Research Associate
Space Domain Awareness Mission System

Position Summary
The Senior Research Associate position is situated within the School of Engineering and Information Technology. As a member of a research team, the Research Associate will undertake research as directed by the Team Leader. The position will involve research activity in multidisciplinary settings requiring skills to develop innovative approaches to fuse data from passive radio frequency and optical sensors to create a novel space domain awareness mission system. The Research Associate will contribute to the development of research results and their publication in international journals, participate at a national and/or international conference(s) and undertakes a range of teaching duties.

This position will report for the Research Leads of the project.

Accountabilities
Specific accountabilities for this role include:

- Research and implement state-of-the-art machine learning; AI; and/or data fusion approaches to combine data collected from passive Radio Frequency (RF) and optical space domain awareness (SDA) sensor networks for enhanced orbit determination, unique satellite identification, and behaviour characterisation.

- Develop SDA algorithms that leverage the UNSW Canberra Space in-house GPU computing infrastructure. Prepare reports summarising the findings gained from research and prepare research proposals for submission, including applications for external funding.

- Research dynamic sensor tasking approaches for the optimal use of a combined passive RF and optical telescope network.

- Work in a team to iteratively create and improve SDA data products and test their effectiveness within an operational context.

- Meet milestones and goals within the Cooperative Research Centre Project (CRC-P) through efficient management practices and interaction with the industry partner.
• As directed, work with and on the CRC-P industry partners premises when directed/required and during hours outside of core business hours.
• Conduct research as directed by the research team leader.
• Contribute to the preparation of research proposal submissions to external funding bodies.
• Contribute to School teaching activities as required.
• Interact with undergraduate and postgraduate students and assist in their supervision.
• Undertake a range of administrative tasks as directed.
• Contribute to the common activities of the School, Faculty and University.
• Cooperate with all health and safety policies and procedures of the university and take all reasonable care to ensure that your actions or omissions do not impact on the health and safety of yourself or others
• Align with and actively demonstrate the UNSW Values in Action: Our Behaviours and the UNSW Code of Conduct.

Skills and Experience

• A Masters or PhD in engineering, physics, mathematics, computer science or a relevant area/discipline that complements the breadth of expertise of the School.
• Demonstrated ability to conduct innovative and independent research applying data science techniques to real world systems.
• Understanding of a University environment and willingness to undertake teaching duties as required.
• Excellent interpersonal, oral and written communication skills appropriate for interacting effectively team members, collaborators and colleagues across the Faculty.
• Demonstrated ability to work as a member of a multi-disciplinary team showing initiative and taking direction as appropriate to the situation.
• Demonstrated ability to complete tasks within agreed time frames, with suitable supervision.
• Knowledge of health and safety responsibilities and the ability and capacity to implement required UNSW health and safety policies and procedures.

Pre-Employment checks required for this position

• Verification of Qualifications
• Criminal History Check
• Identification Check
• Australian Working Rights Check

About this document
This Position Description outlines the objectives, desired outcomes, key responsibilities, accountabilities, required skills, experience and desired behaviours required to successfully perform the role.

This template is not intended to limit the scope or accountabilities of the position. Characteristics of the position may be altered in accordance with the changing requirements of the role.
POSITION DESCRIPTION

Senior Research Associate
Space Domain Awareness Mission System

Position Level | Level B
Faculty/Division | UNSW Canberra (ADFA)
School | School of Engineering & IT
Position Number | 00090882
Original Document creation | 26/02/2022

Position Summary

The Senior Research Associate position is situated within the School of Engineering and Information Technology. As a member of a research team, the Senior Research Associate will undertake research as directed by the Team Leader. The position will involve research activity in multidisciplinary settings requiring skills to develop innovative approaches to fuse data from passive radio frequency and optical sensors to create a novel space domain awareness mission system. The Senior Research Associate will contribute to the development of research results and their publication in international journals, participate at a national and/or international conference/s and undertakes a range of teaching duties.

This position will report for the Research Leads of the project.

Accountabilities

Specific accountabilities for this role include:

- Research and implement state-of-the-art machine learning; AI; and/or data fusion approaches to combine data collected from passive Radio Frequency (RF) and optical space domain awareness (SDA) sensor networks for enhanced orbit determination, unique satellite identification, and behaviour characterisation.
- Develop world-class SDA algorithms that leverage the UNSW Canberra Space in-house GPU computing infrastructure. Prepare reports summarising the findings gained from research and prepare research proposals for submission, including applications for external funding.
- Research dynamic sensor tasking approaches for the optimal use of a combined passive RF and optical telescope network.
• Work in a team to iteratively create and improve SDA data products and test their effectiveness within
an operational context.
• Meet milestones and goals within the Cooperative Research Centre Project (CRC-P) though efficient
management practices and close interaction with the industry partner.
• As directed, work with and on the CRC-P industry partners premises when directed/required and during
hours outside of core business hours.
• Undertake independent research as directed by the Team Leader, making an independent contribution
through professional practice and expertise.
• Prepare reports summarising the results gained from the research.
• Prepare journal and conference publications based on research.
• Contribute to the preparation of research proposal submissions to external funding bodies.
• Obtain research income from nationally competitive research grants (and/or research fellowships) and
research end-users as a member or leader.
• Contribute to School teaching activities are required.
• Interact and mentor undergraduate and postgraduate students and assist in their supervision
supervisor; and contribute to HDR review panels.
• Undertake a range of administrative tasks as directed.
• Ensure hazards and risks are identified and controlled for tasks, projects and activities that pose a
health and safety risk within your area of responsibility.
• Align with and actively demonstrate the UNSW Values in Action: Our Behaviours and the UNSW Code
of Conduct.

Skills and Experience
• A PhD in engineering, physics, mathematics, computer science or a relevant area/discipline that
complements the breadth of expertise of the School.
• Demonstrated expertise in applying data science techniques to real world systems (classical data
fusion and/or machine learning/AI techniques) teamed with Experience in software development for
high performance computing architecture (particularly GPU).
• A demonstrated ability to conduct innovative and independent research in conjunction with a record of
papers in high quality journals and/or conferences of high ranking in the field.
• Ability to conduct high quality teaching in a University environment and willingness to undertake
teaching duties as required.
• Excellent interpersonal, oral and written communication skills appropriate for interacting effectively
team members, collaborators and colleagues across the Faculty.
• Demonstrated ability to work as a member of a multi-disciplinary team showing initiative and taking
direction as appropriate to the situation to complete tasks within agreed time frames.
• Ability and capacity to implement required UNSW health and safety policies and procedures.
Pre-Employment checks required for this position

- Verification of Qualifications
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