POSITION DESCRIPTION

THE UNIVERSITY OF MELBOURNE

School of Computing and Information Systems
Faculty of Engineering and Information Technology (FEIT)

Research Fellow in Machine Learning for Automated Decision Making

POSITION NO	0052425
CLASSIFICATION	Research Fellow Grade 1, Level A
SALARY	$73,669 - $99,964 p.a. (pro rata for part-time)
SUPERANNUATION	Employer contribution of 17%
WORKING HOURS	Full-time (1.0 FTE)
BASIS OF EMPLOYMENT	Fixed-term for 3 years *Applications for part-time or other flexible working arrangements will be welcomed and will be fully considered subject to meeting the inherent requirements of the position*
OTHER BENEFITS	https://about.unimelb.edu.au/careers/staff-benefits
HOW TO APPLY	Online applications are preferred. Go to http://about.unimelb.edu.au/careers, select the relevant option ('Current Opportunities' or 'Jobs available to current staff'), then find the position by title or number.
CONTACT FOR ENQUIRIES ONLY	Professor Chris Leckie Tel +61 3 8344 1413 Email caleckie@unimelb.edu.au *Please do not send your application to this contact*

For information about working for the University of Melbourne, visit our website:
about.unimelb.edu.au/careers

Acknowledgement of Country

The University of Melbourne acknowledges the Traditional Owners of country throughout Australia. The University recognises the unique place held by Aboriginal and Torres Strait Islander peoples as the original custodians of country and their continued connection to the land, waterways, songlines and culture. The University respects all Aboriginal and Torres Strait Islander People and warmly embrace those students, staff, Elders and collaborators who identify as First Nations.

FEIT's Commitment to Diversity and Inclusion

FEIT is committed to creating a diverse and inclusive environment that welcomes and values all people. We recognise that diversity is essential in contributing to the success of FEIT. Women, Aboriginal and Torres Strait Islanders, the LGBTIQ+ community, people living with disability and those from a culturally and linguistically diverse background, are strongly encouraged to apply. Those seeking support in submitting an application are welcome to contact the Faculty HR team at feit-hr@unimelb.edu.au

Position Summary

The Research Fellow in Machine Learning for Automated Decision Making will contribute to Australian Research Council Centre of Excellence for Automated Decision-Making and Society (ADM+S) on *Fairness in Route Recommendation Systems*, which is a three-year research project. This project will develop new approaches that combine fairness, privacy and legal guarantees for automated decision making systems, such as recommender and machine learning based systems. It will initially focus on transportation applications, but can potentially be applicable in other areas. The position will be part of a team comprising investigators from the University of Melbourne and RMIT University. The successful applicant will have a background in computer science (or related discipline) with a strong research track record in developing novel algorithmic methods for machine learning, especially for recommendation systems and optimisation problems. Experience in research into the fairness, trust and explainability of machine learning models would also be an advantage.

The Fellow will be based at the School of Computing and Information Systems in the Faculty of Engineering and Information Technology at the University of Melbourne, and affiliated with the ARC Centre of Excellence for Automated Decision-Making and Society. You will collaborate actively with the Centre of Excellence's national and international network of participants. You will conduct independent and collaborative research, leading to the preparation and publication of research outcomes in conferences and journals. All Centre postdoctoral research fellows will also have access to the Centre of Excellence's research training and professional development opportunities, international visiting fellowships and exchanges (travel arrangements permitting), and the Centre's network of industry partners. You will be expected to be an active member of the School of Computing and Information Systems and the Centre of Excellence, collaborating with other researchers. You may have the opportunity to undertake small amounts of teaching, conduct training activities and research supervision directly related to your area of research.

About the Centre of Excellence

The rapid expansion of automated decision-making enabled by technologies from machine learning to the blockchain has great potential benefits, while it also creates serious new risks to human rights and welfare. Potential harms range from data discrimination against disadvantaged communities to the spread of disinformation for political and commercial ends. Increasing inequality, lower productivity and diminished economic security have been highlighted as risks in the coming decade.

