Nathaniel Johnston

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Education

University of Waterloo **Sep. 2017 - Apr. 2022**
Bachelor of Applied Science, Electrical Engineering *Dean's Honors List*

Work Experience

PCB Layout Designer & Components Librarian **Jan. 2023 - Pres.**
Kepler Communications

- Used **Altium** and **PDN** to design, layout, and simulate a power delivery board capable of **350W** for space applications
- Applied **DFM** and **DFT** principles to complete layout of complex 4-10 layer PCBs, often with high speed or high power
- Fully tested and qualified custom buck-boost power regulation boards
- Made hundreds of schematic symbols and PCB footprints to **IPC** standards
- Sped up designs and reduced workload with custom **C#** Altium extension that performed automated design checks
- Led migration of 7000+ components from SQL DB to Altium 365 and implemented consistent naming convention

Solutions Architecture Developer **May 2022 - Aug. 2022**
BlackBerry Ltd.

- Worked as sole developer for a Syslog emulator to generate all types of BlackBerry Syslogs for test and demo use cases
- Designed a **Python** parser to convert Syslogs into JSON using a combination of RegEx and string methods
- Developed systems using **Docker** so the code could be easily run on any computer
- Wrote multiple blog posts about BlackBerry technologies on *BlackBerry's developer blog*

Solutions Architecture Developer **Sep. 2021 - Dec. 2021**
BlackBerry Ltd.

- Aided in design of **React.js** application to allow users to automatically find security vulnerabilities in mobile apps
- Added and modified server side **REST** endpoints using **Node.js**
- Used **React Native** and **Firebase** to build an **Android** app to receive security threat notifications on remote devices
- Wrote a technical blog post on BlackBerry security APIs for *BlackBerry's developer blog*

Hardware Designer - Research Assistant **Jan. 2021 - Apr. 2021**
Institute for Quantum Computing - University of Waterloo

- Used **KiCad** to complete schematic capture and layout of an RF power amplifier PCB for use in a quantum simulator
- Designed and simulated 3rd order maximally flat (Butterworth) RF filters using **LTspice**
- Sourced components and wrote in depth guides and documentation

Motor Control Subteam Lead **Jul. 2019 - Apr. 2020**
Waterloop Design Team - University of Waterloo

- Managed team of 6 students, taught important concepts, and supervised progress through weekly meetings
- Helped design motor control boards with 3-phase transistor inverter for linear induction motor
- Performed schematic capture and PCB layout using **Altium Designer** and **KiCad**

Enterprise Solutions Developer - IoT **Sep. 2019 - Dec. 2019**
BlackBerry Ltd.

- Sole designer and developer for proof of concept for smart security system
  - Microcontroller used ultrasonic sensor and camera to detect motion and send video to **Raspberry Pi** via **MQTT**
  - Used **Node.js** and **Python** on a **Raspberry Pi** to detect faces and send secure alerts to users via BlackBerry APIs
  - System automatically disarmed when it detected a nearby familiar device or correct PIN was entered into keypad
- Wrote multiple technical articles on the *BlackBerry developer blog*
- Served as Subject Matter Expert on new BlackBerry REST API for both company partners and team members

Projects

DIY Smart Watch

- Currently designing a smart watch from scratch, including all the hardware, software, and mechanical aspects
- Designed BMS circuit with OCP, OVP/UVP, and allows for simultaneous charging and use of the watch
- Designed to communicate over 2.4GHz BLE with smart phone app

Technical Skills

Hardware: IPC CID certified, Altium Designer, Altium PDN Analyzer, LTSpice, KiCad, Soldering, Oscilloscope
Languages: Python, C#, Java, JavaScript, C/C++, SQL
Embedded: SPI, I2C, UART, CAN, JTAG, ESP32, Arduino, Raspberry Pi, TI Launchpad
Other: Linux, Git, Node.js, React.js, Spring MVC, REST, Android Studio, Firebase, MQTT, Docker