

Skills Summary

- Programming: proficient in Python, C, C#, C++; working knowledge of SQL, JavaScript, PHP, and HTML/CSS; Git.
- Electronics: experience creating schematics, designing PCBs, wiring, CAN bus communication, designing embedded Linux systems.
- Modelling: SolidWorks, Matlab + Simulink.
- Robotics (hardware): experience with component selection & sizing, motor controller programming, and battery optimization for robots and electric vehicles.
- Robotics (software): experience with ROS, Gazebo, learning rviz.
- OS: Mac, Linux, Windows.

Relevant Experience

Content Developer, Udacity – Waterloo, ON.

2017 – Ongoing

- Developing engaging content, such as lectures, quizzes, and labs, for the Robotics, Flying Car, and Cybersecurity Nanodegree Programs.
- Working with leading subject-matter experts to create programs that are relevant and enjoyable, and produce hireable graduates with skills needed in today's markets.
- Using data-driven tools to identify areas of difficulty and student drop-off points. Creating new content to address identified needs to improve the quality of our content and increase completion rates of our students.
- Working to implement strong pedagogical practices across all content development teams at Udacity.

Mechatronics Engineer-In-Training, University of Waterloo – Waterloo, ON.

2016 – 2018

- Designed innovative projects, such as an autonomous underwater robot, to introduce hands-on content to the Mechanical and Mechatronics Engineering curricula.
- Coordinated with course instructors on how to tie together course teachings with the deliverables of the project. Created a marking scheme for the project.
- Managed a team of four co-op students, assisting me in the development of course material, purchasing, design, construction, and packaging of robot kits.
- Coordinated the execution of the project for 300 undergraduate students across two courses. This involved administering lectures, office-hours, and evaluations, as well as managing four teaching assistants.
- Taught students to use technologies such as 3D printers, laser cutters, and CNC mills.
- Created courses for an online training program, allowing students to learn the basics of a technology online. This cut down on the duration of in-person training required, allowing for a larger throughput of students.
- Organized a one-hour workshop for engineering outreach students, ages 7-9, introducing them to different methods of manufacturing. Executed the workshop weekly over the course of a summer.
- Assisted with Women-In-Engineering events such as 'Introduction to Drill Presses' and soldering workshops.

Research and Development Engineer-In-Training, Prairie Machine & Parts – Saskatoon, SK.

2014 – 2016

- Designed and programmed a data-logging tool that interfaces with a vehicle's CAN bus to query and record vehicle operating parameters.
- Developed an interactive web application that presents logged operating parameters and live performance data to the end-user.
- Spearheaded the advancement of the tool to include diagnostic capabilities, such as querying for faults and displaying battery voltage levels.
- Provided drawings and trained production staff in the construction and programming of the data-logging and diagnostic tool.
- Final product was shipped with every vehicle, allowing the company to diagnose vehicle faults remotely. This began to save the company tens of thousands of dollars per fault, as a technician could diagnose a vehicle remotely instead of needing to fly to a distant mine site.

- Researched & tested battery technologies to produce the safest, most reliable, and long-lasting battery packs for our mine vehicles. Tests included cold-weather performance, lifecycle analysis, and others.
- Created, wired, and programmed an automated battery tester to facilitate the research.
- Managed the purchase of a \$120,000, large-scale battery tester, whose purpose is to characterize and test each individual cell prior to assembly in a battery pack.
- Battery tester and new production processes identified faulty cells, reducing vehicle faults experienced by customers, improving the reliability of our vehicles, and saving the company and customer thousands of dollars.
- Managed the paperwork and documentation required to comply with Transport Canada's battery shipping regulations.

Program Co-Director, SHAD Saskatchewan – Saskatoon, SK.

2015 - 2016

- Responsible for the organization of a one month-long live-in program for gifted high school students from across Canada.
- Managed the hiring of 12 program staff (faculty, teachers, recreation directors, and program assistants).
- Planned curriculum to accommodate a wide range of interests, and be appropriate for students of various ages (15 – 18).
- Managed communication with parents, guest speakers, university employees, and students.

Co-Creator, Palette Controller – Waterloo, ON.

2012 – 2013

- Invented a modular controller for advanced computer use, in cooperation with 3 team members, as our capstone design project in Mechatronics Engineering.
- Rapidly developed prototypes using a Teensy development board.
- Personally developed an interactive desktop application that allows a user to customize the functionality of the controller, using C# in Visual Studio.

Education

University of Waterloo

2008 – 2013, 2018 – Ongoing

- 2013, Bachelor of Applied Science, Honours Systems Design Engineering, Co-op Program
- 2021, Candidate, Master of Business, Entrepreneurship, and Technology, Part-Time

Awards

- 1st Place, Accenture Case Challenge, 2014
- 3rd Place Young Engineers' Competition, World Engineers' Congress, 2011
- 1st Place Debate Competition, International Student Energy Summit, 2009
- National Millennium Scholarship, 2008

Personal Projects

- Designed and constructed a 250lb combat robot for the television show BattleBots. Presently trying to automate its operation by applying computer vision algorithms to a camera feed from the arena's ceiling.
- Enrolled in Udacity's Deep Learning Nanodegree program.
- Enjoy building things by hand. Notable projects include casted rock-climbing holds, lamps, and a poker table.

Interests

- Love to rock climb, ski, mountain bike, and play ultimate frisbee.
- Regularly volunteer with FIRST Robotics, Girl Guides, Engineers Without Borders, and other groups.