



UNSW
SYDNEY



Space Situational Awareness

Novel solutions to Space Situational Awareness (SSA) problems by combining cutting-edge approaches to machine learning within a multidisciplinary space physics, surveillance, astrodynamics and engineering team.

Competitive advantage

- Research strength in the field of ionospheric aerodynamic modelling
- Ability to combine high-fidelity numerical simulations with real-world data and machine learning approaches
- On-orbit small satellite capability and unique ground-based space environment simulation facilities to support benchmark quality SSA experiments

Impact

- Space mission experience that quantifies the impact of astrodynamics on spacecraft in Low Earth Orbits (LEO)
- Contributing to increased knowledge and preparedness within Defence regarding critical challenges relating to SSA

Successful applications

- Optical and numerical SSA techniques to the Buccaneer Risk Mitigation Mission spacecraft
- Aero-assisted formation control strategies for the Royal Australian Air Force (RAAF) M2 dual satellite program
- Multiple US Air Force Office of Scientific Research (AFOSR) grants for ionospheric aerodynamic research to enable improved orbital control of LEO spacecraft
- Imaging the deployment of the Planet Flock 3p (the largest number of satellites launched on a single rocket in history) two hours after launch

Capabilities and facilities

- Falcon Telescope Network node
- 0.3m Meade telescope
- Comprehensive space environment simulation laboratory
- Research lab with satellite wind tunnel and small thermal vacuum facility
- Dedicated flight assembly areas, plus assembly, integration and testing (AIT) expertise
- Australian National Concurrent Design Facility which is a national asset for developing space missions

Our partners

- Royal Australia Air Force
- Department of Defence Science and Technology (DST)
- The Air Force Office of Scientific Research

More Information

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