

- 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 and optimal control, PID, DSP, HIL/SIL, TDD, OOP, DSA, CI, API
  - **Other:** Bash, Vim, HTML5, CSS, JSON, XML,  $\LaTeX$ , Markdown, MISRA, Assembler, Swift

**EDUCATION** University of Waterloo  
 Bachelor of Applied Science with Distinction  
 Honors Mechanical Engineering Co-op, GPA: 3.5/4.0

Waterloo, ON, CAN  
 Sept. 2013 - Apr. 2019

- EXPERIENCE** Tesla  
*Firmware Engineering - Energy Products*  
 Sept. - Dec. 2018  
 Palo Alto, CA, USA
- Coded MISRA compliant firmware in C for power electronic controls on embedded system's DSPs and MCUs
  - Full-stack exposure: RTOS kernel, serial drivers APIs (CAN, SPI), application level controls and diagnostics
  - Deployed an embedded self-test C framework on multiple ECUs eliminating manual debugging at EOL/field
  - Improved existing Java code generations tools and Python Pytest regression testing
  - Employed a test-driven development mindset by writing CMock unit tests and SIL/HIL simulations
  - Assured CI in an Agile environment with Atlassian tools, Git Bash, code review/PR and Jenkins builds
- Apple  
*Controls Engineering - Special Projects Group*  
 Aug. 2017 - Aug. 2018  
 Cupertino, CA, USA
- 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  $\mu$ 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*  
 Jan. - Apr. 2017  
 Boston, MA, USA
- 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*  
 May - Aug. 2016  
 Waterloo, ON, CAN
- Designed robotic components (electrical, hydraulic) of PLC/CNC bending systems in SOLIDWORKS
- Pratt & Whitney Canada  
*Program Management - Turbofan Operations*  
 Sept. - Dec. 2015  
 Mississauga, ON, CAN
- Communicated with the OEM in French to assure delivery of a quality engine while exceeding expectations
- Linamar  
*Manufacturing Engineering - Skyjack*  
 Jan. - Apr. 2015  
 Guelph, ON, CAN
- Worked with a team of engineers to troubleshoot production issues at an aerial work platform manufacturer

- PROJECTS**
- Robot Arm Controller* ECE 488: Multi-Variable Controls Apr. 2019  
 • Modeled and controlled MIMO non-linear system in MATLAB using optimal LGC control methods
- Heated Press System* ME 482: Capstone Design Project Mar. 2019  
 • Led electrical system efforts including harnessing/debugging and temperature/motor controls in C on MCU
- Swift App Training* Apple: Software University Aug. 2018  
 • Reviewed the fundamentals of object oriented programming in Swift and coded an 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
- 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** • Repairing off-road vehicles, DIY electronics, hockey, golf, swimming and socializing (bilingual/French)