A COLLABORATIVE PARTNERSHIP BETWEEN

THE UNIVERSITY of ADELAIDE | UNSW

DEFENCE TRAILBLAZER
CONCEPT TO SOVEREIGN CAPABILITY

Visual Guidance for Ship Launch and Recovery of Unmanned Aerial Vehicles

Up for a challenge?

Join us to work on a Defence-led research project with Geodrones Pty Ltd

Who can apply?

- Australian Citizens & Permanent Residents
- New Zealand Citizens
- Onshore international students from Five Eyes Alliance Nations (United States, the United Kingdom, Canada)

Program of study available

- Doctor of Philosophy (PhD)
- Master by Research

Industry partner and funding body

- Geodrones Pty Ltd
- Defence Trailblazer

Total annual stipend amount

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

Start date

- PhD by end of July 2024 (or by exception)
- Masters by December 2024

About the project

Current systems for landing UAVs on ships tend to be GPS or radar based and do not use passive sensing. This project aims to develop a visual guidance solution for maritime launch and recovery of UAVs which is not reliant on specialist hardware on the ship and is resilient to failed or degraded GPS. Moreover, this project will target small vessels that otherwise would not have a UAV capability owing to the lack of infrastructure that can be installed and the significant ship motion caused by operations in anything but calm seas. This will enable UAV support of operations from small uncrewed vessels as well as larger crewed vessels.

The project will investigate the best way to achieve a visually guided approach and landing on to the moving deck of a maritime vessel. It will compare classical machine vision and deep learning approaches to tracking the ship and deck markings with consideration of fusing other sensor modalities such as LiDAR. Use of ship motion prediction via machine learning will also be explored to decide the best time to conduct launch and recovery and to enhance the smoothness of the landing trajectory.

Eligibility criteria

- Australian citizens and defence industry professionals are encouraged to apply.
- Applicants with strong experimental and numerical skills in robotics, computer vision or control systems will be considered favourably.
- Be willing to share Intellectual Property with the industry partner and University by way of a Student Deed Poll.

Benefits

- Work closely with experts on defence industry led projects
- Translate research into a tangible solution for Defence
- $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

* 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 Industry Research Program (IRP).

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

Defence Research Capability

Academics participating in Defence Trailblazer 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. UofA researchers support this in every 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, and defence capability portfolios at UNSW

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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