

## EDUCATION

### University of Waterloo

2020-2025

Bachelor of Applied Science: Mechatronics Engineering (Co-op)

GPA: 94%

3x Engineering Term Dean's Honours List

**Languages:** Python, C/C++, MATLAB, C#

**Software:** Git, Linux, Azure, GCC, C/Make, Pytest, Docker, Jenkins, Jinja, Simulink, Jira/Confluence

## TECHNICAL EXPERIENCE

### ML Stack Software Engineer Intern

Toronto, Canada

*Cerebras Systems*

*January 2023 - Present*

- Analyzed and performance tested heuristic and profile guided compiler optimizations in **GCC**, **Make**, and **CMake**
- Implemented debug output cookie hashing for weight streaming buffers using **Boost** and **C++17**

### ML Software Developer

Toronto, Canada

*Altohelix Corporation*

*August 2021 - Present*

- Architected a sign recognition application for Boston Dynamics Spot using **Python**, **Azure Custom Vision** and **Function App** to classify over 10 live images per second
- Extended recognition application to extract and analyze frames from drone capture videos using **OpenCV**
- Integrated LTE wireless range extension functionality into Boston Dynamics Spot using **SSH**, **Linux**, **Raspberry Pi**, and **Azure**
- Created a VPN server on Azure VM using OpenVPN and SSH, and utilized iptables to forward port traffic to **Raspberry Pi**
- Developed dropbox web feature using **C#**, **Razor Pages**, Google Drive API, and Dropzone, enabling progressive file uploads

### Linux Systems Software Developer Intern

Waterloo, Canada

*Dejero Labs*

*May 2022 - August 2022*

- Implemented a **Linux** vulnerability scanner in **Python**, scanning over 500 Debian packages for vulnerabilities in ~15 seconds
- Integrated vulnerability scanner with **Jenkins** to automate security scanning for builds using **Jenkinsfiles** and **Groovy** scripts
- Created **HTML/CSS** vulnerability output tables for better user comprehension and data digestion using **Jinja** templating
- Designed unit test coverage tools using **gcovr**, **pytest**, and **gocov-xml** to generate **Cobertura XML** coverage files
- Integrated coverage files into build sequence using **Jenkins Plugins**, allowing developers to rate coverage on their CRs
- Constructed tool in **Python** to analyze code coverage of a given commit SHA using set theory operations

### UAV Autopilot Embedded Software Engineer Intern

Waterloo, Canada

*UWaterloo Aerial Robotics Group*

*January 2021 - April 2022*

- Designed, simulated, and tested autonomous landing and takeoff control systems on a fixed wing aircraft using **C++** and **FSM's**
- Restructured and debugged the previous attitude control system using **Simulink** and **GDB**
- Optimized **Simulink** and PID model to better represent flight dynamics and tested path following using Flight Gear
- Researched and introduced SD card driver for **STM32F7** using **STMCubeMX** and **FatFS**

### Software Quality Analyst Intern

Toronto, Canada

*i4i (Infrastructures for Information)*

*September 2021 - December 2021*

- Designed tool automating Excel data conversion into **XML**, using **Python** and **XSLT** reducing user input time by ~95%
- Tested scripts relating to company database and Microsoft Word authoring tool using QaTraQ

## PROJECTS

### AWS DeepRacer WildCard Competition

- Trained reinforcement learning model for autonomous 1:16 scale racing using **PPO** and a customized reward function
- Competed against graduate and undergraduate students across Canada during the Ottawa wildcard competition, achieving a time of ~11.3 seconds and placing second overall

### Embedded Voice Recognition

- Developed keyword recognition system using **Edge Impulse**, with a ~90% audio recognition accuracy on a mobile deployment
- Extracted features from audio datasets using anti-aliasing, Fourier transforms, and mel frequency cepstral coefficients