holds a PhD in Computer Science from the University of Melbourne, where she specialized in database theory and design. Her research interests encompass a wide range of topics, including conceptual modeling, knowledge representation, query optimization, data privacy, data stream mining, continual learning, and adversarial learning. She has published over 160 papers in top-tier conferences and journals, such as SIGCSE, IJCAI, ICDM, SIGIR, CIKM, ICDE, SIGMOD, TODS, ACM Computing Surveys. She was awarded the DASFAA 10+ Year Best Paper Award for her research contribution with Prof Ling Tok Wang and Prof Mengchi Liu. Professor Dobbie is a Fellow of the Royal Society of New Zealand and Chair of the Marsden Fund Council. Throughout her career Professor Dobbie has been a catalyst for collaboration and interdisciplinary work, leading the development of projects such as Precision Driven Health, which received the MinterEllisonRuddWatts Research & Business Partnership Award. She continued to build bridges between academia and industry through her leadership of the Auckland ICT Graduate School. Beyond her academic pursuits, Professor Dobbie is actively engaged in promoting diversity and inclusivity in STEM fields. She is passionate about encouraging underrepresented groups to pursue careers in computer science, fostering an environment where everyone can thrive.



Data Privacy: Access and Consent Management using Personal Online Datastores – a Hand's on Primer

Anushka Vidnage, Jessica Moore and Graham Williams,

The Australian National University

TS

Dr Anushka Vidnage is a research fellow at the Software Innovation Institute (SII) in the ANU School of Computing, with over 6 years of experience research fields of data privacy. His primary research interests include data privacy and security through PODs, privacy-preserving record linkage, and distributed machine learning.

Dr Jess Moore is an applied data scientist in the ANU School of Computing and Chief Operating Officer of the Software Innovation Institute (SII), with over 15 years post PhD experience. Her research interests are in consent management, analytics and engineering with PODs.

Professor Graham Williams is Chief Scientist of the Software Innovation Institute, ANU School of Computing. He returned to the ANU after a career as Microsoft's Director of Data Science, Lead Data Scientist for the Australian Government's Data Analytics Centre of Excellence, and Principle Research Scientist with CSIRO Australia. His current research interest is in AI and ML in a privacy based world.



What might an AI Strategy for Aotearoa look like?

Madeline Newman, AI Forum

KS

I am very excited to be leading the AI Forum of New Zealand as Executive Director at such a pivotal time. We have a really engaged Executive Council and the work our members are producing is essential for a prosperous, equitable and inclusive future Aotearoa.

Madeline joined the AI Forum as Executive Director in 2022. She has extensive experience in strategy, transformational change and helping people to see the potential that innovative technologies bring. Originally from New Zealand, Madeline spent 20 years working with AI and Tech in the mental health, financial services and regulatory sectors in the UK. Her more recent work included helping to shape and deliver the Financial Conduct Authority's internationally renowned RegTech innovation programme; and Head of Innovation and Product for a science based digital mental health service. She brings new thinking and international to our AI community.

Generative AI panel

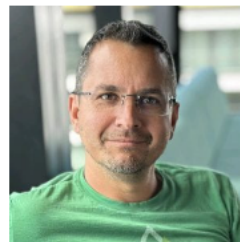
Panel speakers:



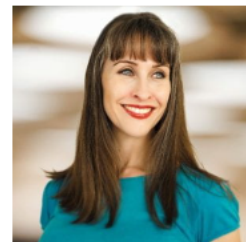
Malcolm Fraser
(The Collaborative)



Trevor Kennedy
(Amazon)



Christopher Mende
(Google)



Moderator:
Shivonne Londt
(Amazon Web Services)



A Voyage Through AI: From Biomedical Imaging to Insurance Chatbots and Beyond

Ming Cheuk, ElementX

SS

Dr. Ming Cheuk has worked with data and AI for over 10 years across academia and industry. As the co-founder of ElementX, he has led numerous AI implementations across a range of industries including education, finance, manufacturing, and retail. Through his role as an Executive Council Member of AI Forum NZ, Ming is actively contributing to the forum's mission of bringing together New Zealand's AI community to harness the power of AI technologies and create a prosperous, inclusive, and thriving future for the country.

