

NATHANIEL JOHNSTON

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Education

University of Waterloo

Bachelor of Applied Science, Electrical Engineering

Sep. 2017 - Apr. 2022

Work Experience

PCB Layout Designer & Components Librarian

Jan 2023 - Pres.

Kepler Communications

- Used **Altium** and **PDN** to complete the design, layout, and simulation of a power delivery board capable of **350W**
- Completed layout of complex boards from 4-8 layers, often with high speed or high power requirements
- Fully tested and qualified custom buck-boost power regulation boards
- Wrote custom **C#** Altium extension to perform automated checks, speeding up designs and decreasing workload
- Migrated 7000+ components from SQL DB to Altium 365, implementing consistent naming and ensuring no duplicates

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, allowing 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

Institute for Quantum Computing - 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

Automatic Pill Dispenser and Health Tracker

- Worked as part of a team of 4 to build an automatic pill dispenser, health tracking wristband, and **Android app**
- Used **KiCad** to perform schematic capture and PCB layout of the wristband and dispenser
- Wrote embedded firmware for ESP32 microcontrollers and incorporated IoT protocols for reliable communication

Technical Skills

Hardware: Altium Designer, Altium PDN Analyzer, LTSpice, KiCad, Soldering, Oscilloscope

Languages: Python, C#, Java, JavaScript, C/C++, SQL

Embedded: SPI, I2C, UART, CAN, ESP32, Arduino, Raspberry Pi, TI Launchpad

Other: Linux, Git, Node.js, React.js, Spring MVC, REST, Android Studio, Firebase, MQTT, Docker