



# Earth Program – The Andy Thomas Space Foundation Undergraduate Internship Awards 2023

## Overview

Applications are invited for The Andy Thomas Space Foundation 2023 Undergraduate Internship Awards.

The Foundation is providing four awards to a value of \$2,500 each for Australian citizens or permanent residents residing in Australia and currently enrolled in an undergraduate degree as part of an internship for a period of at least 6 weeks during the 2022-23 Australian university summer vacation in an Australian company, participating in a defined space-related project.

The Australian space industry is currently experiencing unprecedented growth with substantial public and private investment. The job opportunities in space science, engineering and related disciplines are projected to increase as new programs and projects are established. This prize program aims to support students interested to further their career in a space-related field by providing an opportunity to gain industry experience while completing an academic qualification.

Internships help to deepen one's understanding and experience of the practical application of space science and technology, connecting both upstream and downstream space sectors.

## Specific Requirements

The Program is open to Australian citizens and permanent residents of Australia.

The aim of the Program is to benefit Australia, and applicants must explain how they will ensure that the knowledge or experience they gain through the prize funding will help to achieve these aims.

It is the responsibility of applicants to demonstrate that they are currently enrolled in a Bachelor's degree in an Australian university.

All internships will involve attendance at the office of the internship host in Adelaide, South Australia, and the cost of travel to and from the internship location will be the responsibility of the applicant.

The internship hosts are:

- Saab Australia (Two internships)
- Frazer-Nash Consultancy (One internships)
- Inovor Technologies (One prize for an applicant to Inovor's Annual Internship Program)

Details of the research projects to be undertaken with each host are set out below.

Applicants are required to apply on-line at [https://andythomas.foundation/applications/2023/app\\_earth.php](https://andythomas.foundation/applications/2023/app_earth.php) outlining:

- the project or prize applied for
- their motivation and relevant space-related activity and
- their space-related career ambitions.

Applicants should submit:

- An up-to-date copy of the applicant's university academic transcript

Applicants may also submit (optionally):

- A letter of support from Applicant's lecturer or academic adviser

Successful applicants will be required to enter an internship contract with the host organisation setting out the key arrangements between the host and the intern in relation to matters such as remuneration, activities during the internship, confidentiality and intellectual property.

**The internship awards of \$2,500 each, funded by the Andy Thomas Space Foundation, will be paid by the host organisation to the intern as remuneration after the commencement of the internship according to the terms of the internship contract.**

At the completion of the internship the successful applicants are requested to provide an Outcomes Report to the Foundation setting out in general terms:

- the applicant's research activity (subject to any restrictions imposed by the internship host)
- how applicant proposes to apply the knowledge and skills gained and
- how the internship has affected the applicant's career ambitions.

## Timeline

- 24 October 2022 – Applications open
- 14 November 2022 – Applications close (must be received by midnight CST)
- 28 November 2022 – Successful applicants notified

## Publicity

The Foundation reserves the right to publish information about successful applicants as set out in the on-line application form.

## More Information

If you need further information or have particular questions, please email:

[educationfund@andythomas.foundation](mailto:educationfund@andythomas.foundation)

# Internship Research Project Descriptions

## Host: Saab Australia

Saab Australia is offering two internship placements from the Andy Thomas Space Foundation 2023 Internship Program. These placements will be within the space domain and will be for a software engineer project and a space systems engineering project.

### **Software Engineering Project:**

*The software development of a Space Mission System is wide and varied. It can touch on User Interface development, event driven micro-services, communication technologies and orbital mechanics. Joining the software development team in the role of a Space Software Engineer requires the individual to collaborate with other engineers to extend and enhance the capability of a complex Space mission system.*

*Working as a Software Engineer in the space domain will involve taking requirements from the stakeholder, identify any technical and/or knowledge gaps, executing the software development of that task, and documenting/reporting on the development process and design decisions.*

*This position is best suited for someone with an interest in software development, the ability to work within a team and closely with other engineers, good problem solving skills, and can independently research and learn to solve assigned tasks.*

### **Space Systems Engineering Project:**

*A Space Systems Engineer will be responsible for the analysis and breakdown of functional requirements for a space mission system. This will involve critically analysing the operational needs of a system, breaking it down to clear and concise functions for application to various modules, and identifying data flows and interfaces.*