List of Papers

Day 1 - Monday, December 11th

Session	Paper
<p>Session 1A (Research track)</p> <p>Session Chair: Dr. Diana Benavides Prado</p>	<p>Random Padding Data Augmentation <i>Nan Yang, Laicheng Zhong, Fan Huang, Wei Bao and Dong Yuan</i></p>
	<p>Unsupervised Fraud Detection on Sparse Rating Networks <i>Shaowen Tang and Raymond Wong</i></p>
	<p>Semi-supervised Model-based Clustering for Ordinal Data <i>Ying Cui, Louise McMillan and Ivy Liu</i></p>
	<p>Damage GAN: A Generative Model for Imbalanced Data <i>Ali Anaissi, Yuanzhe Jia, Ali Braytee, Mohamad Naji and Widad Alyassine</i></p>
<p>Session 2A (Research track)</p> <p>Session Chair: Dr. Andrew Lensen</p>	<p>Text-Conditioned Graph Generation Using Discrete Graph Variational Autoencoders <i>Michael Longland, David Liebowitz, Kristen Moore and Salil Kanhere</i></p>
	<p>Boosting QA Performance through SA-Net and AA-Net with the Read+Verify Framework <i>Liang Tang, Qianqian Qi, Qinghua Shang, Yuguang Cai, Jiamou Liu, Michael Witbrock and Kaokao Lv</i></p>
	<p>Anomaly Detection Algorithms: Comparative Analysis and Explainability Perspectives <i>Sadeq Darrab, Harshitha Allipilli, Sana Ghani, Harikrishnan Changaramkulath, Sricharan Koneru, David Broneske and Gunter Saake</i></p>
	<p>Towards Fairness and Privacy: A Novel Data Pre-processing Optimization Framework for Non-binary Protected Attributes <i>Manh Khoi Duong and Stefan Conrad</i></p>
<p>Session 3A (Research track)</p> <p>Session Chair: Dr. Nick Lim</p>	<p>MStoCast: Multimodal Deep Network for Stock Market Forecast <i>Kamaladdin Fataliyev and Wei Liu</i></p>
	<p>Few shot and transfer learning with manifold distributed datasets <i>Sayed Waleed Qayyumi, Laurence Park and Oliver Obst</i></p>
	<p>Mitigating The Adverse Effects of Long-tailed Data on Deep Learning Models <i>Din Sangrasi, Lei Wang, Markus Hagenbuchner and Peng Wang</i></p>
	<p>Shapley Value Based Feature Selection to Improve Generalization of Genetic Programming for High-Dimensional Symbolic Regression <i>Chunyu Wang, Qi Chen, Bing Xue and Mengjie Zhang</i></p>
	<p>Hybrid Models for Predicting Cryptocurrency Price using Financial and Non-Financial Indicators <i>Tulika Shrivastava, Basem Suleiman and Muhammad Johan Alibasa</i></p>

Day 2 - Tuesday, December 12th

Session	Paper
<p>Session 4A (Application track)</p> <p>Session Chair: Asara Senaratne</p>	<p>Multi-Dimensional Data Visualization for Analyzing Materials <i>Amit Vurgaft</i></p>
	<p>Law in Order: An Open Legal Citation Network for New Zealand <i>Tobias Milz, Elizabeth Macpherson and Varvara Vetrova</i></p>
	<p>Enhancing Resource Allocation in IT Projects: The Potentials of Deep Learning-Based Recommendation Systems and Data-Driven Approaches <i>Li Xiao, Samaneh Madanian, Weihua Li and Yuchun Xiao</i></p>
<p>Session 5A (Application track)</p> <p>Session Chair: Dr. Mingming Gong</p>	<p>A Comparison of One-class versus Two-class Machine Learning Models for Wildfire Prediction in California <i>Fathima Nuzla Ismail, Abira Sengupta, Brendon J. Woodford and Sherlock Licorish</i></p>
	<p>Skin Cancer Detection with Multimodal Data: A Feature Selection Approach Using Genetic Programming <i>Qurrat Ul Ain, Harith Al-Sahaf, Bing Xue and Mengjie Zhang</i></p>
	<p>Comparison of Interpolation techniques for Prolonged Exposure Estimation: A Case Study on Seven years of Daily Nitrogen Oxide in Greater Sydney <i>Prathayne Nanthakumaran and Liwan Liyanage</i></p>
	<p>Detecting asthma presentations from emergency department notes: An active learning approach <i>Sedigh Khademi, Christopher Palmer, Muhammad Javed, Gerardo Luis Dimaguila, Jim Buttery and Jim Black</i></p>
<p>Doctoral Symposium</p> <p>Session Chair: Di Zhao</p>	<p>Unveiling the Hidden Gems: Exploring Unexpected Rare Pattern Mining in Data <i>Sadeq Darrab, David Broneske and Gunter Saake</i></p>
	<p>Shapley Value Based Feature Selection to Improve Generalization of Genetic Programming for High-Dimensional Symbolic Regression <i>Chunyu Wang</i></p>
	<p>Achieving High Mean Accuracy with Semi-Supervised Learning using Small Number of Labeled Observations <i>Sayed Waleed Qayyumi, Laurence Park and Oliver Obst</i></p>
	<p>Spatiotemporal Data Analysis to Identify Environmental Impact on Chronic Diseases for Disease Management and Control: A Data-Driven Approach <i>Prathayne Nanthakumaran and Liwan Liyanage Hansen</i></p>

