Allen Pham

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Experience

Pacific Rim Space Exploration Corp (PARSEC) Vancouver, Canada

Technical Team Member *February 2025 – Present*

- Researched and procured pressure and temperature sensors based on cryogenic requirements and ease of integration for the lunar water purification system.
- Integrated temperature and pressure sensors into the **ESP-32** electronic system of the lunar water purification system using **C++** and multiple serial communications system such as **I2C**, **UART** and analog inputs.
- Populated the sensor boards containing through-hole **MOSFETs**, **ICs** and **buck converters**.

UBC Supermileage Vancouver, Canada

Electrical General Team Member *September 2024 – Present*

- Led improvement effort on the **ESP-32** telemetry system, including RPM warning and specific indicators for driver's user experience using **C++**.
- Populated telemetry PCBs using a **reflow oven** and **soldering iron** for the team's cars: Urban Concept, Gas Prototype, and Fuel Cell Prototype.
- Expand on vehicle's dynamic simulations and strategize racing lines and car setup to maximize mileage using **MATLAB** and **Python**.

Blacksheep Power Hanoi, Vietnam

Electrical and Mechanical Engineering Intern *May 2023 – July 2023, July 2024 – August 2024*

- Designed new electrical wiring harnesses and low-voltage electronics such as amplifiers, and documented wiring diagrams for future development by **LTSpice** for an electric motorcycle.
- Analyzed performance data from pressure pumps with **Python** to compare prototypes and devised a prototype heat sink using **Creo** and **Arduino IDE**, lowering operating temperature by 10°C.
- Constructed a safety guide to ensure workplace safety for employees and visitors.

Projects

Coin Picking Robot March 2025 – April 2025

Github, C, Intel Microcontroller, AVR Microcontroller, Radio IC

- Programmed a remote controller that consists of an LCD, **ATMega328P microcontroller**,**JDY40** and **joystick** to control a coin picking robot, creating an interactive and friendly experience.
- Designed and programmed a robot based on the **EFM8LB1** using **C** that was able to both manually and automatically pick up 20 coins within an electrically-powered perimeter.
- Enhanced the functionality of the robot and remote controller by utilising **IR** sensors as the perimeter's failsafe and adding coin identification respectively.

Reflow Oven Controller January 2025 – February 2025

Github, 8051 Instructional Set, Python

- Designed a circuit that consists of an LCD, **Intel's microcontroller** and **op-amps** to amplify, display and collect temperature data for the oven controller's thermocouple wire.
- Programmed a finite state machine using **8051 Instructional Set** incorporated with the circuit to create a reflow soldering temperature profile for a toaster oven.
- Collected and visualized the reflow oven process and temperature data using **Python's Matplotlib**, creating an interactive and insightful user-interface.

Urban Concept Vehicle Simulation December 2024 – Present

MATLAB, Python, Optimization Toolbox

- Gathered instantaneous weather conditions of Indianapolis Motor Speedway by requesting and storing the NWS API's data using **Python SQL**.
- Created an optimal racing line for the UBC Supermileage Urban vehicle using **MATLAB's Optimization Toolbox** in the Shell's Eco-shell Marathon, reinforcing the team's racing strategy and setup.

RISC Machine November 2024 – Present

SystemVerilog, ModelSim, Quartus Prime

- Developed a script to create a datapath for a **RISC** machine supporting addition and bit-shifting with System Verilog.
- Co-created a **RISC** controller using a finite state machine to control the datapath and assembly instruction.
- Used **ModelSim** and **Quartus Prime** to implement the finite state machine into a DE1-SOC and visualize waveforms and debug functionality respectively.

Signal Generator May 2024 – June 2024

KiCad, Multimeter, Oscilloscope

- Redesigned a signal generator schematic using **KiCAD** to simplify the printed circuit board when it would be ready for assembly.
- Analyzed properties of electric components such as operational amplifiers and capacitors to understand properties of a signal generator with **LTSpice**.
- Debugged a printed circuit board assembly with a **multimeter** and an **oscilloscope** to create a final product

Education

The University of British Columbia Vancouver, BC

Bachelor of Applied Science in Electrical Engineering *September 2022 - Present*