



Kickstart your career with CSIRO's Industry PhD

Earn your PhD in partnership with industry, a leading university, and Australia's national science agency, CSIRO.

The CSIRO Industry PhD Program (iPhD) is a research training program, focusing on applied research that benefits industry by solving real-world challenges. It aims to produce the next generation of innovation leaders with the skills to work at the interface of research and industry in Australia.

The opportunity

- Admission to a university PhD program
- A four-year scholarship valued at \$47,000 per annum (2025 rate)
- A project expense and development package of up to \$13,000 per annum
- Supervision by CSIRO, an industry partner and the host university
- A 60-day Industry Engagement component with the industry partner
- A structured professional development and training package

Successful students will receive a PhD on completion.

Eligibility requirements

The student must:

- Be an Australian citizen or Permanent Resident, or a New Zealand citizen.
- Meet participating university PhD admission requirements.
- Meet university English language requirements.
- Not have previously completed a PhD.
- Be able to commence the Program in the year of the offer.
- Enrol as a full-time PhD student.
- Be prepared to be located at the project location(s) that the host university has approved and, if required, comply with the host university's external enrolment procedures.

Application process

- Applicants submit an expression of interest (EOI) following the instructions on the university's webpage or directly by emailing the supervisory team. Applications are open until position is filled.
- The EOI is assessed by the supervisory team and shortlisted applicants are interviewed.
- The supervisory team nominates a preferred applicant.
- The application is assessed by the university against PhD admission criteria.
- The university will issue a letter of offer for the program if all conditions have been satisfied.

Project overview

Visual-LiDAR Inertial Localisation and Mapping in Dynamic Environments

Simultaneous Localisation and Mapping (SLAM) is crucial in robotics, allowing systems to estimate sensor motion and scene geometry concurrently. However, most of the existing SLAM systems assume a static environment or exclude dynamic objects such as pedestrians or cars. This Project focuses on object-level localisation and mapping in dynamic environments, aiming to estimate the motion of dynamic objects and segment them for 3D reconstruction. Integrating this outcome into lidar-based mapping systems will enhance robustness in highly dynamic environments. Accurately mapping dynamic objects improves situational awareness, benefiting applications such as Augmented Reality (AR) and driverless cars.

The expected outcomes are:

- Development of robust methods for segmentation and tracking of moving objects sensed by a sensor rig (lidar+camera) in motion. The proposed new methodologies will combine geometric reasoning with deep learning techniques to obtain solutions that will be able to remove the necessity of strong priors and assumptions and handle a large range of dynamic scenes.
- Deliver a novel estimation framework that simultaneously localises the robot and maps the static and dynamic environment.
- Implementation of the proposed frameworks and their proper evaluation on the data collected in real-world scenarios.
- Publication of research findings and outcomes in top-tier relevant academic journals and conferences.

SUPERVISORY TEAM DETAILS	
The University of Sydney	Viorela Ila Yiduo Wang viorela.ila@sydney.edu.au yiduo.wang@sydney.edu.au
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Ideal student skillset

- Strong research training experience with a formal qualification at Honours/Masters level in Robotics/Computer Science/Electrical/Mechatronics engineering.
- Strong programming skills in C++ (Python is a plus) in Linux and experience with Robotic Operating System (ROS).
- Strong understanding of research methodology and experience in proof of concept (PoC) development.
- Some understanding of Simultaneous Localisation and Mapping (SLAM) and image processing concepts.
- Strong oral and written communication skills, good problem-solving skills and ability to work on applied research problems.
- A proven ability to publish research outcomes in high-impact venues would be an advantage.

PROJECT LOCATIONS	
Primary location	CSIRO Pullenvale, 1 Technology Court, Pullenvale QLD 4069
Industry Engagement component location	Emesent Pty Ltd, Emesent, Kings Row Office Park, 40-52 McDougall Street, Milton QLD 4064
Other potential location	The University of Sydney, Camperdown NSW 2006



FOR FURTHER INFORMATION

- Visit the [iPhD website](#)
- Contact the project's supervisory team
- Contact the University's Graduate Research School
- Contact the [iPhD team](#)

