SEBASTIEN BLANCHET

Cupertino, CA, USA (669)-241-8438 s3blanch@edu.uwaterloo.ca

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 hardware-in-the-loop system for the validation of power electronic control algorithms
- Designed system harness to interface HIL with PCBA from schematics and hardware specifications
- Programmed LabVIEW HMI for communication between RTOS controller and FPGA models
- Implementation of MATLAB/Simulink models in C firmware on embedded MCU, digital filters
- Converted continious MATLAB/Simulink models to discrete time for FPGA
- Control system plant model emulation on FPGA
- Hardware communication protocols serial, Ethernet, SPI PXIe, I2C, UART
- Assured robustness of control architecture with verification of safety-critical diagnostics algorithms
- Automated regression testing with Python and LabVIEW
- Debug and bring-up of high voltage PCBAs safely with in-house test racks, electronic lab equipment and NI instrumentation
- Employed Agile software development with Atlassian tools (JIRA, Confluence, Sourcetree) 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 worlds first commercial autonomous aerostat
- Coordinated with vendors and ControlEng SERVOsoft to size all control system components (servos, VFDs)
- Utilized electronic lab equipment, sensors and LabVIEW HMI to gather test data and analyze with MATLAB **electromechanical**

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 Analyst — *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

Nor-Arc Steel Fabricators — **Earlton, ON, CAN**
Junior Detailer — *June - Aug. 2014*
- Detailed architectural, mechanical and electrical drawings including GD&T in AutoCAD

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*
- Utilized the IDE and serial COM with MATLAB to develop real-time monitoring of drumming pattern

Wind Turbine Pitch Actuator *ME360: Control Systems* *Dec. 2016*
- Studied time/frequency domain responses to assure closed loop stability of PI Simulink model in MATLAB

Mining Safety Device *ME380: Engineering Design* *Nov. 2016*
- Developed a 3D printed enclosure to protect internal Arduino and sensors of severe underground environment, **design and test**

DC Motor Control System *ME360: Control Systems* *Oct. 2016*
- Implemented real-time PID control and tuned system with a hardware-in-the-loop Simulink simulation **design**

CNC Bending Powertrain *WKRPT 300: Co-op 4* *Sept. 2016*

• Performed iterative testing with HMI to gather data for selection; assured compatibility into control system

Dune-Buggy Repairs *Personal* *Aug. 2016*

• Replaced carburetor, coils and armature of personal dune-buggy upon troubleshooting **diagnostics**

INTERESTS

• Further developing skills while gaining new exposure to firmware, real-time controls and electronics

• Repairing off-road vehicles, DIY Arduino projects, hockey, golf, swimming and socializing with friends