Andrew Randell

519-504-9161 | arandel@uwo.ca | linkedin.com/in/andrew-randell | portfolio | andrewrandell.ca

Education

University of Western Ontario *September 2016 – April 2021*

Bachelor of Engineering Science, Mechatronics, Dean's Honour List, 3.8GPA

Professional Experience

Intel Corporation *May 2019 – August 2020*

Graphics Platform Architect and PCB Designer (Internship)

- Lead architecture and design for a high-speed silicon validation platform to be scaled across Intel validation teams
- Designed and laid-out prototype PCBs to aid platform bring-up and validation efficiency in a laboratory setting
- Incorporated CPLD devices for system housekeeping tasks resulting in PCB layout area and cost reduction by 40%
- Spearheaded new CAD processes, workflows, and tools to increase team design efficiency with large projects
- Managed Intel's relationship with third-party vendors for specific platform subsystems and exploratory projects
- Submitted two patent applications for system behaviour during power state transitions

Swift Labs *Summer of 2017 and 2018*

Internet of Things Hardware Designer (Co-op)

- PCB component selection, schematic capture, and board layout alteration for an IoT gateway
- Hardware debug and power-on coordination for an IoT gateway in a laboratory setting
- Automated wireless testing and verification procedures via remote control of lab testing equipment over GPIB
- Specified and compiled Buildroot Linux firmware for a production IoT gateway

Extracurricular Experience

Western Formula Racing, Formula-SAE *September 2017 - Present*

Electrical Director 2021

- One of three team leaders responsible for 50+ team members and 10 subsection leads who design, build, and race a 504-volt, $160,000 electric vehicle at international SAE competitions
- Lead vehicle propulsion system design from the ground up. Increased the system efficiency by 30% with accumulator cell arrangement optimizations, and integrating an all-new motor controller
- Designed a bespoke Battery Management System with hardware and control algorithms to manage 720 Lithium-ion battery cells arranged in a 6P120S configuration
- Managed cross-functional meetings and workgroups for team members. Mentored junior team members
- Four years of electronics design, system integration, and rapid troubleshooting experience

Energy Accumulator Lead 2020

- Lead electrical system design and assembly for a 400-volt energy accumulator. Incorporated all discrete control components onto a modular PCB assembly, resulting in stellar accumulator reliability and serviceability allowing the vehicle to complete the season with no serious faults
- Assembled and tuned a Cascadia PM100DXR inverter and an Emrax 228MV motor used in the propulsion system
- Designed a 400V to 12V DCDC converter based on Vicor DCM modules to power the vehicle's low-voltage systems

Low-Voltage and Data Acquisition Lead 2019

- Acted as the Certified High Voltage Electrical Safety Officer for the $150,000 vehicle and 55+ member team
- Lead low-voltage harness design and assembly utilizing a bespoke Power Distribution Module with telemetry, an Android-based dashboard display with OBDII, and a Motec M150 engine controller and DAQ

Electrical Member 2018

- Incorporated wireless telemetry based on a generic 802.11n local area network with a router running OpenWRT
- Supported the electrical team with duties including: system design, wire harness assembly, and troubleshooting

Engineering Projects

Linear Projectile Accelerator | *FPGA, MOSFETs, hand-made electronics*

- Designed and manufactured a four-stage linear accelerator based on magnetic coils controlled by an FPGA
- For more information, please visit my YouTube video

Technical Skills and Interests

Design Tools: OrCAD, Allegro, DE HDL, Eagle PCB, MATLAB, Excel, LTSpice, PowerDC, Solidworks (CSWA)
Prototyping: Oscilloscope, Logic Analyzer, SMD Soldering, Arduino, CANBUS, High-voltage wiring, 3D Printing
Interests: Alpine Skiing, Rock Climbing, Hiking, Swimming, Running, Cooking, Motorcycles