



## Target Motion Analysis from Doppler sensors

### Up for a challenge?

Join us to work on an industry-led research project with Saab Australia.

#### Who can apply?

- Australian Citizens & Permanent Residents

#### Industry partner and funding body

- [Saab Australia](#)
- [Defence Trailblazer](#)

#### Program of study available

- Master of Philosophy (MPhil) with the University of Adelaide

#### Start date

- Plan for a start no later than 31/03/2024

#### Total annual stipend amount

- A base scholarship of \$40,000pa plus \$10,000 top-up scholarship

### About the project

Target Motion Analysis (TMA) is the process of estimating the two-dimensional location of a moving platform, using a temporal sequence of one-dimensional (bearing) observations from a moving sensor. Doppler (range-rate) information may also be available. TMA is used for passive acoustic surveillance and is therefore a core function in anti-submarine warfare, whether conducted by submarines or surface combatants. TMA solutions are inherently ambiguous under an assumption of straight-line movement, therefore manoeuvre is used by the sensor operator to resolve ambiguities, and by the tracked target to mislead TMA processes being conducted by adversaries.

The aim of this project is to provide a fundamental theoretical improvement in the performance of one or more aspects of TMA and counter-TMA operations through the application of novel algorithms and/or use of additional information sources. Ideally, this improved performance will be demonstrated in a laboratory environment.

### Eligibility criteria

- Australian citizens and defence industry professionals are encouraged to apply. It is desirable for candidates to be able to obtain a baseline security clearance after enrolment.
- Applicants with skills in some, or all of: data science, mathematical modelling trackers, data fusion, and software development will be considered favourably.
- Excellent students who hold an Honours degree in Mathematics, Computer Science, Engineering or equivalent would be especially suitable and encouraged to apply.
- Applicants with 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.

## How to apply

- Complete an [expression of interest](#)
- Once your initial eligibility assessment is approved, formally lodge an application for admission and/or scholarship via the [Adelaide Graduate Research School](#)
- **Application intake, opening and closing dates are listed on the university website.**



## 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 \$240 million dollar initiative will skill the workforce of the future, support defence-focused 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:

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*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