The ARC Centre of Excellence for Automated Decision-Making and Society (ADM+S) is a new, cross-disciplinary, national research centre, which aims to aims to create the knowledge and strategies necessary for responsible, ethical, and inclusive automated decision-making. Funded by the Australian Research Council from 2020 to 2026, ADM+S is hosted at RMIT in Melbourne, Australia, with nodes in seven other Australian universities including the University of Melbourne. The Centre brings together leading researchers in the humanities, social and technological sciences in an international industry, research and civil society network. Its priority domains for public engagement are news and media, transport, social services and health.

1. Selection Criteria

1.1 ESSENTIAL

1.1.1 PhD in computer science or a relevant discipline;

1.1.2 A track record of high-quality algorithmic research in machine learning as evidenced by research publications in leading conferences and journals, commensurate with opportunity;

1.1.3 Demonstrated ability to perform independent research in machine learning for optimisation and recommendation systems;

1.1.4 Demonstrated capacity to communicate research concepts to technical and non-technical audiences;

1.1.5 Excellent ability in problem solving and critical thinking;

1.1.6 Excellent written and verbal communication skills, demonstrated by presentation of research results at conferences, internal forums and through manuscript submissions;

1.1.7 Excellent interpersonal skills, including an ability to interact with internal and external stakeholders (academic, administrative and support staff) in a courteous and effective manner;

1.1.8 Demonstrated experience in using initiative, working with minimal supervision and ability to prioritise tasks to achieve project objectives within timelines;

1.2 DESIRABLE

1.2.1. Demonstrated expertise and research track record on developing novel algorithms for topics such as: machine learning for transport routing and recommendation systems; explainability, trust and fairness of machine learning;

1.2.2. Experience in training, testing and analysing the complexity and performance of different types of machine learning algorithms on diverse and voluminous data sets;

1.2.3. Experience in supervision of graduate students and/or research assistants;

1.2.4. Experience in working with external partners in government or industry to define new research or training projects;

1.2.5. Experience in delivering training activities to research students or external partners.

2. Key Responsibilities

2.1 RESEARCH AND ADVANCEMENT OF DISCIPLINE

- Conduct high-quality research on machine learning for recommendation systems and other topics relevant to the Machines program in the CoE, both independently and as part of project teams;
- Participate in preparation of manuscripts for publication in peer-reviewed conferences and journals;
- Liaise effectively with collaborators with a variety of internal and external stakeholders;

- Contribute to the development of the School's strong research program in machine learning;
- Work towards building research engagements with industry and government;
- Contribute actively to the ARC Centre's research culture, including participation in research collaboration and community-building within the Centre's research programmes and focus areas;
- Conform to University and ARC Centre requirements with respect to research ethics and integrity and data management;
- Perform other duties as requested by the appointee's immediate supervisor.

2.2 CONTRIBUTION TO TEACHING AND LEARNING

- Contribute to teaching, training, scientific mentoring and supervision of students, including co-supervision of research projects for students at Masters and PhD level;
- Supervise junior research staff in the appointee's area of expertise;
- Conduct lectures, tutorials, mark and undertake laboratory duties where mutually agreed the School;

2.3 ENGAGEMENT

- Attend and contribute actively to group meetings;
- Present experimental results at local, national and international forums;
- Contribute to public understanding and debate through media, industry and/or policy engagement;
- Attend and actively participate in seminars, meetings and/or committee memberships.

2.4 LEADERSHIP AND SERVICE

- Support the Chief Investigators in coordinating the activities of the project as required;
- Lead and contribute in the preparation and submission of competitive grant applications relating to the appointee's research program
- Undertake Occupational Health and Safety (OH&S) and Environmental Health and Safety (EH&S) responsibilities as outlined in Section 4.

2.5 OTHER JOB RELATED INFORMATION

- This position requires the incumbent to hold a current and valid Working with Children Check.
- Occasional work out of ordinary hours, travel, etc.

3. Equal Opportunity, Diversity and Inclusion

The University is committed to all aspects of equal opportunity, diversity and inclusion in the workplace and to providing all staff, students, contractors, honorary appointees, volunteers and visitors with a safe, respectful and rewarding environment free from all forms of unlawful discrimination, harassment, vilification and victimisation. This

commitment is set out in the University's People Strategy and policies that address diversity and inclusion, equal employment opportunity, discrimination, sexual harassment, bullying and appropriate workplace behaviour. All staff are required to comply with all University policies.

