POSITION DESCRIPTION

THE UNIVERSITY OF MELBOURNE

School of Electrical, Mechanical and Industrial Engineering
Faculty of Engineering and Information Technology

Research Fellow in Autonomous Robotics

POSITION NO	0055813
CLASSIFICATION	Level A Research Fellow
SALARY	$95,179 - $102,163 (Level A) Minimum salary for a PhD Graduate is $95,179
SUPERANNUATION	Employer contribution of 17%
WORKING HOURS	Full-time
BASIS OF EMPLOYMENT	Fixed term to 31 May 2024 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	Prof. Girish Nair Email gnair@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.

Commitment to Diversity and Inclusion

The Faculty of Engineering and Information Technology (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 the Faculty. 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

Position Summary

The Control and Signal Processing (CSP) research group in the Department of Electrical and Electronic Engineering comprises many internationally recognised researchers, including Fellows of learned Academies and the IEEE. In line with a significant focus on robotics and autonomy, the CSP group seeks to appoint up to three postdoctoral research fellows to work on a multidisciplinary project on perception, navigation and spatial awareness in autonomous robots, using vision or other sensing modalities, and inspired by insights from neuroscience and biology. The successful candidates will be expected to conduct original theoretical research on this theme and implement the resulting algorithms on a robotic testbed. It is anticipated that there will be opportunities to visit and collaborate with institutions in Boston, USA.

1. Selection Criteria

1.1 ESSENTIAL

- A PhD in the area of control, robotic navigation, optimisation or statistical signal processing, or an equivalent qualification;
- A record of quality research as evidenced by publications in leading journals and at conferences of systems and control, robotics, optimisation or signal processing, commensurate with opportunity;
- Strong theoretical and analytical skills in formulating, analysing and solving problems
- A commitment to pursue the research topics of perception, navigation and spatial awareness in autonomous robots, as described in the “Position Summary” above;
- Experience in taking the initiative, working with minimal supervision and prioritising tasks to achieve project objectives within given timelines;
- Demonstrated capacity to communicate research concepts to technical audiences.
- Ability to work as part of a team that includes research students, and junior and senior researchers.

- Good interpersonal and communication skills when interacting with students, researchers, professional staff and external stakeholders.

1.2 DESIRABLE

- Experience using mobile robots
- Familiarity with vision-based methods for mapping, localisation, and navigation
- Familiarity with information theory and stochastic control
- Experience with the implementation of numerical methods and engineering applications of optimisation techniques in real-time control of dynamical systems;
- Exposure to mathematical foundations of learning theory

2. Key Responsibilities

2.1 CONTRIBUTION TO TEACHING AND LEARNING

- Giving occasional lectures, tutorials and/or workshops, and supervising students where appropriate.

2.2 RESEARCH AND ADVANCEMENT OF DISCIPLINE

- Conducting fundamental and application-oriented research on perception, navigation and spatial awareness in autonomous robots, consistent with the “Position Summary” above;
- Following timelines and milestones in accordance with the research schedule of the project;
- Preparation and publication of high quality research papers and technical reports;
- Preparation and delivery of technical presentations to technical and non-technical audiences;
- Assistance in the supervision of research and coursework student projects, where appropriate.

2.3 ENGAGEMENT

- Attend and actively contribute to group meetings and department seminars;
- Present research results at local and national meetings and conferences;
- Effectively liaison with external partners and stakeholders to foster collaborative research partnerships;

2.4 LEADERSHIP AND SERVICE

- Assist with administrative duties and general laboratory duties including maintenance of the laboratory and equipment;
- Assist in the preparation and submission of competitive grant applications relating to the appointee's research program;
- Perform other duties as requested by the appointee's immediate supervisor;
- 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.

3. Other Information

3.1 SCHOOL OF ELECTRICAL, MECHANICAL AND INFRASTRUCTURE ENGINEERING

https://eng.unimelb.edu.au/about/departments/school-of-electrical-mechanical-and-infrastructure-engineering

The School of Electrical, Mechanical and Infrastructure Engineering (EMI) undertakes teaching and research across a range of disciplines that are internationally recognised for their contribution to fundamental research. EMI has several well-established industry linkages and international partnership and is building a vibrant profile of interdisciplinary research, working with industry with an aim to contribute to society. EMI offers a comprehensive range of accredited Master of Engineering and Master of Information Technology programs taught through the Electrical, Mechanical and Infrastructure departments as well as professional Masters programs. The School has a substantial cohort of research higher degree students.

