POSITION DESCRIPTION

Postdoctoral Research Fellow – Maritime Array Sensor Fusion

WESTERN SYDNEY UNIVERSITY

POSITION DETAILS

Position Title	Postdoctoral Research Fellow in Maritime Array Sensor Fusion
Classification	Level A
Position Number	7016390
School/Office	International Centre for Neuromorphic Systems (ICNS), MARCS Institute for Brain, Behaviour and Development
Division	Provost

POSITION PURPOSE

The Postdoctoral Research Fellow will support the Aqua Colliculus Autonomous Neuromorphic Sonobuoy Network for Multi-Modal Sensing and Decision-Making (ASCA) research project. The role contributes to research, prototyping and field validation of neuromorphic maritime acoustic pre-processing and spiking neural network (SNN) methods, including FPGA-based hardware implementation for low-power, low-latency inference.

KEY ACCOUNTABILITIES

1. Contribute to the design, implement and evaluate underwater acoustic localisation and tracking systems, delivering validated methods and performance benchmarks.
2. Develop and apply neuromorphic models to enable robust anomaly detection, classification and localisation cue inference.
3. Develop and maintain reproducible research pipelines, supporting reliable data processing, experimentation, and performance reporting.
4. Contribute to the delivery of high-quality research outputs, including refereed publications and conference presentations, contributing to the field's advancement.
5. Support the design, assembly and integration of hydrophone array systems with multi-channel acquisition and synchronised data logging, achieving reliable operational performance.
6. Integrate acoustic sensing with complementary data streams (e.g., vision, GPS/IMU) to enable aligned, multi-modal experiments and insights.
7. Support the planning and delivery of field trials, ensuring effective deployment, data quality

assurance, and clear documentation of configurations and procedures.
8. Maintain robust research governance, documentation and lab practices, while contributing to project delivery, student supervision, and collaboration with internal and external partners.
9. Contribute to researcher development in collaboration with cognate School and Faculty through co-supervision of Honours, Masters and PhD Candidates

QUALIFICATIONS, EXPERIENCE AND SKILLS

1. Australian citizen (required due to the nature of the research and project requirements).
2. A PhD or PhD thesis submitted, in Electrical/Electronic Engineering, Signal Processing, Acoustics, Robotics, Computer Science, or a closely related discipline.
3. Demonstrated experience in underwater acoustics or multi-microphone/hydrophone array processing, including calibration, localisation techniques (e.g., TDOA/ITD), and/or beamforming.
4. Experience designing or integrating sensor hardware and field-deployable systems, including DAQ and timestamping, with strong programming skills in Python and/or C/C++ and experience using Linux and version control (Git).
5. Experience developing data pipelines and quantitative evaluation frameworks, with a strong record of peer-reviewed publications and high-quality research output.
6. Demonstrated ability to work in interdisciplinary teams, mentor students and communicate effectively with technical and non-technical stakeholders; experience in multi-sensor fusion and/or FPGA or embedded hardware acceleration is desirable.

KEY RELATIONSHIPS

This position reports to: Postdoctoral Research Fellow in Auditory Neuromorphic Engineering
This position supervises: Nil
Key internal relationships:

- ICNS Director and MARCS Institute Director
- ICNS Centre Manager
- Colleagues in the Centre, Institute and across the University

Key external relationships:

- International and Industry Partners and Collaborators

CHALLENGES

- Operating in complex underwater environments where noise, signal variability and changing environmental conditions impact the accuracy and reliability of acoustic detection, localisation and tracking.
- Contributing to the integration and validation of multi-sensor research systems, supporting reliable performance, precise time synchronisation, and reproducible results across acoustic arrays and complementary sensing technologies.
- Balancing innovative research development with the delivery of project milestones, field trials and publication outputs within fixed funding timeframes.

UNIVERSITY EXPECTATIONS

The University expects that all employees are aware of, and comply with legislation and Western's policies and procedures relevant to the position, including but not limited to:

- → Code of Conduct
- → Work Health and Safety and Wellbeing Management System
- → Enterprise Agreement or Award
- → Anti-discrimination principles, Equal Employment Opportunity and staff and student equity.

Approved by: People and Culture Partner
Date: 16 June 2026