ERIC ZHAO

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SKILLS

Software | C++, Python, Git, Java, HTML, CSS, JavaScript
CAD | SOLIDWORKS, Fusion 360, AutoCAD, Tinkercad, GrabCAD, GD&T
Other Skills | Arduino, CircuitMaker, Ultimaker Cura, Microsoft Office, Jira, Figma, Adobe Creative Suite

WORK EXPERIENCE

Ford Motor Company

Software Performance, Stability, and Power Optimization — Jan 2022 - Apr 2022

- Performed daily triages on battery drain events to determine ECUs responsible for keeping the vehicles hardware awake.
- Enhanced and updated the battery drain triage automation script with better logic and newer triaging protocols.
- Developed a variety of scripts to automate manual processes such as populating spreadsheets and loading diagnostic events.
- Organized and ran weekly meetings with the triage and test subteams, while sending teamwide testing email updates daily.

Battery Drain Analysis Automation Script

Python, Selenium, Excel — Jan 2022 - Apr 2022

- Developed a triage automation script able to download, scan, and analyze battery drain logs from the Ford's diagnostics portal.
- Improved the logic increasing the automated triage accuracy by **30%** and weekly triage speed by **25%**.
- Updated the script to interface and work with Ford's newest CAN bus logging format.

Electrans Technologies Ltd.

Mechatronics Engineering Intern — May 2021 - Sep 2021

- Initiated and completed several projects to help develop and complete the first prototype of a next generation electronic auxiliary system for commercial vehicles.
- Created enclosure boxes, board mounts, and wiring harnesses for all electrical components.
- 3D printed custom designed mounts to secure communications hardware to laptops for compact and mobile outdoor testing.

Electric Vehicle Battery Status Monitor

CircuitMaker, Fusion 360, C++, Arduino — Aug 2021 - Sep 2021

- Designed a custom PCB to monitor and display the state of charge, voltage, and current draw of a high voltage system.
- Soldered, wired, and mounted system with an emergency stop box for easy monitoring, reset, and shut down of projects.
- Implemented Arduino code to receive specific **CAN bus** messages for system monitoring.
- Designed circuit to measure and scale voltages from up to **50V** to appropriate Arduino analog signals with a resolution of **49mV**.
- Ordered appropriate current sense amplifiers and shunt resistors to measure up to **12.5A** of current with a **12mA** resolution.

PROJECTS AND DESIGN TEAMS

Midnight Sun Solar Car Team

Battery Box Lead — Jan 2021 - Present

- Leading the team responsible for the design of a battery pack and enclosure for a **fully solar powered** electric car.
- Developing and running tests on capacity, internal resistance, and discharge temperature for a variety of lithium-ion cell models.
- Organizing supplier interfacing and ordering, scheduling team-wide meetings, running design sprints and recruitment events.

Battery Module Design

SOLIDWORKS, Spot Welding, 3D Printing — Feb 2021 - Present

- Utilizing **21700 lithium-ion** cells in a 4S8P module design, which can be connected in series to form a **36S8P** battery pack, able to store up to **5184Wh** of energy at **90 to 151.2V**.
- Conducting rapid prototyping with 3D prints and testing rigs to continuously improve the thermal performance of the modules.

EDUCATION

University of Waterloo

Candidate for BASc, Mechatronics Engineering — Sep 2020 - Apr 2025
Cumulative GPA: 93.91 (4.0)

AWARDS

First in Class Engineering Scholarship

Feb 2021

Presented to the top student of the class during each term.