*Individuals will investigate how to extend the functionality of a space mission system with advanced and unique features. The project direction will be discussed and refined collaboratively within the team. The space systems engineer will then be responsible for creating a system breakdown and undertaking any required analysis and prototyping. Outcomes may then be presented as reports, design documents, prototype systems, mathematical models, or algorithms.*

*This position is best suited for someone with an interest in systems engineering, modelling, and simulation. As this work is a research and development activity, the individual must be able to work with limited tasking.*

# Internship Research Project Descriptions

## Host: Frazer-Nash Consultancy

### Space-based Solar Power Project

*Space based solar power (SBSP) is being investigated internationally as a renewable energy generation technology capable of providing low intermittent power, sometimes referred to as “baseload” power provision. Recent studies undertaken by Frazer-Nash in the UK have shown that this technology is highly likely to be technically and economically feasible to support the UK in achieving its net zero targets.*

*Australia is currently undergoing an energy transition revolution that requires low-carbon energy generation that supports a decarbonized economy. SBSP has yet to be shown to be feasible in the Australian context of cultural heritage, environment, population distribution and energy usage.*

*The successful candidate would work to investigate the issues and opportunities that SBSP could bring Australia. For example, how could we leverage existing technology development, such as the adaptation of robotics technologies currently used in mining, to further de-risk SBSP in support of a safe, secure and sustainable society?*

# Internship Research Project Descriptions

## Host: Inovor Technologies

Inovor Technologies will host six interns during the 2022-23 university summer vacation, including **one intern selected to receive The Andy Thomas Space Foundation 2023 Internship Prize**.

The successful applicant will complete **one of the following space engineering design projects**:

### **Mechanical Engineering Design Project**

*This internship will give interns the opportunity to work on a multi-disciplinary independent design project with oversight from Electrical, Software, Mechanical, Modelling and Simulation, and Systems Team Leaders at Inovor Technologies. The project will have the interns conducting a full design cycle for a piece of test and evaluation equipment that will assist Inovor in developing and testing satellite systems. The project will include requirement generation, design reviews, system design, testing and requirement V&V to give the interns experience with standard aerospace and defence design processes. The mechanical intern will specifically have experience in using industry standard tools to simulate, design, manufacture, and test hardware. They will also have the chance to experience the assembly and test process of satellite hardware.*

### **Mod and Sim Design Project**

*This internship will give interns the opportunity to work on a multi-disciplinary independent design project with oversight from Electrical, Software, Mechanical, Modelling and Simulation, and Systems Team Leaders at Inovor Technologies. The project will have the interns conducting a full design cycle for a piece of test and evaluation equipment that will assist Inovor in developing and testing satellite systems. The project will include requirement generation, design reviews, system design, testing and requirement V&V to give the interns experience with standard aerospace and defence design processes. The modelling and simulation intern will specifically have experience in using industry standard tools to model and test spacecraft systems and operations.*

### **Software Design Project**

*This internship will give interns the opportunity to work on a multi-disciplinary independent design project with oversight from Electrical, Software, Mechanical and Systems Team Leaders at Inovor Technologies. The project will have the interns conducting a full design cycle for a piece of test and evaluation equipment that will assist Inovor in developing and testing satellite systems. The project will include requirement generation, design reviews, system design, testing and requirement V&V to give the interns experience with standard aerospace and defence design processes. The software intern will develop communications protocols between PC and embedded hardware, develop PC application software (with a GUI) and embedded software for the test equipment. As part of developing the testing hardware, they will gain an understanding of the spacecraft systems and application behind the testing.*

### **Electrical Design Project**

*This internship will give interns the opportunity to work on a multi-disciplinary independent design project with oversight from Electrical, Software, Mechanical and Systems Team Leaders at Inovor Technologies. The project will have the interns conducting a full design cycle for a piece of test and evaluation equipment that will assist Inovor in developing and testing satellite systems. The project will include requirement generation, design reviews, system design, testing and requirement V&V to*

*give the interns experience with standard aerospace and defence design processes. The electronics intern will specifically have experience in using industry standard tools to simulate, design, manufacture, and test electronics hardware. They will also have the chance to experience the assembly and test process of satellite electronics hardware and the selection and limitations of different aerospace electronics components and materials.*