

EDUCATION

Carnegie Mellon University • Pittsburgh, PA

GPA 4.0 • Bachelor of Science in Electrical and Computer Engineering; Minor in Physical Computing • May 2019

Fifth Year Scholar: Scholarship to attend classes for one year and develop a community impact project. My project will work towards expanding the making culture at CMU by creating ANVIL, a maker club, and redesigning and developing a maker space on campus.

Relevant course work: 60-223 Intro to Physical Computing (F15) • 18-213 Computer Systems: A Programmer's Perspective (S16) • 48-390 Physical Computing Studio (S16) • 18-349 Real-time Embedded Systems (F16) • 18-220 Electronic Devices and Analog Circuits (F16) • 18-320 Microelectronic Circuits (S17) • 15-410 Operating System Design and Implementation (F17) • 18-540 Rapid Prototyping of Computer Systems (S18)

EXPERIENCE

Senior Capstone Demomaster • Jan-May 2018

- Responsible for organizing and managing demo planning and execution for a full class project.
- Worked with groups specializing in design, mobile app development, databases, and hardware to create a smart shirt that aids people with scoliosis.
- Constructed prototype pressure matrix using smart textiles.

Intel New Technologies Group • May-Aug 2017

- Wrote firmware for sensor-enabled glasses.
- Developed mechatronic systems for ambient projective environments. Designed and fabricated parts using Solidworks and rapid prototyping. Developed and implemented algorithms and software for control of the systems.

Carnegie Mellon CREATE Lab • Jan-May 2015 • Aug 2015-May 2017 • Aug 2017-Present

- Designed and built an internet connected, outdoor air quality monitor using the AlphaSense OPC-N2 particle sensor.
- Wrote firmware for the GigaPan robotic camera mount; added fully customizable panning time-lapse and video features and wrote new motor driver functions in order to achieve desired motion.
- Co-author: "Parallel Calibration of Low Cost Indoor PM2.5 monitors" published at Indoor Air 2016.

iRobot Corporation • June-Aug 2015

- Wrote automated test software for the Ava500 telepresence robot using Java and TestNG.
- Automated manual restart test using Python and ran manual tests on the robots.

Teaching

- Teaching Assistant for 60-223 Intro to Physical Computing (art/technology class) (Fall 2016)
- Teaching Assistant for 49-713 Designing for the Internet of Things (Spring 2017)
- Volunteer instructor for Fun with Robots, a student-taught intro robotics class (January 2015-present)

PROJECT EXPERIENCE (Additional projects at rjpaetz.com)

Light Alarm Clock • Personal • Fully customizable alarm clock that wakes up the user with light and sound to ease getting up in the morning. Implemented with a custom circuit board and hand built wooden case. (July 2016)

bPoLite • Physical Computing Studio • Group project intended to help communities experiencing a high rate of violent crime. Our team designed a community message board that would be a physical presence in the community and could be moderated by the community. Involved web development, Raspberry Pi work, and interaction over SMS. (May 2016)

Sound Bike Computer • Physical Computing Studio • Individual project to build a bike computer that uses sound to recognize wheel rotations in order to measure speed. Final implementation was packaged within an audio cable that plugged into a phone mounted on the handlebars. Wrote an Android app to interpret the microphone data and display the speed. (March 2016)

TECHNICAL SKILLS

Programming Languages • C, Python, Java

Embedded Platforms • AVR (atmega and xmega), ARM (Broadcom BCM2836)

Consumer Hardware Platforms • Arduino, Raspberry Pi, NodeMCU (ESP8266), Particle Photon

Operating Systems • MacOS, Linux, Windows

Other Programs • CadSoft EAGLE, SolidWorks, MATLAB

Fabrication • Sewing, Surface Mount Soldering, Laser Cutting, Book Binding, Basic Machining, Basic Woodworking, Basic Welding (MIG and TIG)

HONORS

Eta Kappa Nu • Electrical and Computer Engineers Honor Society

Tau Beta Pi • Engineering Honor Society

Dean's List • All semesters