

Education

Johns Hopkins University

MSE: Robotics - Perception & Cognitive Systems

Bachelor of Science - Double Major in Electrical Engineering and Computer Engineering

Cumulative GPA: 3.58 (Dean's List 5 semesters)

Baltimore, MD

Expected May 2019

May 2018

Languages

Advanced: MATLAB, Python, C++

Familiar: Java, Perl, Bash

Beginner: VHDL, Assembly

Technical Skills & Tools

Advanced: EAGLE PCB design, Instrumentation, soldering

Familiar: PyTorch, ROS, Systems architecture

Beginner: 3D printing, Power electronics, Laser cutting

Experience

Galen Robotics

Electrical Engineering Team Leader

Baltimore, MD

May 2017 - present

- Designing microsurgery robots aimed at mass production and improved performance
- Solving challenges including EMI mitigation, redundant sensors and miniaturization
- Previously integrated features include backup battery, internal computer, fly-by-wire solenoid brakes, internal temperature monitoring and integrated tool IO
- Exhibited at the American Academy of Otolaryngology - Head & Neck Surgery Annual Meeting

FactoryFour

Research & Development Team

Baltimore, MD

May 2015 - present

- Designed and implemented scalable distributed architecture for 3D scanner with Raspberry Pis
- Achieved wireless time synchronization (<10ms max offset) between 32 Pis using NTP
- Automated 3D model generation with Agisoft Photoscan API
- Created fault-tolerant program for remote control of RepRap CNC machines via the Internet
- Team selected to receive support from 500 Startups and Refactor Capital

Laboratory for Computational Sensing + Robotics

Lab Manager & Student Researcher

Baltimore, MD

Feb. 2016 - present

- Designed electrical systems for 6-DOF surgical system prototype
- Coded logic and user interface for simultaneous multi-axis control via touchscreen and joystick
- Achieved low-level parallelism in single-core microcontroller using timer-counter registers
- Constructed circuitry for motors and reverse-engineered hydraulics
- Provide electronic interfaces for surgical tools including drills and lasers
- New prototypes constructed as part of Galen Robotics

Electronic Tracking for Earth Movers

Advanced ECE Team Project Member

Baltimore, MD

Sept. 2016 - May 2018

- Developed proof of concept for a mobile tracking system to prevent collisions between heavy machinery and construction workers
- Implemented Sequential Monte Carlo Particle Filter to estimate worker position relative to machinery
- Experimented with software protocols and hardware platforms including networks of RFduinos, BLE Beacons, and iPhone receivers
- Won Best Technology Award and 3rd Place in Category at JHU Business Plan Competition 2018
- Custom hardware currently under development

Applied Physics Laboratory

Advanced Application Scholars Program Intern

Laurel, MD

May 2016 - Aug. 2016

- Wrote driver for lossless communication with realtime wireless sensing platform
- Implemented dead reckoning calculations in C++ from IMU array as outlined in "Foot-mounted inertial navigation made easy" publication from the OpenShoe Project
- Created Java Native Interface for driver integration with existing Java projects
- Modified solar battery charger to change output of buck-boost converter from 12V to 25.2V