A COLLABORATIVE PARTNERSHIP BETWEEN

THE UNIVERSITY of ADELAIDE | UNSW

DEFENCE TRAILBLAZER
CONCEPT TO SOVEREIGN CAPABILITY

Can Artificial Intelligence improve Training of Unmanned Aerial Systems Operators?

Who can apply?
- Australian Citizens & Permanent Residents
- New Zealand Citizens
- International applicants may also be considered, subject to approval

Industry partner and funding body
- CAE
- Defence Trailblazer

Total annual stipend amount
- A base scholarship of $40,000 p.a. plus $10,000 top-up scholarship

Start date
- Plan for a start no later than 26/01/2024

Program of study available
- Doctor of Philosophy (PhD)
- Master of Philosophy (MPhil)

About the project

CAE and UNSW will examine situational awareness and cognitive load for autonomous systems. Specifically, it is aimed to understand how situational awareness is affected by different levels of cognitive load, with the focus on high demand tasks, such as the operation of sensors in unmanned aerial vehicles (UAV's). The proposed study will employ valid and objective data from simulation and biometrics such as gaze tracking, heart rate variability and galvanic skin response to develop new interpretative algorithms to inform training task instructors on the trainee cognitive load in performing operational tasks.

The research will further develop and investigate the efficacy of the cognitive load assessment algorithm followed by the developed similar algorithms for flight based tasks by CAE. All scientific support, including knowledge and resources will be available to the candidate.

The research tool will be a CAE UAV flight and sensor simulator, equipped with biometric sensors, with a suite of training scenarios available for task evaluation. The simulator will be fully supported, hosted at UNSW and available for the duration of the program. The biometric device will be provided by UNSW. The project will involve data collection from human subjects and will be required to receive ethics application approval prior to the start of the experiment. This support will be provided by the adviser from UNSW.

Eligibility criteria

- Australian citizens and defence industry professionals are encouraged to apply. International applicants from non-sanctioned countries may also be considered, subject to approval. It is expected that this project will require the candidate to have a security clearance which will likely limit applicants to Australian Citizens or citizens of countries within the Five Eyes Alliance (FVEY).
- Applicants with strong knowledge in Unmanned Aerial Systems and Artificial Intelligence will be considered favourably.
- Excellent students who hold a Bachelor of Aviation, Master of Aviation or a double degree with 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 skilled experts on defence industry led projects
- Translate research into a tangible solution for Defence
- $50,000p.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 UNSW.

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.

Learn more about UNSW's defence capability portfolios.

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

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