

David Shmail

[linkedin.com/in/davidshmail](https://www.linkedin.com/in/davidshmail)

david.shmail1@gmail.com

TECHNICAL SKILLS

Languages: C, C++, Python, MATLAB, Verilog, SystemVerilog, VHDL, TCL, LaTeX & Markdown, Basic Assembly, Basic Bash.

Simulation and Analysis: Matlab (Signal Processing, Control System, System ID, Antenna and RF, PDE, Symbolic Math Toolboxes), Simulink and Simscape, SPICE (LTspice, KiCad, OrCAD), SymPy, Solidworks Simulation (non-linear & fatigue FEA, adaptive meshing), Ansys.

RTL Silicon Engineering: SystemVerilog RTL, Quartus Prime (Cyclone V synthesis & place-and-route), formal verification (Yosys/SymbiYosys/Z3, k-induction, SMT-LIB), cocotb + pytest regression, Verilator & Verible lint, Icarus Verilog, gate-level netlist & synthesis-pipeline analysis, transmission-line & signal-integrity modelling, basic static timing analysis.

Electromechanical Integration: Parametric CAD & Assemblies (Solidworks, Onshape), Embedded Control (Arduino, ESP32, STM32Cube; PWM, PID, sensor systems, memory-optimised implementations, thermal & safety cutoffs), Motor & Gear Train Design, Bench Electronics (supplies, AWG, oscilloscopes, AD2, spectrum analyser, soldering), Manufacturing Workflows (FDM additive, metal machining, laser cutting), Thermally Managed & Mission-Critical Enclosures.

PROJECTS - Application Specific, See Portfolio

PROFESSIONAL EXPERIENCE

Space Resources Engineer | UniMelb Rover Team (Melbourne, Australia) | 2025-2026

Year-long effort, placing 9/30th overall at the competitive 2026 Australian Rover Challenge. [Space Resources task scored Top 5.](#)

- Delivered a precision gantry subsystem supporting a spectrometer, focused imaging module, and regolith preparation mechanism within strictly specified integration and competition rule constraints.
- Instilled co-engineer initiatives, easing cross-subteam friction through structured biweekly design reviews and interface syncs, keeping a distributed ~50 person team aligned on shared deadlines and conscious of the wider system.
- Integrated structural framing, instrumentation mounting interfaces, drilling and water-extraction subsystems in a shared rover architecture for in-situ resource analysis.
- Engineered through design and manufacturing stages of the 2025-26 development cycle, in well-documented and version-controlled parametric Onshape and KiCad assemblies, designed with succession in mind. Manufactured through electronic benchtop, additive manufacturing and 3D printing, metal machining and laser cutting workflows.

Optical Calibration Hardware - Contract Mechanical Design | Good Times Tech! (Melbourne, Australia) | 2025

- Designed a calibration reference cone for a machine vision -based dart tracking system.
- Produced tolerance-controlled CAD documentation - defined datum references, surface-finish callouts - for direct handoff to manufacturing.
- Iterated 3D-printed prototypes against feedback from team principles, closing the gap between as-built hardware and software calibration accuracy.

Food and Beverage Assistant | Ballers Clubhouse (Melbourne, Australia) | 2023 - Present

- Assisted in event coordination and high-quality customer service in a fast-paced and high-volume hospitality environment. Reinforced leadership and communication skills.

Lead Educator | STEM Academic Service (Melbourne, Australia) | 2022 - 2023

- Founded a VCE-aligned tutoring service, providing tailored worksheets, assignments and marking of work in maths and physics contexts.
 - Lead local marketing which built a client base of 10+ concurrent students enabling sustained income opportunities for myself and three peers.
 - Maintained collaborative documentation in Notion for a structured, version-controlled educational library.
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LEADERSHIP AND EXTRACURRICULAR EXPERIENCE

Course Liaison | Faculty of Engineering, University of Melbourne | 2025-2026

Course Liaison for

- Signals and Systems (ELEN30012)
- Numerical Algorithms (ENGR30004)
- Thermodynamics and Fluid Mechanics (MCEN30018)

Provided deep technical guidance in course discussion forums. Liaised across committees within Electrical, Mechatronics, and Mechanical Engineering Departments.

Spy-o-T Hackathon (2025) | Finalist | Project ALARM: Covert, distributed keyword-detection system.

Simon Marais Mathematical Competition (2025) | Competed in the Asia-Pacific's premier university proof-based mathematics competition.