A major focus of the School is to attract and retain outstanding and internationally recognised academic staff. EMI is committed to increasing the number of female engineers and scientists on its staff.

3.2 DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

http://www.ee.unimelb.edu.au

The Department of Electrical and Electronic Engineering is a vibrant community of internationally recognised researchers focused on addressing major challenges in Power & Energy Systems; Communications & Networks; Electronic & Photonic Systems; and Control & Signal Processing. We have long-standing, strong partnerships with industry and government that support our researchers in conducting high impact research. The

Department offers both PhD and Masters level research degrees, and our research graduates are highly sought after in academia and industry.

The Department also aims to deliver outstanding graduate outcomes in our coursework programs. These include the two-year professionally accredited Master of Engineering (Electrical) program, and the three-year Electrical Systems major in the Bachelor of Science.

3.3 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-feit

Our ten-year strategy, FEIT 2025, is our 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

3.4 THE UNIVERSITY OF MELBOURNE

Established in 1853, the University of Melbourne is a leading international university with a tradition of excellence in teaching and research. The main campus in Parkville is recognised as the hub of Australia's premier knowledge precinct comprising eight hospitals, many leading research institutes and a wide-range of knowledge-based industries. With outstanding performance in international rankings, the University is at the forefront of higher education in the Asia-Pacific region and the world.

The University employs people of outstanding calibre and offers a unique environment where staff are valued and rewarded.

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

3.5 ADVANCING MELBOURNE

The University's strategic direction is grounded in its purpose. While its expression may change, our purpose is enduring: to benefit society through the transformative impact of education and research. Together, the vision and purpose inform the focus and scale of our aspirations for the coming decade.

Advancing Melbourne reflects the University's commitment to its people, its place, and its partners. Our aspiration for 2030 is to be known as a world-leading and globally connected Australian university, with our students at the heart of everything we do.

- We will offer students a distinctive and outstanding education and experience, preparing them for success as leaders, change agents and global citizens.
- We will be recognised locally and globally for our leadership on matters of national and global importance, through outstanding research and scholarship and a commitment to collaboration.
- We will be empowered by our sense of place and connections with communities. We will take opportunities to advance both the University and the City of Melbourne in close collaboration and synergy.
- We will deliver this through building a brilliant, diverse and vibrant University community, with strong connections to those we serve.

The means for achieving these goals include the development of the University of Melbourne's academic and professional staff and the capabilities needed to support a modern, world-class university. Those means require a commitment to ongoing financial sustainability and an ambitious infrastructure program which will reshape the campus and our contribution to the communities we engage with. This strategy, and the priorities proposed, is centred around five intersecting themes; place, community, education, discovery and global.

3.6 EQUAL OPPORTUNITY, DIVERSITY AND INCLUSION

The University is an equal opportunity employer and is committed to providing a workplace free from all forms of unlawful discrimination, harassment, bullying, vilification and victimisation. The University makes decisions on employment, promotion, and reward on the basis of merit.

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 Advancing Melbourne strategy that addresses diversity and inclusion, equal employment opportunity, discrimination, sexual harassment, bullying and appropriate workplace behaviour. All staff are required to comply with all University policies.

The University values diversity because we recognise that the differences in our people's age, race, ethnicity, culture, gender, nationality, sexual orientation, physical ability and background bring richness to our work environment. Consequently, the People Strategy sets out the strategic aim to drive diversity and inclusion across the University to create an environment where the compounding benefits of a diverse workforce are recognised as vital in our continuous desire to strive for excellence and reach the targets of Advancing Melbourne.

3.7 GOVERNANCE

The Vice Chancellor is the Chief Executive Officer of the University and responsible to Council for the good management of the University.

Comprehensive information about the University of Melbourne and its governance structure is available at https://about.unimelb.edu.au/strategy/governance

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.