

- SKILLS**
- Advanced embedded control system design acquired from project and hands-on laboratory experiences
  - 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, SOLIDWORKS, MATLAB/Simulink, Python, C++, C, LabVIEW, LaTeX, Bash
  - Experience with PLC/SCADA/HMI systems, embedded microcontroller programming (TI, Raspberry Pi, Arduino, x86 Assembler), Xilinx FPGA, Linux, ECAD tools, ANSYS FEA and CFD

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

**EXPERIENCE** **Apple Inc.** **Cupertino, CA, USA**  
*Controls Engineering: Special Projects Group (SPG)*  
 Aug. 2017 - Present

- Developed a HIL system to validate power electronic control algorithms for autonomous technologies
- Programmed LabVIEW HMI for communication between PC, PXIe RTOS controller and FPGA models
- Converted MATLAB/Simulink algorithms to discrete firmware in C and models on FPGA
- Optimized FPGA models for high fidelity, low latency  $\mu$ s control
- Emulated control system plant model on **deterministic** NI cRIO Linux controller
- Applied DSP theory through data acquisition with discrete filters in C **anti-aliasing filters**
- Debug and bring-up of PCBAs with in-house test racks, electronic lab equipment and NI instrumentation
- Employed Agile software development with Atlassian tools and Git to track firmware bugs and fixes

**Altaeros Energies** **Boston, MA, USA**  
*Systems Engineering*  
 Jan. - Apr. 2017

- Performed FEA in ANSYS and Python on prototype of an autonomous aerostat's electromechanical system
- Coordinated with vendors and ControlEng SERVOfsoft 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**

<b>Latest Proj</b>	<i>Personal</i>	<i>Ongoing</i>
• Provj		
<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>Mining Safety Device</b>	<i>ME380: Engineering Design</i>	<i>Nov. 2016</i>
• Developed a 3D printed enclosure to protect internal Arduino and sensors of severe underground environment		
<b>DC Motor Control System</b>	<i>ME360: Control Systems</i>	<i>Oct. 2016</i>
• Designed PID control in Simulink simulation for a DC motor; implemented in real-time with QUARC C code generation		
<b>CNC Bending Powertrain</b>	<i>WKRPT 300: Co-op 4</i>	<i>Sept. 2016</i>
• Performed iterative testing with HMI to gather data for selection; assured compatibility into control system		
<b>Dune-Buggy Repairs</b>	<i>Personal</i>	<i>Aug. 2016</i>
• Diagnosed fuel system ignition issue then replaced carburetor, <b>coils and armature</b>		

**INTERESTS**

- Further developing skills while gaining new exposure to firmware, real-time controls and electronics
- Repairing off-road vehicles, DIY electronics, hockey, golf, swimming and socializing with friends