# Patrick Woodburn, Software Engineer

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SUMMARY

A software engineer, passionate about emerging technologies that allow users to interact with the world around them.

EXPERIENCE

**Fort Robotics**                                                                               Jun 2021 — Present

https://fortrobotics.com

- Embedded linux software engineer for safety devices.
- Worked with yocto to create embedded linux distributions for custom hardware.
- Created standard build environments to enable developers to build consistent software.
- Increased performance of CMake build tools.
- Created chip flashing tools for low level radio interfaces.
- Worked on embedded communications system using zmq and coap.
- Set up automatic build systems for multiple code repositories in multiple programming languages.
- Improved code stability through the implementation of static code analysis.
- Trasitioned dependency management to more manageable system allowing for faster more reliable software builds.
- Worked on embedded hardware to increase safety in industrial environments.

**Thomas Jefferson University - Dice Group, Software Engineer**          Dec 2017 — Jun 2021

https://www.dicegrp.org

- Lead embedded software engineer for the Internet of Things team.
- Worked on software that drove the first ever HIPPA compliant smart speaker.
- Built APIs that allowed for internet connected devices to communicate between each other for the purpose of controlling equipment in a hospital setting.
- Wrote Linux scripts used to manage a suite of software focused on the embedded platform.
- Built a system for intercommunication between APIs and firewall protected embedded systems.
- Designed a system for delivering software updates leveraging MQTT events.
- Used Google Cloud Platform to control and maintain numerous Jefferson IoT projects.
- Improved data flow between existing APIs to ensure negligible delay between interconnected systems.
- Lead conversations on uses, pros and cons, and implementation of IoT networks including LoRaWAN, Bluetooth, WiFi, and cellular within the engineering team.
- Designed and created prototypes of simple electrical circuits for small batch products on experimental IoT and embedded system projects.
- Designed 3D printed short run rapid protype housings for early phase projects during the proof of concept stage.
- Created an interface for controlling Docker over the MQTT network.
- Maintained Docker images for testing embedded software in order to eliminate the need for physical hardware.
- Created workflows for using Docker on embedded systems.
- Created systems to automatically and dynamically deploy software to embedded hardware.
- Implement Redis as a low lag reliable cross application key store and communication bus solution.

**Comcast, Software Engineer**                          Mar 2015 — May 2017

http://www.xfinity.com

- Designed and developed home security and home automation systems.
- Operated within a team of developers to develop and test a new home automation system.
- Worked with internet connected devices to automate and secure user's homes.
- Developed android apps that could run against a users unique home automation system.
- Used testing tools such as junit and espresso to create test code to run against android apps for continuous integration.
- Built test kits to simulate devices in a typical user's home.
- Created technical documentation for both installation technicians and tech support to use when assisting users.
- Set up continuous integration environment using Jenkins.
- Scripted tools to deploy to and debug on custom android firmware.
- Developed software to communicate over wireless interfaces such as bluetooth, WIFI, and Zigbee.

**Independence Blue Cross, Software Engineer**          Aug 2014 — Feb 2015

http://www.ibx.com

- Wrote secure access software for customers to access their person private insurance information.
- Implemented given designs so that users may have the most comfortable experience possible when accessing their insurance information.
- Created cross-platform mobile apps that could be rebranded for multiple insurance companies.
- Ported functionality of apps between incompatible code repositories.

**BioHitech America, Intern**                          Jan 2014 — Jul 2014

http://www.biohitech.com

- Developed Linux-based software to run on industrial organic digester.
- Developed software to run on headless industrial machinery and perform analytics regarding their use.
- Set up and maintained Linux devices to be used in embedded industrial applications.
- Created static environment configuration for linux machinery and virtual machines.
- Developed Kiosk software to be be able to track metrics from items scanned with nfc chips.
- Developed webpages to pull from various RESTful APIs.
- Created firmware to drive touchscreen pannels.
- Researched and retrofitted new hardware for industrial-grade machinery.

**Franklin Institute, Teacher**                        Apr 2006 — Jun 2019

http://www.fi.edu

- Taught robotics to high school students.
- Planned lessons on the topics of electrical and software development.
- Taught students how to program and build circuitry required for multiple applications of robotics.
- Worked with students to build robots for various competition and museum displays.
- Documented use and maintenance of students' projects to be handed off to groups tasked with operation through museum.
- Built software tools that the students can use to better debug their projects.
- Presented and demonstrated robotics projects to large groups of people.
- Operated robots in and around the museum.

VOLUNTEERING  **Code for Philly**                      May 2011 — Jan 2016

http://www.codeforphilly.org

- Developed Open source software for the betterment of Philadelphia.
- Acted as a subject matter expert on developing API's and integrating them into web and mobile apps.
- Created websites for community service projects.
- Built apps to help transform improve communities within the city.
- Developed APIs to open up public data from the city.
- Helped others to bring up and configure their server solutions on a project to project basis.
- Built data scrapers to bring data into databases from other sources.

EDUCATION    **Harrisburg University Of Science And Technology**          Sep 2010 — May 2014

Bachelor - Computer Information Sciences, GPA: 3.4 Major

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| SKILLS | **Software Engineering:** Java, C++, CMake, Python, Android, HTML, Object Oriented Programming, JavaScript, Nodejs, Git, Linux, rxJava, php, bash, jQuery, React Native, Jenkins, Docker, ansible, cloud, embeded, data |
| | **Electrical Design:** Circuit Design, Prototyping, soldering, CAD |
| INTERESTS | Robotics *[ Internet Of Things, Electrical, Control Systems, Electrical, Control Systems, Embedded, BLE, radio, microcontroller, arduino, PIC, AVR, Arm ]* , Artificial Intelligence *[ AI, Neural Networks, Big Data ]* , Home Automation *[ Internet Of Things, Electrical, Control Systems, Embedded, Wireless, BLE, mqtt, Zigbee, xbee, ZWAVE, arduino, microcroller, PIC, AVR, Arm ]* , Embedded Systems *[ Linux, Micro Controller, PIC, AVR, Arm ]* , 3D printing *[ CAD, CNC, Rapid prototyping ]* |