

- SKILLS**
- **Programming:** Embedded C, C++, Python, MATLAB, LabVIEW
 - **Hardware:** MCU (ARM, Texas Instrument, Arduino, Raspberry Pi), FPGA (VHDL, Xilinx Vivado)
 - **Simulation:** LabVIEW-FPGA/RT, Simulink, OPAL-RT, Speedgoat, dSPACE, SOLIDWORKS, ANSYS
 - **OS:** Windows, macOS, Linux, RTOS (FreeRTOS, Phar Lap ETS, TI-RTOS, QNX), UNIX
 - **Protocols:** CAN, LIN, UDS, SPI, I2C, JTAG, UART, USB, RS422, FTP
 - **Integration:** Git Bash, Atlassian (JIRA, Confluence, Stash) GitHub, Jenkins, SCons
 - **Concepts:** embedded discrete controls, DSP, HIL/SIL, TDD, SCRUM, OOP, DSA, CI, API, SoC, ASIC
 - **Other:** Bash, Vim, HTML5, CSS, JSON, XML, \LaTeX , Markdown, MISRA, Assembly

EDUCATION University of Waterloo

Candidate for B.ASc. GPA: 3.5/4.0

Honors Mechanical/Mechatronics Engineering Co-op

Waterloo, ON, CAN

Sept. 2013 - Apr. 2019

EXPERIENCE Tesla

Palo Alto, CA, USA

Firmware Engineering - Energy Products

Sept. - Dec. 2018

- Coding MISRA compliant firmware in C for power electronic controls on embedded system's DSPs and MCUs
- Full-stack exposure: RTOS kernel, serial drivers (UDS, CAN, SPI), application level controls and diagnostics
- Deploying embedded self-test C framework multiple ECUs to eliminate manual debugging at EOL/field
- Improving existing Java code generations tools and Python Pytest regression testing
- Assuring CI with Atlassian tools, Git Bash, code review, Jenkins builds, unit tests, SIL, HIL

Apple

Cupertino, CA, USA

Controls Engineering - Special Projects Group

Aug. 2017 - Aug. 2018

- Developed a hardware-in-the-loop system for validation of power electronic control algorithms in C
- Emulated and optimized high-fidelity discrete plant models on 32-bit Xilinx FPGA for low latency μ s control
- Deployed LabVIEW HMI for deterministic communication between PC, PXIe RTOS controller and FPGA
- Flashed microcontroller via JTAG, serial and Ethernet with the latest software builds for bring-up of PCBAs
- Applied DSP theory to convert continuous Simulink filters to discrete firmware in C for data acquisition
- Implemented automated testing Python frameworks for continuous integration and software regression

Altaeros

Boston, MA, USA

Systems Engineering - Research & Development

Jan. - Apr. 2017

- Performed numerical analysis in Python on prototype of an autonomous aerostat's electromechanical system
- Utilized electronic lab equipment and LabVIEW HMI to log test data and analyze with MATLAB

Ontario Die International

Waterloo, ON, CAN

Mechanical Design - Research & Development

May - Aug. 2016

- Designed robotic components (electrical, hydraulic) of PLC/CNC bending systems in SOLIDWORKS

Pratt & Whitney Canada

Mississauga, ON, CAN

Program Management - Turbofan Operations

Sept. - Dec. 2015

- Assured on time OEM delivery of a quality turbofan engine while exceeding their expectations and needs

Linamar

Guelph, ON, CAN

Manufacturing Engineering - Skyjack

Jan. - Apr. 2015

- Worked with a team of engineers to troubleshoot production issues at an aerial work platform manufacturer

- PROJECTS**
- | | | |
|--|---|------------------|
| Robot Arm Controller | <i>ECE 488: Multi-Variable Controls</i> | <i>Ongoing</i> |
| • Modeling and control of MIMO non-linear system in MATLAB using advanced state-space methods | | |
| Heated Press System | <i>ME 482: Capstone Design Project</i> | <i>Ongoing</i> |
| • Leading electrical system efforts: harnessing, temperature and motor controls with Arduino | | |
| MIT Open Courseware Self-Study | <i>6.006 Introduction to Algorithms</i> | <i>May 2018</i> |
| • Covered complexity, sorting algorithms, graphs, and dynamic programming in Jupyter Python notebooks | | |
| Ball & Beam Lab | <i>ECE481: Digital Control Systems</i> | <i>Aug. 2017</i> |
| • Designed LabVIEW HMI, performed system ID, implemented/tuned digital controller on NI cRIO FPGA | | |
| Drum Rhythm Arduino Hack | <i>Personal: WIT Hackathon</i> | <i>Mar. 2017</i> |
| • Coded firmware in C and communicated over UART to MATLAB for real-time monitoring of vibration | | |
| Wind Turbine Pitch Actuator | <i>ME360: Control Systems</i> | <i>Dec. 2016</i> |
| • Studied time/frequency domain responses in MATLAB for closed-loop stability of PI controlled Simulink | | |
| DC Motor Control System | <i>ME360: Control Systems</i> | <i>Oct. 2016</i> |
| • Designed PID control in Simulink for a DC motor; implemented in real-time with QUARC C code generation | | |
| Dune-Buggy Magneto Repair | <i>Personal</i> | <i>Aug. 2016</i> |
| • Diagnosed fuel system ignition issue then replaced coil and armature of solid-state system | | |

- INTERESTS**
- Further developing skills related to firmware, electronics, machine learning and embedded systems
 - Repairing off-road vehicles, DIY electronics, hockey, golf, swimming and socializing (bilingual/French)