



Development of novel machine learning algorithms for cognitive electronic warfare

Up for a challenge?

Join us to work on an industry-led research project with SRC Aus.

Who can apply?

- Australian & New Zealand Citizens

Industry partner and funding body

- [SRC Aus Pty. Ltd.](#)
- [Defence Trailblazer](#)

Program of study available

- Doctor of Philosophy (PhD) with the University of Adelaide

Total annual stipend amount

- \$50,000 p.a. for four years

Start date

- Plan for a start no later than 31/12/2023

About the project

The aim of this PhD project is to develop novel machine learning algorithms and adaptive methods to automatically respond to the constantly changing and complex Radio Frequency (RF) environment in electronic warfare (EW). The project will involve the design, implementation, and testing of new machine learning techniques to identify and predict the characteristics and behaviour of RF emitters, in order to improve the performance of EW receiver processing.

This PhD project aims to achieve the following objectives:

- Design and develop novel machine learning algorithms for adaptive RF EW receiver processing
- Evaluate the performance of the developed algorithms on real-world datasets and hardware platforms
- Compare the performance of the developed algorithms with existing state-of-the-art techniques in the field
- Investigate the potential of integrating the developed algorithms into practical EW systems.

Eligibility criteria

- Proficient programming skills in MATLAB, Python, and/or other relevant programming languages
- Familiarity with machine learning, signal processing, and/or statistical analysis
- Knowledge of software-defined radio (SDR) platforms and hardware implementation
- Experience in working with large datasets and raw data pre-processing
- Students who hold an Honours degree or equivalent in Electrical, Electronic or Mechanical Engineering, Computer Science, IT, Software Engineering, Telecommunications, Robotics, or Mathematics are encouraged to apply
- Well-developed written and verbal communication skills will be considered favourably
- Be willing to provide your personal details by way of a Student Deed Poll.

Benefits

- Work closely with experts on defence industry led projects
- Translate research into a tangible solution
- \$50,000 p. a. tax-free* stipend (pro-rated for eligible part-time students)
- No tuition fees apply
- Acquire a unique set of skills and expertise
- Enhance your employability skills sought after by industry; graduates are highly regarded by employers
- Opportunities for local and international travel
- Work alongside world-leading researchers
- Gain industry experience and grow your networks
- Solve real life problems through industry engaged projects
- Publish your contributions
- Become an expert and make a real impact
- Access paid annual, parental and personal leave.

* Conditions apply

How to apply

- Complete an [expression of interest](#)
- The primary supervisor will assess your eligibility, and if successful, will prompt your application for admission via the University of Adelaide.

More about Defence Trailblazer

The Defence Trailblazer for Concept to Sovereign Capability is a once in a generation opportunity to strengthen the collaboration between defence, academia and industry whilst accelerating research and commercialisation.

In partnership with the University of Adelaide (UoA), the University of New South Wales (UNSW), industry partners and supported by the Australian Government, the initiative will skill the workforce of the future, support defence-focussed innovation, and play a leading role in accelerating the delivery of sovereign capabilities for the nation's security and prosperity...at-speed and at-scale.

Learn more: <https://dtb.solutions/>

Industry Research Program

All students supported under the Defence Trailblazer initiative will participate in the Defence Trailblazer Industry Research Program (IRP).

Candidates will be located on-site at both university and industry offices for at least 60 FTE days (pro-rated for eligible Masters candidates), to enable professional development opportunities in an industry setting.

Defence Research Capability

Academics participating in the Defence Trailblazer IRP are leaders in their fields.

UNSW adds a critical dimension to preparing defence forces across areas as diverse as Autonomous Systems, Hypersonics, Sensors and Space. The UNSW Defence Capability Portfolio showcases UNSW's excellence in defence research and technology and highlights work across academia, government and industry, as well as with global policy makers, to create a hub of defence-related knowledge. The vision is to translate this knowledge into impact which can transform Australian and global societies.

There's no greater reassurance for our community than knowing we're well prepared to prevent or avert threats to our security. UoA researchers support this in very domain: on land and online; in space, the air and at sea, working extensively with the [Department of Defence](#) and defence-related organisations in a variety of ways—as an advisor, research partner and producer of high-quality, career-ready graduates equipped to make our world a better and more secure place.

[Find out more](#) about defence research at the University of Adelaide.

Further information

For a confidential discussion contact:

Dr. Feras Dayoub

Australian Institute of Machine Learning
The University of Adelaide | Adelaide SA 5005

E: feras.dayoub@adelaide.edu.au

Defence Trailblazer, together with UoA and UNSW, are actively working to support equity groups. We strongly encourage applications from people with a disability, veterans and women interested in working in non-traditional work settings
University of Adelaide CRICOS Number 00123M

