LANE MCMARTIN

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Employment History

Test Engineer (E.I.T)
Profire Energy | Acheson, AB
May 2021 - Present

- 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.

Electrical and Mechanical Assembler
Powell | Acheson, AB
May 2019 - August 2019

- Assembled and wired switchgear products from CAD models and electrical diagrams, exercising a high degree of safety.
- Conducted electrical quality-assurance corrections including insulation, continuity, and functionality testing.

Education

BSc Electrical Engineering – 3.8 GPA
University of Alberta | Edmonton, AB
September 2017 – April 2021

Skills

Programming: C, Python, C++, 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 Hackathon
January 2022

- Cooperated with a team to create a PC game in Unity over a 24-hour period – learning C# and exercising creative skills.

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.