

## Postdoctoral Research Associate

- **An exciting opportunity exists for a motivated and proactive Postdoctoral Fellow to join a dynamic Faculty of Science and Engineering research team**
- **Salary Package:** Level A step 6 (PhD) from \$95,706 to \$102,570., plus 17% employer's Superannuation and annual leave loading.
- **Appointment Type:** Full-time, fixed term up to 12 months, with a possibility of further appointment subject to funding.
- **Macquarie University (North Ryde location)**

### The Role

An exciting role has become available in the Department of Computing at Macquarie University. We are seeking a qualified Postdoctoral Research Fellow to join a team with an international reputation for producing high quality research on Embedded Systems Programming and Applied Machine Learning (specifically sensor fusion algorithms).

Macquarie is a young and dynamic university, focused on fostering collaboration between students, academics, industry and society, encouraging all to traverse the boundaries of their own perspective and effect change. In Macquarie's Faculty of Science and Engineering you'll join passionate researchers and educators blazing new trails in the spirit of discovery and exploration. The Department of Computing is located on a beautiful, serene and green campus in northern Sydney.

At the forefront of the revolution in digital technologies, the Department of Computing is a powerhouse for work-changing research – including intelligent and data intensive computing, secure and reliable systems, and human-computer interactions. Our exciting goal is to continually improve Macquarie's global reputation for generating and delivering high-impact computing research and education. For more information, please visit the department's website at <https://www.mq.edu.au/faculty-of-science-and-engineering/departments-and-schools/department-of-computing>.

### About the Project

The project (A safety-preserving ecosystem for autonomous driving) is under the umbrella of Australian Research Council (ARC) Linkage Project (LP) scheme (LP190100676) in collaboration with a local start-up IoT company in Sydney and University of Technology Sydney (UTS).

In this project, working with the team at Intelligent Systems Research Group (ITSEG) in Macquarie University (MQ): <http://itseg.org/>, you need to tackle the industry challenges in building robust multi-sensor fusion perception models used in autonomous driving, creating innovative test selection, test reduction, test prioritization, test generation methods for perception, control, plan and scheduling modules in industry-scale autonomous driving systems. You also need to provide efficient and scalable runtime monitoring for such driving systems.

In ITSEG, we have recently discovered vulnerabilities in end-to-end driving model (camera based) <http://itseg.org/wp-content/uploads/2020/11/09127389.pdf>, conducted a survey on possible attacks and defences on autonomous driving systems [http://itseg.org/wp-content/uploads/2021/04/ALL\\_TII-20-5715.R1.pdf](http://itseg.org/wp-content/uploads/2021/04/ALL_TII-20-5715.R1.pdf), and proposed a few testing

methodologies for autonomous driving systems which are under review. Currently, we aim to expand our work for multi-sensor fusion perception, control and plan modules used in driving systems. The goal of this research is not only publishing high-quality papers (CORE A\* conferences in System and Software Engineering, such as PerCom, MobiSys, ICSE and FSE), but also to deploy our technologies in some real-world vehicle systems. Prospective candidates are encouraged to look at the corresponding publications at <http://itseq.org/publications/>.

## **Selection Criteria**

To be considered for this position, applicants must address the selection criteria below, and attach your CV (including a list of two referees), a statement of research interests and achievements.

### **Essential**

- PhD degree in a relevant field
- Experience in Software Testing and IoT security
- Strong background in Applied Machine Learning and Embedded Systems Programming
- Experience working both as an independent researcher and in a team-based environment and contribute positively to an active work environment
- Demonstrated ability to manage and interpret complex datasets and publish leading-edge research
- Excellent communication skills, with an ability to engage with staff and students across discipline boundaries.

### **Desirable**

- Experience in Program Analysis
- Experience in Autonomous Systems (Autonomous Vehicles or UAVs)

**Enquiries:** Dr. James Xi Zheng at [james.zheng@mq.edu.au](mailto:james.zheng@mq.edu.au)

**Applications Close:** 4 weeks from the date of posting if attracting international candidates, otherwise 2 to 3 weeks closing date will be reasonable.

### **Equity & Diversity Statement**

At Macquarie University, we are committed to providing a working environment where each individual is valued, respected and supported to progress. Our priority is to ensure culture, policies and processes are truly inclusive and that no-one is disadvantaged on the basis of their Aboriginal and Torres Strait Islander identity, gender, culture, disability, LGBTIQ+ identities, family and caring responsibilities, age, or religion. We encourage everyone who meets the selection criteria and shares Macquarie University's values of scholarship, empowerment and integrity to apply.

Learn more about our progress towards Equity, Diversity and Inclusion.

<https://staff.mq.edu.au/work/diversity-and-community>