Organising Committee

Steering Committee Chairs

Simeon Simoff (Western Sydney University)
Graham Williams (The Australian National University)

PC Chairs – Research

Diana Benavides Prado (The University of Auckland)
Sarah Monazam Erfani (The University of Melbourne)

Industry Chair

Shivonne Londt (Amazon Web Services (AWS))

Diversity, Equity, and Inclusion Chair

Richi Nayak (Queensland University of Technology)

Publication Chair

Yee Ling Boo (RMIT University)

Doctoral Symposium Chairs

Di Zhao (The University of Auckland)
Asara Senaratne (University of South Australia)

Publicity Chair

Nick Lim (The University of Waikato)

General Chair

Yun Sing Koh (The University of Auckland)

PC Chairs – Application

Philippe Fournier-Viger (Shenzhen University)

Tutorial and Workshop Chair

Andrew Lensen (Victoria University of Wellington)

Special Session Chairs

Amanda J. Williamson (University of Waikato, Deloitte New Zealand)
Jiamou Liu (The University of Auckland)
Mingming Gong (The University of Melbourne)

Sponsorship Chair

Annelies Tjetjep (Data Science Evangelist, ex-PWC, ex-SAS)

Web Chair

Bowen Chen (The University of Auckland)

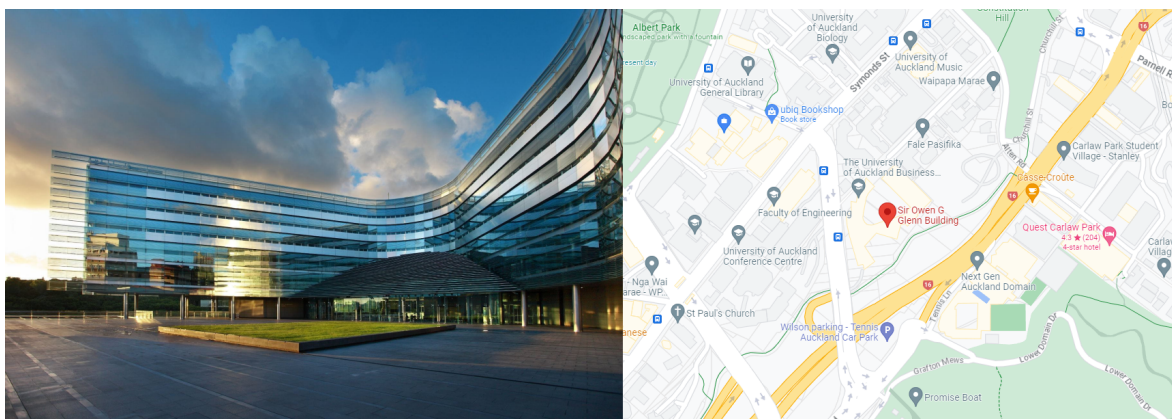
Local Organising Chairs

Tessa Campbell (The University of Auckland)
Thomas Lacombe (The University of Auckland)

Attending Information

Venue - Sir Owen G Glenn Building – University of Auckland AusDM'23 will be held at the **University of Auckland's Sir Owen G Glenn Building** at the heart of Auckland's main commercial centre.

The Sir Owen G Glenn Building is a renowned and award-winning structure designed to cater to the needs of staff and students. It offers integrated facilities such as lecture theatres, computer labs, workrooms, and social spaces, all surrounding a stunning 26m-high atrium.



Parking – The Owen G Glenn Building (OGGB) has five levels of car parking (over 1,000 spaces) and is the main car park on The University of Auckland City Campus. Access to the car park is via Grafton Road, opposite Stanley Street. More information can be found **here**.

Accessibility – The Owen G Glenn building (12 Grafton Rd) is mobility and wheelchair accessible and has accessible and unisex toilets. Mobility parking spaces (spaces that are larger and nearer to access ways) are available within the building car park. A CCS mobility car parking permit is required to park in these spaces.

Public Transport – Auckland Transport offers frequent bus services with several direct routes that arrive and depart from the university. For public transport timetables and further information, please visit <https://at.govt.nz/>.



Conference Dinner - The Wintergarden (<https://www.wintergardenpavilion.co.nz/>) is located at the Auckland Domains Park. There will be a walking bus departing from registration at 5 pm, alternatively please make your own way to the dinner venue.



Sponsorships

On behalf of the Conference Organising Committee, it is our great pleasure to welcome you to the Australasian Data Science and Machine Learning Conference 2023, held in Auckland, New Zealand, in December 2023



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