ERIC ZHAO

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SKILLS

Software | C++, Git, Java, Python, 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

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.

Commercial Vehicle Misalignment Detection System

C++, Arduino, Fusion 360 — May 2021 - Sep 2021

- Designed and constructed system to measure misalignment angles between two commercial vehicles.
- Utilized infrared time of flight sensors to measure and display yaw misalignment with up to **1.4 degrees** of accuracy.
- Programmed LED lighting display to provide feedback to drivers on how to adjust their vehicle to improve their alignment.
- Prototyped dash display with a button to create a finite state machine simulating driverside stateflow.

Distance Sensor Testing System

Fusion 360, Microsoft Excel, C++, Arduino — May 2021 - Jun 2021

- Constructed a testing fixture with custom 3D printed parts, aluminum extrusions, and swivel tripods, to mount, test, and collect data on sensors and sensor configurations at various angles with up to **1 degree** precision.
- Created a decision matrix to select the most appropriate technology out of ultrasonic, infrared, and LiDAR distance sensors.
- Analyzed data on sensor measurements using normal distributions and tolerance stackup analysis to select the optimal sensor.

PROJECTS AND DESIGN TEAMS

Midnight Sun Solar Car Team

Battery Box and Interiors Team Member — Jan 2021 - Present

- Conducting research into various production methods, including support filament, heat set inserts, and mounting procedures.
- Leading the development of new board mounts for the printed circuit boards of the solar powered car.
- Prepared a fully retractable and compact cup holder within a one-week design sprint.

Conveyor System Design

SOLIDWORKS, Adafruit MakeCode, Microsoft Word — Oct 2020 - Dec 2020

- Led a team of 4 to design and produce a professional report, bill of materials, and CAD model for a fully functional conveyor system which autonomously identifies and sorts packages.
- Used SOLIDWORKS to design the conveyor frame and Adafruit MakeCode to run simulations of the sorting software.

EDUCATION

University of Waterloo

Sep 2020 - Apr 2025

Candidate for BASc, Mechatronics Engineering — Cumulative GPA: 93.77 (4.0)

AWARDS

First in Class Engineering Scholarship

Feb 2021

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