A COLLABORATIVE PARTNERSHIP BETWEEN

THE UNIVERSITY of ADELAIDE | UNSW

DEFENCE TRAILBLAZER
CONCEPT TO SOVEREIGN CAPABILITY

Experimental Free Space Quantum Communications

Up for a challenge?

Join us to work on a Defence-led research project with Northrop Grumman

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

Industry partner and funding body
- Northrop Grumman
- Defence Trailblazer

Start date: Plan for a start no later than June 2024

Total annual stipend amount: A base scholarship of $40,000pa plus $10,000 top-up scholarship

Program of study: Doctor of Philosophy (PhD)

About the project

Experimental deployment of quantum communication over free space will open a pathway to the secure global quantum internet. In this project you will be involved in developing a prototype quantum communication system that will eventually be used to communicate with low earth orbit satellites. The project is currently seeking two experimentally focussed PhD students to participate in this work. You will be involved in the development of optical systems that encode entangled photon pairs, development of transmitters for quantum signalling through free space, and in the development of quantum-decoding receivers.

You will be joining a large group of students, postdocs and staff at UNSW currently working in this area, both experimentally and theoretically. You can anticipate a world-class education in this exciting new field. As part of your training, you can expect to travel to international conferences as well as receive industry-based training through our key industry partner. UNSW is a world-leader in the field of quantum technology, and the School of Electrical Engineering and Telecommunications, which you will join, has recently initiated the world's first bachelor's degree in quantum engineering.

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.
- Applicants with strong interest in experimental quantum optics are encouraged to apply.
- Two positions are open to candidates who possess, or hope to possess soon, a First-Class Honours Degree in Electrical Engineering, Physics, or a closely related discipline.
- 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).
- 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.

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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