National Industry PhD Program: Enhancing acoustic signals for underwater communication and sonar using biologically inspired signal processing

Adelaide University and evoSonic invite applications for this industry PhD project, enhancing underwater acoustic signals.

Program overview

Degree

Doctor of Philosophy

Research area

Engineering

Academic supervisor

Prof Anthony Finn

Industry partner

evoSonic

Expected commencement

2026

The successful candidate will receive:

- Admission to a PhD program at Adelaide University;
- An Adelaide University Research Scholarship for 4 years, paid at $53,635 p.a., and a tuition fee waiver;
- Supervision from research specialists at Adelaide University and evoSonic;
- Industry embedment with evoSonic; and
- Access to professional development opportunities through the University's Graduate Research and Innovation Training program.

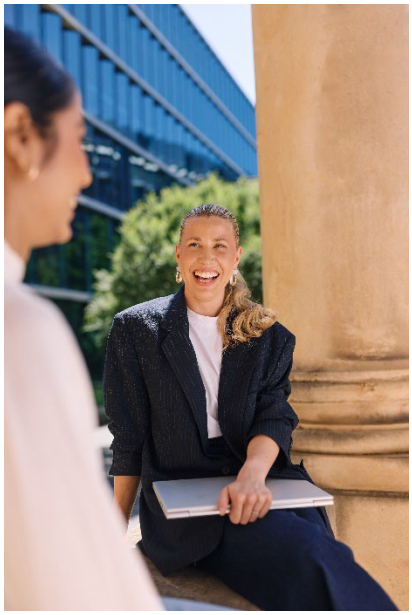
Project details

This project aims to improve the signal-to-noise ratio (SNR) of low-amplitude acoustic signals propagating in noisy underwater environments using a fully elaborated model of insect vision. The project builds on previous research which has proven beneficial when applied to the detection, location, classification, and tracking of quiet, slow-moving targets in aero-acoustic settings. Extending and developing these techniques, which are based on a biologically inspired, multi-stage, multi-feedback signal processing strategy, will boost the signal-to-noise ratio of the received signals in these complex, noisy environments. The outcomes will lead to higher bandwidth with faster and longer-range underwater communications and target detection for sonar, potentially benefitting defence-related applications particularly in the maritime domain.

This project will be undertaken in collaboration with Professor Anthony Finn of the College of Engineering and Information Technology and research specialists at evoSonic. The student will co-located at Adelaide University and evoSonic's Adelaide site.

Eligibility Requirements

This opportunity is open to Australian citizens who can meet the requirements for PhD admission at Adelaide University (including English language proficiency in the relevant academic area), and who can



demonstrate suitable experience in Engineering, Physics or Mathematics (through a high-quality Honours or Masters degree).

The ideal candidate will have an interest in, and understanding of, signal processing, and be able to demonstrate initiative in applying themselves to solving and understanding complex problems. It would be beneficial for the candidate to have knowledge in radio frequency or acoustic signal processing, but these skills can be learnt.

The successful candidate must be able to enrol as a full-time PhD student at the University in the year of the offer. They must remain based in Adelaide, South Australia for the duration of the award.

Students that have previously completed a PhD program are, unfortunately, ineligible for the National Industry PhD Program.

Application Process

To apply, please email the following documents to principal supervisor Anthony Finn (anthony.finn@unisa.edu.au) with the subject line 'National Industry PhD Program application':

- CV
- Cover Letter (of not more than 2 pages) outlining your interest in the PhD project and describing how your background and research area align with the project
- Degree certificates and relevant academic transcripts, with translations of non-English documentation

Applications close on **16 January 2025**. Please note that applications will be shortlisted on a rolling basis, and the scholarship advertisement may be withdrawn early if a suitable candidate is identified.

About the National Industry PhD Program

The National Industry PhD Program is an Australian Government initiative to enhance workforce mobility among graduate researchers, and to promote knowledge transfer between academia and industries across all areas. PhD candidates under this program are connected with academic supervisors and industry-based researchers, to co-design innovative, applied research projects. Through their doctoral candidature, students will experience research in both university and industry settings, and undertake specialised training in research translation and commercialisation.

Enquiries

For enquiries about this opportunity please contact Prof Anthony Finn: anthony.finn@unisa.edu.au

General Enquiries

For further information about the National Industry PhD Program, or research degrees at Adelaide University, please contact the Adelaide University Graduate Research School.