James Condos

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Education

University of Melbourne

Masters of Electrical Engineering — Autonomous Systems and AI 2024 – 2026

- Control Algorithms, Embedded Systems, Photonics, Optimization, Quantum Computing, AI/ML

Bachelor of Science — Major in Mathematical Physics 2019 – 2023

- Second Class Honours (H2B) — Advanced Applied Maths, Quantum Physics, Lab Work

Diploma in Computer Science 2019 – 2023

- First Class Honours (H2A) — Java, C, Python, ML, AI, Natural Language Processing

Experience

Melbourne Space Program June 2022 – Present

Lead for ACRUX – 2 Project *Melbourne, VIC*

- Currently working on the ADCS (Attitude Determination and Control Systems) team for ACRUX – 2, where we are aiming for a 2025 December launch of a satellite into low earth orbit.
- Implemented a C++ ADCS finite-state machine for interfacing reaction wheels and sun sensors, interface with the sensors to communicate with the On-Board Computer.
- Assisting in writing of our **LQR (Linear-Quadratic-Regulator) control algorithm**, which will focus on how the satellite moves, with our reaction wheels
- Research Control algorithms and implement them through a range of sensors and actuators. One example is the B-Dot algorithm, which uses a magnetometer and magnetorquer for de-tumbling. .

Australian Defence Force - Science and Technology May 2025 – Present

STEM Cadetship *VIC, Australia*

- A program for high achieving university students to work in a Defence Intelligence Organization
- Working on ***python development***, projects and other technical aspects for the ADF's needs.

GamePlan Coaching Tutoring Aug 2022 – Present

Tutor *Melbourne, VIC*

- Tutoring university students for subjects in physics, math's and computer science.
- Tutoring, advising, coaching, and guiding high school students in the VCE curriculum for STEM subjects

PHM Technology Jan 2025 – July 2025

Electrical Engineering and Research Intern *Melbourne, VIC*

- Gained experience with advanced maintenance and reliability software, MADe, which creates digital risk twins.
- Conducted a research project with **Discrete-Event-Simulations (DES), Deep Reinforcement Learning (DRL) and Machine Learning (ML)** for multi-agent python simulations. Developed a deterministic decision agent for maintenance operators, which was to be extended to a stochastic framework.

University of Melbourne Dec 2021 – Jan 2025

Student Researcher for the School of Physics *Melbourne, VIC*

- An independent research project for the school of physics under an academic, with focus and study on 'Quantum Machine Learning'.
- Discussed the importance of computation theory for **Quantum Computers (PDA's, DFA's etc)**. Also discussed different ways to improve efficiency of Qubit collapsing states, and how this can be utilized in data mining and statistical analysis.

Physics Teaching Assistant and Lab Demonstrator

- Running and supervising Physics labs for classes of 15-20 students, teaching Physics.
- Includes marking written labs for experiments and collaborating with peers.

APA Group Jan 2022 – Mar 2022

Software Developer Intern *Melbourne, VIC*

- Working in a collaborative team setting, working continuously with Java and MySQL implementation and development, where my team's goal was to bridge development and operations.
- Working with Team City, Octopus Deploy, Bitbucket and Git.
- Contributed to a work environment that fosters innovation, teamwork and high achievement

Projects and Involvement

My Digital Portfolio | ***React, Node.js, HTML, CSS***

- My Portfolio

Notable Projects | ***FPGA, Algorithms, Deep Learning, Trading, Accelerators***

- Final degree project simulating a **Quantum Computer** on an FPGA board beginning in 2026
- Developed a solar cell from scratch, Semiconductor Physics **(Lab work + Solid State Physics)**
- Created a FPGA hardware physical digital clock **(Verilog)**
- Created a Doubly Connected Edge List data structure **(C)**
- Created a Tweet Sentiment Bot for optimizing trades in financial markets **(Python and ML)**
- Created a more advanced version of Flappy Bird **(Java)**
- Created a **hardware accelerator** for a convolutional neural network **(CNN)**

Extra-Curricular Involvement

- UMSU Host Program – Touring new students through the University
- Captain for the Melbourne University futsal soccer team (Goalkeeper)
- Melbourne University Electrical Engineering Club (MUEEC)
- Student representative for Semiconductor Devices (ELEN90091)

Technical Skills

Languages: Python, C, Java, MATLAB, Verilog, Haskell, JavaScript

Frameworks: React, Node.js

Developer Tools: Git, Docker, VS Code, Visual Studio, PyCharm, IntelliJ, Eclipse, Vitis, Quartus, Atlassian Products

Defence Clearance: Australian Positive Vetting (PV) Clearance Obtained in 2025