

- SKILLS**
- Advanced embedded control system modeling and design acquired from project and hands-on lab experience
  - Exceptional critical thinking and problem-solving skills allowing for complex engineering analysis
  - Highly motivated and organized self-starter with a strong attention to detail and work ethic
  - Outstanding oral and written communication to share creative ideas fluently in both English and French
  - Able to thrive and lead in a team or work independently in a dynamic deadline driven environment
  - Proficient in iWork/Office, SOLIDWORKS, MATLAB/Simulink, Python, C++/C, LabVIEW, L<sup>A</sup>T<sub>E</sub>X, Bash
  - Familiar with PLC/SCADA/HMI systems, embedded microcontroller programming (Texas Instruments, Arduino, x86 Assembler), FPGA, Linux, ANSYS FEA/CFX

**EDUCATION** **University of Waterloo** **Waterloo, ON, CAN**  
 Candidate for B.ASc. 3.3/4.0 GPA  
 Honours Mechanical Engineering Co-op Program  
 Sept. 2013 - Present

- EXPERIENCE** **Apple Inc.** **Cupertino, CA, USA**  
*Controls Engineering, Special Projects Group*  
 Aug. 2017 - Present
- Developed a HIL system to validate power electronic control algorithms for autonomous technologies
  - Emulated and optimized plant models on 32-bit Xilinx FPGA for high fidelity, 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
  - Employed Agile software development with Atlassian tools and Git to track firmware bugs and fixes
  - Applied DSP theory to convert continuous Simulink filters to discrete firmware in C for data acquisition
  - Debugged high voltage hardware with in-house test racks, electronic lab equipment, and NI instrumentation
  - Assured robustness and reliability of safety-critical diagnostics by virtual fault injection at HIL
  - Designed system harness to interface HIL and PCBA from electrical schematics and NI hardware datasheets
- Altaeros Energies** **Boston, MA, USA**  
*Systems Engineering*  
 Jan. - Apr. 2017
- Performed FEA in ANSYS and Python on a prototype of an autonomous aerostat's electromechanical system
  - Coordinated with vendors and ControlEng SERVOSoft to size all control system components (servos, VFDs)
  - Utilized electronic lab equipment and LabVIEW HMI to log test data and analyze with MATLAB
- Ontario Die International Inc.** **Kitchener, ON, CAN**  
*Research & Development*  
 May - Aug. 2016
- Designed robotic components (electrical, hydraulic) of PLC/CNC bending systems in SOLIDWORKS
  - Automated tedious SOLIDWORKS tasks in VBA and C++ with the API in MS Visual Studio IDE
  - Performed hands-on Q&A HMI testing, machined components, fabricated assemblies with power/hand tools
- Pratt & Whitney Canada** **Mississauga, ON, CAN**  
*Operations Program Management*  
 Sept. - Dec. 2015
- Assured on time OEM delivery of a quality turbofan engine while meeting their expectations and needs
  - Developed Excel VBA programs allowing for improvements in methods of business metric preparation
- Skyjack Inc.** **Guelph, ON, CAN**  
*Manufacturing Engineering*  
 Jan. - Apr. 2015
- Worked with a team of engineers to troubleshoot production issues at an aerial work platform manufacturer

- PROJECTS**
- 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
- Mining Safety Device** *ME380: Engineering Design* **Nov. 2016**  
 • Developed a 3D printed enclosure to protect internal Arduino and sensors of severe underground environment
- 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
- CNC Bending Powertrain** *WKRPT300: Co-op 4* **Sept. 2016**  
 • Performed iterative testing with HMI to gather data for selection; assured compatibility into control system
- Dune-Buggy Magneto Repair** *Personal* **Aug. 2016**  
 • Diagnosed fuel system ignition issue then replaced coil and armature of solid-state system
- Embedded Robot Design** *GENE121: Digital Computation* **Apr. 2014**  
 • Coded a C++ algorithm, designed and assembled a robot to perform a colour sorting and movement operation

- INTERESTS**
- Further developing skills related to firmware, electronics, machine learning and artificial intelligence
  - Repairing off-road vehicles, DIY electronics, hockey, golf, swimming and socializing with friends