

EDUCATION

UNIVERSITY OF CENTRAL FLORIDA

BSEE, ELECTRICAL ENGINEERING

Cummulative GPA: 3.905, Magna Cum Laude

Graduating December 2015

PROFESSIONAL EXPERIENCE

UNIVERSITY OF CENTRAL FLORIDA UNDERGRADUATE RESEARCHER, ORLANDO FL

DECEMBER 2014 - CURRENT

This research experience actually has had so far two major projects. The first phase was focused on Working on a **RAVEN II** medical robot running the **ROS C++** robotics framework. This robot was meant to work as surgery robot, with our task being to augment the controls with BCI-based controls to improve usability. Unfortunately the robot proved hard to use, and we switched over to working in **signal processing** in **Python** of EEG data in general. Our team has been studying **feature extraction** and **SSVEP frequency detection** to hopefully advance the state of the art. We have used **emokit Python** library to extract signals from Emotiv EEG headset, and are continuing research into SSVEP BCI interfaces.

INTERNSHIPS

IBM EXTREME BLUE INTERN, RTP NC

MAY 2015 - AUGUST 2015

Here our team worked on zero knowledge **encryption** for **IBM Connections Cloud**. We were the pioneering efforts at this, 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 and used 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

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

PROJECTS

- **UCF Lunar Knights** project, electrical/communications teams
 - Helped with **wireless communication** with **Beaglebone Black**
 - **UART** communication with **Arduino** to send **PWM** to motor controllers
 - Helped in robot assembly, troubleshooting and debugging
- **IEEE-UCF Hardware Team** for SouthEastCon, motors team
 - Involved in the design and construction of motors system for competition robot
 - Programmed, along with a few others, the **Arduino** powering the robot during competition
- Senior design project
 - **Hardware system design** for all components
 - * Led overall hardware system design
 - * Designed schematics for all components using **KiCAD** EDA software
 - * Converted schematics into PCBs using **KiCAD**
 - Research into **signal processing** for **feature extraction** with respect to applications in **brain-computer interfaces**
 - Some experience with reverse engineering wheelchair **communication protocols**
 - Created and designed laser cut design to create gimbal to control wheelchair joystick
 - Wrote **assembly** for the **MSP430** to test the gimbal
- **Robotics Club, UCF**
 - Worked on Cypress **PSoC chips** for high performance UART
- Studying **asynchronous circuit design**, working on 8-bit asynchronous CPU for fun

SKILLS

- Hobbyist experience with eletronics design and reverse engineering, guitar electronics repair
- 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>