

- SKILLS**
- **Programming:** Embedded C, C++, Python, MATLAB, Swift, Java, Javascript
 - **Hardware:** MCU (ARM, TI, Arduino, x86 Assembler, Raspberry Pi), FPGA (VHDL, Xilinx Vivado)
 - **Simulation:** LabVIEW FPGA/RT, Simulink, OPAL-RT, Speedgoat, dSPACE, SOLIDWORKS, ANSYS
 - **OS:** Windows, macOS, Linux (Ubuntu, Red Hat), RTOS (FreeRTOS, Phar Lap ETS)
 - **Protocols:** CAN, LIN, UDS, SPI, I2C, JTAG, UART, Ethernet, TCP, FTP, HTTPS, PCIe
 - **Integration:** Git Bash, JIRA, Confluence, Stash, GitHub, Jenkins, YAML, SCons, GCC, Maven
 - **Concepts:** embedded discrete control systems, DSP, HIL/SIL, TDD, Agile/SCRUM, OOP, DS&A, CI
 - **Other:** Bash, HTML5, CSS, JSON, XML, \LaTeX alphabet (ABC)

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**
Firmware Engineering - Energy Products
 Palo Alto, CA, USA
 Sep. 2018 - Present
- Programming firmware in C for power electronic and thermal controls on embedded system ECUs (DSP/MCU)
 - Full-stack exposure: RTOS kernel, serial drivers (UDS, CAN, SPI), application level controls and diagnostics
 - Deploying embedded self-test C framework on Supercharger to eliminate manual debugging at EOL/field
 - Improving existing Java, Python, Golang auto codegen tools and ECU specific regression testing
 - Assuring CI with Atlassian tools, Git Bash, code review, Jenkins builds, unit tests, SIL, HIL
- Apple**
Controls Engineering - Special Projects Group
 Cupertino, CA, USA
 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**
Systems Engineering - Research & Development
 Boston, MA, USA
 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**
Mechanical Design - Research & Development
 Boston, MA, USA
 May - Aug. 2016
- Designed robotic components (electrical, hydraulic) of PLC/CNC bending systems in SOLIDWORKS
- Pratt & Whitney Canada**
Program Management - Turbofan Operations
 Mississauga, ON, CAN
 Sept. - Dec. 2015
- Assured on time OEM delivery of a quality turbofan engine while meeting their expectations and needs
- Linamar**
Manufacturing Engineering - Skyjack
 Guelph, ON, CAN
 Jan. - Apr. 2015
- Worked with a team of engineers to troubleshoot production issues at an aerial work platform manufacturer

- PROJECTS**
- Web Portfolio Development* *Personal* *Ongoing*
- Hosting personal website to showcase portfolio via GitHub utilizing knowledge of front-end coding
- Swift App Training* *Apple: Software University* *Aug. 2018*
- Reviewed the fundamentals of object oriented programming in Swift and coded basic application
- MIT Open Courseware Self-Study* *6.006 Introduction to Algorithms* *May 2018*
- Covered complexity, sorting algorithms, graphs, and dynamic programming in Jupyter Python notebooks
- Ball & Beam Lab* *ECE481: Digital Control Systems* *Aug. 2017*
- Designed LabVIEW HMI, performed system ID, implemented/tuned digital controller on NI cRIO FPGA
- Drum Rhythm Arduino Hack* *Personal: WIT Hackathon* *Mar. 2017*
- Coded firmware in C and communicated over UART to MATLAB for real-time monitoring of vibration
- Wind Turbine Pitch Actuator* *ME360: Control Systems* *Dec. 2016*
- Studied time/frequency domain responses in MATLAB for closed-loop stability of PI controlled Simulink
- DC Motor Control System* *ME360: Control Systems* *Oct. 2016*
- Designed PID control in Simulink for a DC motor; implemented in real-time with QUARC C code generation
- Dune-Buggy Magneto Repair* *Personal* *Aug. 2016*
- 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)