A COLLABORATIVE PARTNERSHIP BETWEEN

THE UNIVERSITY of ADELAIDE | UNSW

DEFENCE TRAILBLAZER
CONCEPT TO SOVEREIGN CAPABILITY

Leveraging ML Agents for Military Application: Analysis of networks through low-level cyber observables and NLP

Who can apply?
- Australian Citizens

Program of study available
- Doctor of Philosophy (PhD)

Industry partner and funding body
- DEWC Services
- Defence Trailblazer

Total annual stipend amount
- $56,000pa for 4 years tax-free
- A base scholarship of $40,000pa plus $16,000pa top-up scholarship

Start date
- Plan for a start no later than 01/02/2024

Benefits

- Work closely with skilled experts on defence industry led projects
- Translate research into a tangible solution for Defence
- $56,000pa tax-free* stipend
- No tuition fees apply for eligible candidates
- 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

About the project

In the realm of modern warfare, understanding the military applications and intentions of networks is of paramount importance. This research proposal focuses on employing ML agents to determine the military application of networks based on low-level cyber observables, such as packet data, and incorporating Natural Language Processing (NLP) techniques for the analysis of documents and communications. By combining advanced technology with network analysis and linguistic understanding, this study aims to contribute to enhancing military intelligence and strategic decision-making.

The project looks to:
- Develop ML-based agents capable of analysing packet data to infer and predict the military application of networks.
- Integrate NLP techniques for the forensic analysis of textual documents and communications to further enhance military application analysis.
- Validate and evaluate the proposed methodologies using real-world data, measuring their accuracy and impact on mission readiness.

Eligibility criteria

- Australian citizens and defence industry professionals are encouraged to apply. 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 a strong background in computer science, mathematics and related areas. In particular, strong knowledge in the areas of algorithms, machine learning and/or cybersecurity will be considered favourably.
- Excellent students who hold an Honours or Master degree in Computer Science or Mathematics 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.

*Conditions apply

How to apply

- Complete an expression of interest by **10 December 2023**.
- 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:

Professor Frank Neumann
School of Computer and Mathematical Sciences
The University of Adelaide | SA 5005 Australia

E: frank.neumann@adelaide.edu.au

T: 08 8313 4477

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