All FEIT employees are required to behave in a manner that creates, supports and encourages an inclusive and safe work environment for all.

https://diversity.eng.unimelb.edu.au/#home

4. Occupational Health and Safety (OHS)

All staff are required to take reasonable care for their own health and safety and that of other personnel who may be affected by their conduct.

OHS responsibilities applicable to positions are published at:

https://safety.unimelb.edu.au/people/community/responsibilities-of-personnel

These include general staff responsibilities and those additional responsibilities that apply for Managers and Supervisors and other Personnel.

5. Other Information

5.1 SCHOOL OF COMPUTING AND INFORMATION SYSTEMS

https://cis.unimelb.edu.au/#about

The School of Computing and Information Systems (CIS) at the University of Melbourne is an international leader in information technology research and teaching.

CIS is one of the highest-profile schools in the country, regularly ranked top in Australia for Computer Science (2020 THE and QS). It is one of only two Australian divisions to be ranked "5 – Well above world standard" in both Information *and Computing Sciences* (FOR 08) and *Information Systems* (FOR 0806). CIS is at the forefront of computing research in Australia and overseas, with close links to major initiatives such as Melbourne Bioinformatics, IBM Research and CSIRO/DATA61 (formerly NICTA).

The School is committed to attracting and retaining the highest-quality staff available in order to produce outstanding and impactful research. CIS has highly successful research teams in the key areas of Computer Science (CS), Artificial Intelligence (AI), Human-Computer Interaction (HCI) and Information Systems (IS).

CIS provides majors in the three-year undergraduate 'Melbourne Model' degrees and has a range of specialist graduate programs in CS (including software engineering), AI, HCI and IS. It also has a large cohort of active graduate research students, both domestic and international, who are regularly publishing in top venues and engaging with the community.

In 2021 CIS will move to a new home, Melbourne Connect, Melbourne's newest innovation precinct. Through the co-location of talented researchers, scientists, academics and students with private enterprise and government partners, Melbourne Connect seeks to unlock the value and global reach of the University's research and people. The pivotal work to be undertaken in Melbourne Connect will address major

societal challenges by identifying solutions that are data driven, digitally enabled and socially responsible.

To find out more visit https://melbconnect.com.au/.

5.2 FACULTY OF ENGINEERING AND INFORMATION TECHNOLOGY

The Faculty of Engineering and Information Technology (FEIT) has been the leading Australian provider of engineering and IT education and research for over 150 years. We are a multidisciplinary School organised into three key areas; Computing and Information Systems (CIS), Chemical and Biomedical Engineering (CBE) and Electrical, Mechanical and Infrastructure Engineering (EMI). FEIT continues to attract top staff and students with a global reputation and has a commitment to knowledge for the betterment of society.

FEIT has never been better positioned as a global leader, anchored in the dynamic Asia Pacific region, creating and curating knowledge to address some of the world's biggest challenges. Through our students and our relationships with communities, we can not only respond to society's needs but anticipate and create engineering and IT solutions for the future.

https://eng.unimelb.edu.au/

https://eng.unimelb.edu.au/about/join-mse

Our ten-year strategy, FEIT 2025, is our School's commitment to bring to life the University-wide strategy Advancing Melbourne and reinforce the University of Melbourne's position as one of the best in the world.

To achieve our ambitions, we will continue to build new infrastructure to enable our teaching, research and engagement; we continue to recruit outstanding people from around the world; and we continue to attract high-quality students from across the globe who are at the heart of our enterprise.

https://eng.unimelb.edu.au/about/feit-2025

5.3 THE UNIVERSITY OF MELBOURNE

Established in 1853, the University of Melbourne is a public-spirited institution that makes distinctive contributions to society in research, learning and teaching and engagement. It's consistently ranked among the leading universities in the world, with international rankings of world universities placing it as number 1 in Australia and number 32 in the 2020 QS World University Ranking for Computer Science

The University's 10-year strategy, *Advancing Melbourne* will enable the University to contribute to advancing the state and national interest and make vital contributions to Australia's standing on the world stage. We seek to be a leading force in advancing Australia as an ambitious, forward-thinking country while increasing its reputation and influence globally. https://about.unimelb.edu.au/strategy/advancing-melbourne

Further information about working at The University of Melbourne is available at http://about.unimelb.edu.au/careers