

# LANE MCMARTIN

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lanemcmartin.github.io

## Employment History

### Jr. Embedded Developer (E.I.T.)

Profire Energy | Acheson, AB

May 2023 - Present

- Leveraged C++ programming skills in the design and testing of code on the STM32 (ARM) platform, exhibiting a high degree of proficiency in embedded systems development and quality assurance methodologies.
- Leveraged Altium for schematic and PCB design while demonstrating expertise in reviewing and improving design parameters.

### Test Engineer (E.I.T.)

Profire Energy | Acheson, AB

May 2021 – May 2023

- Developed test fixture hardware and firmware using Python, Altium, LabVIEW, and MySQL to automatically evaluate and diagnose PCBs at a rate of over 400% faster than manually testing.
- Built a relational database with a user-friendly frontend in FileMaker to automate the generation and tracking of all product serial numbers - reducing a 10+ minute task to under 10 seconds.
- Collaborated with external CMs to resolve halted production by recommending suitable alternate components.
- Provided troubleshooting services to customers – testing hardware with lab equipment at a 95% success rate.
- Prepared and issued detailed instructional and technical documentation to guide employees and customers.

## Education

### BSc Electrical Engineering – 3.8 GPA

University of Alberta | Edmonton, AB

September 2017 – April 2021

## Skills

**Programming:** C, C++, Python, Git, MATLAB, VHDL, Assembly.

**Software:** Altium, KiCAD, LabVIEW, Jira, LTSpice, Atmel Studio, Xilinx Vivado, Microsoft Office, Photoshop.

**Tools:** Logic Analyzer, Oscilloscope, DMM, Soldering, Function Generator.

## Project Experience

### Game Development Hackathons and Personal Projects

January 2022 - Present

- Cooperated with a team to create a PC game in Unity over a 24-hour period – learning C# and exercising creative skills.
- Actively developing and finishing projects in the Unity Engine (C#) and Godot Engine (GDScript), showcasing versatility and continual learning.

### Wearable Health Monitor Capstone Project

September 2020 – April 2021

- Developed microcontroller firmware with C++ and a custom cross-compiler that could accurately measure heart rate between 50 to 200BPM, blood oxygen above 90%, and skin temperature between 25 to 45°C.
- Applied MATLAB to research, implement, and refine a photoplethysmogram (PPG) peak-detection algorithm.
- Coordinated within a team to draft an electrical schematic in KiCAD integrating the client's own processor into the design.
- Awarded one of the top 3 projects over 20 groups and returned as a volunteer judge the following year.

### UTexas Online Embedded Systems Course

May 2020 – August 2020

- Strengthened embedded systems knowledge with ARM Cortex-M4F TM4C123x microcontroller-based coursework.
- Developed experience building projects incorporating an LCD SPI display, 4-bit DAC audio output, and ADC inputs.

### Autonomous Robotic Vehicle Team Member

September 2018 – May 2019

- Built a leak sensor PCB for a submersible AI-controlled robot using Autodesk EAGLE – soldering and evaluating the board.

### Harvard CS50: Intro to Computer Science

July 2018 – August 2018

- Finished online coursework on C, Python, SQL, JavaScript, and HTML with a final grade of 98%.
- Wrote a fitness tracking and workout sharing website with Python, SQL, and HTML/CSS for the final project.