Kelvin Ly

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University of Central Florida — MS, Computer Engineering

Cummulative GPA: N/A — 2016-Spring 2018

University of Central Florida — BS, Electrical Engineering

Cummulative GPA: 3.905, Magna Cum Laude — 2011-2015

Skills

- Semiprofessional experience with electronics design, PCB layout (KiCad, some Altium Designer), and reverse engineering
- Hobbyist level PCB assembly and soldering
- Fluent in **C/C++**, **Python**, **Go**, **Verilog**
- Working knowledge of **x86/x64/MIPS/MSP430** assembly, **Java**, **LaTeX**, **bash**, **MATLAB**, **Kicad EDA** Software Suite, **Multisim**, **Xilinx ISE**
- GitHub user: `https://github.com/cactorium`

Professional Experience

Fluorometric Instruments Design Engineer, Orlando FL — September 2017 - present

I am working part time to **design PCBs** for oxygen sensors. I worked on many of the stages of development for a handful of products, including **design, testing, parts sourcing, and assembly**. The work involves designing PCBs to fit mechanical and electrical specifications, as well as **developing firmware and GUIs** for the devices as necessary.

University of Central Florida Undergraduate/Graduate Researcher, Orlando Fl — November 2015 - present

The focus on my research here has been on the security of the **Internet of Things**, more specifically the development of defenses for IoT devices against attacks. Consequently, much of my work so far has been in **PCB design and assembly** to develop devices to test out security ideas or provide education on hardware security, and software development to explore ideas in IoT security. Designs so far have incorporated **MSP430** and **Atmel** microcontrollers, along with current work on a primitive **2.45 GHz radar system** for use in a labmate's project. I have also previously worked on our submissions for the **NYU CSAW Embedded Security Competition** '15, '16, and '17 (winning second and first respectively, no win in 2017), which generally involved producing a proof of concept for solving some problem in **cryptography and security domains**. These contests led to a wide range of challenges, from writing code to interface with **MATLAB Simulink** to **modifying the OpenRISC processor core** and **patching a GCC backend**. I am currently being funded by an **SRC/Intel fellowship**.

University of Central Florida Undergraduate Researcher, Orlando FL — December 2014 - March 2015

We studied **feature extraction** from EEG data, focusing on **SSVEP frequency detection**, using this knowledge in our senior design project, discussed further below. We used emokit **Python** library to extract signals from Emotiv EEG headset. Some work was done with the **RAVEN II** medical robot running software built on the **ROS robotics framework**.

Internships

IBM Extreme Blue Intern, RTP NC — May 2015 - August 2015

Here our team worked on **on-disk encryption** for **IBM Connections**. We pioneered work in this direction, producing a proof of concept to pave the way for the actual Connections team to develop. We used **JavaScript and Node.js** for the server **backend**, and modified existing **Java** and **Python** code and libraries for various parts of the project. Our team was organized around modern programming practices, working in an **agile** team of four, with heavy emphasis on **test coverage** and **unit testing**.

Google Software Engineer Intern, Chapel Hill NC — May 2014 - August 2014

I worked on the Skia benchmarking team, providing tooling for **Skia** rendering engine team. This job involved pipelining the gigabytes of data being produced daily from test bots into a useful visualization for the Skia team. I learned **Go**, and contributed code in **C++**, **Python**, and **Go** for both internal and open source projects.

Notable Projects

- **UCF Lunar Knights** project, electrical/communications/software teams (Martian robotic mining competition)
  - Software team lead Fall 2017-Spring 2018, member since 2015
  - Helped in robot **assembly**, **troubleshooting** and **debugging**
  - Developed software for **robot simulation and testing**, mainly through providing wrappers in **ROS** for **gazebo**
  - Designed **CAN interfacing board** with **high density connectors** to mate with Nvidia's Jetson TX2
  - Led efforts in **robot autonomous navigation**
- Senior design project (mind-controlled wheelchair)
  - Led high-level hardware system design
  - Designed and layed out circuits for all high-level modules using **KiCAD** EDA software
  - Research into **signal processing** for **feature extraction** with respect to applications in **brain-computer interfaces**