





- 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, FTP, PCIe
  - **Integration:** Git Bash, JIRA, Confluence, Stash, GitHub, Jenkins, YAML, SCons, Maven
  - **Concepts:** embedded discrete control systems, DSP, HIL/SIL, TDD, Agile/SCRUM, OOP, DS&A, CI
  - **Other:** Bash, HTML5, CSS, JSON, XML,  $\LaTeX$ , Markdown


**EDUCATION** **University of Waterloo**  **Waterloo, ON, CAN**  
 Candidate for B.ASc. GPA: 3.5/4.0 **Sept. 2013 - Apr. 2019**  
 Honors Mechanical/Mechatronics Engineering Co-op


**EXPERIENCE** **Tesla**  **Palo Alto, CA, USA**  
*Firmware Engineering - Energy Products* **Sept. 2018 - Present**  
 • 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  $\mu$ 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**  **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**  **Boston, MA, USA**  
*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 meeting 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**

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