

MATTHEW ROMLEWSKI

mechatronics student with a passion for making things smarter

Contact

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Skills

Programming Languages

C++, C, Python, Matlab, C#
Java, HTML, Javascript, SQL

Software Tools

OpenCV, ROS
Linux, PLCs
Git, JIRA
AWS, DynamoDB
Alexa Skills Kit

Design Knowledge

Solidworks, AutoCAD
EAGLE, PCB bring-up, Arduino
I²C, SPI, CAN
RF transceivers, IMUs
Oscilloscope + other lab equipment
Robotic sensors and actuators
Laser cutting, 3D printing

Education

University of Waterloo

Mechatronics Engineering

2016 - Present

Courses:

Sensors and Instrumentation
Materials
Engineering Graphics and 3D Design
Real Time Operating Systems

Achievements

2016 Schulich Leader Nominee

2016 Diocese of Hamilton Award

Interests

- ▶ Rock climbing
- ▶ Woodcraft & wood burning art
- ▶ Ultimate Disc
- ▶ Volleyball
- ▶ Hackathon culture
- ▶ UW Orientation Leadership

Experience

Hardware R&D Engineering

Virtek Vision

Co-op
Summer 2018

- ▶ Qualified new power supply hardware to save \$500K in annual costs
- ▶ Performed **schematic** capture and PCB **layout** for a microcontroller-based optical device after prototyping a photodiode amplifier circuit
- ▶ Developed its signal processing pipeline in **C** to achieve 99% precise measurements of laser-flicker frequency

Embedded System Software & Hardware Developer

Tigercat Industries

Co-op
Fall 2017

- ▶ Led development of a complete **computer vision** system using **C++** and **Python** to detect and track agricultural objects with 5cm accuracy
- ▶ Designed and fabricated a 2-axis **robot** for a simulated water sprayer with **serial communications** between a main computer and a microcontroller
- ▶ Formulated a velocity measurement algorithm for a **PLC** which processed an infrared 3D point cloud in an object tracking project

Autonomous Vehicle Developer

Watonomous - Software Team

Student Design Team
Jan. 2018 - present

- ▶ Implementing graph-based localization in **C++** to accurately predict the position and orientation of a self driving Chevrolet Bolt EV
- ▶ Delivered proposals to the team on possible solutions to the problem of robot localization and mapping

Database Development Intern

Independent Electricity System Operator (IESO)

Co-op
Winter 2017

- ▶ Programmed new functionalities and UIs into three **Access** databases
- ▶ Debugged database issues on a regular basis with **VBA** and **SQL**

Projects

Safe Electric Skateboard

https://github.com/mattromlewski/eBoard_romlewski

Personal Electronics Project

Ongoing

- ▶ Motorizing my old longboard using a brushless DC motor and battery system
- ▶ Programmed **radio** control system and built up the corresponding electronics
- ▶ Interfaced a gyroscope with a microcontroller to actively analyze board dynamics and suppress dangerous 'speed-wobbles'

BlockScope

github.com/mattromlewski/BlockScope

Statistical Analysis Project

April 2018

- ▶ Developed a computer vision system in **Python** and **OpenCV** which was used to measure Lego bricks with 1mm accuracy
- ▶ Designed and laser-cut a camera mount to provide a stable video stream

EasyAlexa3D

github.com/mattromlewski/EasyAlexa3D

Personal IoT Project

Ongoing

- ▶ Created a voice-interactive front end for **3D printers** using **Amazon Alexa**
- ▶ Programmed a response algorithm in Node.js to perform database queries
- ▶ Developing a **Python** plugin for a Linux platform to communicate with AWS