

Jerry Sun

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My Portfolio: <https://jerry-sun-engineering-portfolio.com/>

Profile

Mechatronics Engineering (Honours) student at Monash University with practical experience in hybrid rocket propulsion, structural analysis and robotic composite manufacturing. Work includes combustion chamber design, propulsion test infrastructure and automated fibre placement trials.

Education

Monash University

Bachelor of Engineering (Honours), Mechatronics

Feb 2022 - Present

Master's Accelerated Pathway

Engineering Experience

Monash High Powered Rocketry

Propulsion Technical Member

Mar 2024 - Present

- Contributed over 2,000 documented engineering hours across hybrid rocket propulsion design, manufacture, assembly and testing.
- Designed the Solaris Mk3 composite combustion chamber for the UK Race2Space competition, addressing structural and thermal requirements, component interfaces and manufacturability.
- Developed engine components for Solaris Mk2, flown in Project Zenith at IREC 2025. The team placed second in the 10,000 ft Hybrid SRAD category.
- Used ANSYS finite element analysis to assess load paths and highly stressed regions for a horizontal test-stand upgrade targeting 15 kN thrust, and developed reinforcement concepts.
- Contributed to nitrous oxide and helium ground-support equipment, including filling, pressure regulation, venting, dumping and remote actuation.
- Produced propulsion and test hardware through manual machining, drilling, fitting and assembly. Supported static-fire preparation, safety checks and troubleshooting.

Robotic Automated Fibre Placement

Autonomous Composite Manufacturing

Feb 2026 - Present

- Programmed and operated a six-axis Motoman SK120 robot with a YASNAC MRC controller for automated fibre placement (AFP) trials.
- Created Cartesian user frames and placement jobs for flat-panel layups at 0, 45, -45 and 90 degrees.
- Conducted hot-gas heating trials at controlled placement speed to investigate aged carbon-fibre prepreg adhesion to fibreglass and sticking to the compaction roller.
- Troubleshoot tow feeding, cutting and snap-back, alongside PC-to-controller job transfer and control system setup.

Projects (available in portfolio)

PenguinPi Autonomous Shopping Robot

Robotics and Autonomous Systems

- Contributed to a mobile robot project combining calibration, simultaneous localisation and mapping (SLAM), object detection and path planning within a robot control system.

RMS to DC Converter

Analogue Electronics

- Contributed to circuit design, LTspice simulation and breadboard testing of an RMS to DC converter built from discrete analogue stages.

Computer Vision and Image Processing

Python and OpenCV

- Implemented image-processing experiments in panorama stitching, segmentation and restoration, comparing outputs to examine algorithm behaviour.

Technical Skills

Design and analysis: CAD, ANSYS finite element analysis, component interfaces, design for manufacture.

Robotics and software: Motoman SK120, YASNAC MRC, robot job programming, Python; C++, MATLAB, OpenCV, JavaScript (basic).

Electronics and manufacturing: LTspice, analogue circuit prototyping, manual turning and milling, precision measurement, composite processing, experimental testing.

Employment

Art of Smart Education

Academic Tutor

Jan 2022 - Jan 2025

Excel Academics Australia, Melbourne

Academic Tutor

Jan 2023 - Dec 2025

- Tutored mathematics and science, adapting explanations and lesson content to students with different learning needs.
- Reviewed assignments and provided structured feedback to develop critical thinking and independent problem solving.

Woolworths, South Yarra

Grocery Team Member

Feb 2022 - Dec 2024

- Assisted customers, replenished stock and maintained store presentation while coordinating with colleagues in a busy retail environment.

Training and Additional Information

Chisholm TAFE Manual machining course, Jun - Jul 2024.

Practical training in lathe and milling operations, tool setup, precision measurement and workshop safety.

Languages English and Chinese (fluent).

Achievement AMEB Grade 8 Piano (Repertoire), 2020.