Elizabeth Shim

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EDUCATION

University of Waterloo - Mechatronics Engineering, Co-op (BASc)   Sep 2020 - Apr 2025
Relevant Courses: Graphics and Design, Circuits, Mechanics of Deformable Solids, Microprocessors and Digital Logic, Linear Systems and Signals, Sensors and Instrumentation, Microprocessor Systems and Interfacing, Kinematics and Dynamics of Machines
Cumulative GPA: 3.7/4.0

EXPERIENCE

Advanced Research and Collaboration Engineer for Christie Digital Systems   May 2023 - Aug 2023
- Designed and prototyped a robot that projected focused content while in motion by integrating features such as the utilization of a lidar depth sensor and dynamic projection mapping
- Designed a case to enclose exposed GPIO pins for the Jetson Nano using **Solidworks**, optimizing assembly parts and manufacturing with precise **heat setting** of fastener inserts to **improve durability** and **increase** consistent alignment reliability by **100%**, while achieving a **20% reduction** in assembly time
- Utilized an **Arduino** and **servo motors** to implement a **crank lever mechanism** to eliminate the need for manual focus adjustment on a projector, enabling real-time, precise adjustment and **reducing** the time required to locate the optimal focus position of at least **5 seconds**
- Designed data transmission between the **Arduino** and the **Jetson Nano** via **serial USB communication**, along with **WebSocket** integration between the Jetson Nano and a backend database, resulting in immediate transmission rates and improving data exchange efficiency
- Researched voice commands and integrated an open-source speech-to-text service in **Docker** to enable the robot's ability to respond and execute events based on specific voice commands

Software Developer for Friendlier   Sep 2022 - Dec 2022
- Reconstructed UI/UX customer flow by improving code structure with reusable components and custom class models in Vue.js, **increasing speed of user workflow and efficiency** by **35%**
- Optimized solution administration by supplying specific error metrics in a notification center for easy traceback, ordered via urgency
- Customized payment handling with **Stripe API** to allow customers to **conveniently** create invoices, automate tracking, and securely save credit card information
- Developed **API endpoints**, route requests and data manipulation in Firestore
- Updated mobile and customer web applications with **multi-language settings** for national expansion

PROJECT

Robotic Car   May 2022 - Aug 2022
- Assembled a small mobile car robot using sensor implementation and interfacing, motor characterization, and by **soldering** several components and sensors onto a PCB board
- Presented **circuit design** along with theoretical calculations with resistors and numbers to ensure robot is **safe** to wire
- Designed to handle component **tolerances** and **noise** for diodes, capacitors, push buttons, optical encoders for wheel rotation, infrared light detection and a system for current sensing and reading
- Integrated code onto **microcontroller** to **communicate** and configure robot and utilize certain sensors to navigate and follow a line on the ground

SKILLS

Hardware & Electrical: 3D CAD modelling in Solidworks and AutoCAD, heat setting, drill press usage, soldering, wiring
Software: Python, JavaScript, HTML/CSS, Node.js, Docker, Git, Bash, Linux, Scripting