



ARC TRAINING CENTRE FOR CUBESATS,
UAVs, AND THEIR APPLICATIONS

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Research Innovation Prize Winners – CROSS.

Friday 28 August 2020

CUAVA Students win Innovation Challenge with their new generation satellite navigation system, CROSS.

Engineering and science students Joshua Critchley-Marrows, Dominic Albertson, Julian Guinane, Benjamin Jarvis and Matthew Suntup have won the Research Innovation Prize, which includes \$5,000 in cash and a three month membership to the [Sydney Knowledge Hub](#).

Their project, [CROSS](#) (Calculated Reference Of Stellar System), is a new-generation star tracker system for use in small-satellites being developed within the University's [School of Aerospace, Mechanical and Mechatronic Engineering](#) in collaboration with the [ARC Training Centre for CubeSats, UAVs & Their Applications](#).

Star trackers measure a satellite's precise orientation in space, which enables the satellite to accurately perform complex tasks such as communication and imaging.

An Australian-made and Australian-owned space system capability built to serve the emerging Australian space sector, CROSS is a high-precision attitude determination device used in satellite pointing systems. Attitude determination is achieved by comparison of the known positions of stars to an image's calculated positions. Designed for Small Satellites, this system will provide high-precision attitude determination to pico- and micro-satellites, such as the CubeSat and up to the 50 kg classes. The majority of star trackers available today are designed for large satellites, hence have significantly larger mass, volume, and cost. The CROSS project will develop a competitive and accessible star tracker platform to grow Australia's space capability through Sydney University researchers and students.

"CROSS is a platform that has earned significant national and international interest," says team member Julian Guinane, who is studying a [Bachelor of Engineering Honours \(Aeronautical Engineering\)](#) and [Bachelor of Science \(Advanced\)](#). "We are truly excited by the potential of the system and aim to see it operational in space next year. This prize makes a tremendous impact on the project, helping us to source space-grade equipment."

<http://crossstartracker.com/>

About CUAVA

CUAVA is funded by the Australian Research Council and working with Industry Partners. Its mission is to train the next generation of workers in advanced manufacturing, commercial space, and Uncrewed Aerial Vehicle (UAV) applications. In doing so CUAVA will develop new instruments and technology to solve crucial problems, and develop a world-class Australian industry in CubeSats, UAVs, and related products. CUAVA have been in operation since December 2017, with headquarters based at the University of Sydney, Camperdown Campus.

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