

Work

Butterfly Network – Senior Software Engineer

Guilford, CT; May 2018 – August 2022

- Developed complete systems, including custom test frameworks, programs, and computers and hardware fixtures to ensure the effectiveness of MEMS ultrasound transducers, PCBs, and assembled probes at contract manufacturing sites.
- Greatly improved production yield by implementing calibration storage in firmware and our iOS and Android apps, which allows us to correct CMOS and transducer imperfections in software.
- Worked cross-functionally with hardware teams towards these goals, including electrical, mechanical, FPGA, and semiconductor engineers.
- Simplified deployment of test programs to Linux systems and protected proprietary information by implementing their distribution using the AppImage format.
- Added end-to-end testing of imaging, probe configuration, and firmware upgrades to the continuous integration pipeline with a custom software and hardware test harness that integrates iPhones and ultrasound probes.
- Enabled FDA compliance over time by implementing continuous monitoring of probe health with logging in firmware and the iOS and Android apps, which includes generalized device usage, battery statistics, and self-diagnostic tests.

Microsoft – Software Engineer

Redmond, WA; July 2014 – November 2017

- Improved the accessibility of Word, Outlook, and Windows 10 Mail by implementing adjustable text scaling, populating the tree used by screen readers, and fixing issues in high contrast modes.
- Made images more usable by automatically shrinking large images in received emails and providing scaling options for inserted images when composing an email.

Google – Software Engineering Intern

Mountain View, CA; June 2013 – August 2013

- Extended APIs to an internal version control system, providing a unified way to view and manage changelists. These APIs are used to test and search Google's codebase.

Education

Rensselaer Polytechnic Institute

Troy, NY; August 2011 – May 2014

- Bachelor of Science in Computer Science *cum laude*
- Computer Science GPA: 3.72 / 4.0 · Cumulative GPA: 3.56 / 4.0

Projects

/u/alternate-source-bot

January 2018 – October 2021

- Wrote a Reddit bot that mitigated the spread of biased and misleading news articles online by responding to news posts with every related article. The intent was to pop filter bubbles and encourage discussion about what constitutes good coverage.

Noise

January 2017 – May 2018

- Developed a completely peer-to-peer and infrastructure-free messaging protocol and proof-of-concept Android app to enable communication when an Internet connection is unavailable using automatically paired Bluetooth connections in the background.
- The protocol is resilient to adverse conditions by using epidemic routing to ensure eventual message delivery, proof-of-work to mitigate spam, and end-to-end encryption to prevent eavesdropping.

Painting Sound

July 2016

- Drove development of an award-winning proof-of-concept Microsoft HoloLens app that allows the hearing-impaired to visualize sound.
- Prototyped a custom tetrahedral microphone that mounts to and communicates with the HoloLens.
- Implemented signal processing algorithms in C++ to locate sounds in 3D space using this microphone.
- The app uses these sound locations to place visualizations in mixed reality.

Awards

Microsoft, OneWeek Hackathon HoloHack First Place Winner

July 2016

Rensselaer Polytechnic Institute, Dean's List

Fall 2011 – Spring 2014

Skills

Programming Languages: C, C++, Python, Java, Kotlin, Swift, Objective-C

Frameworks: Linux, Windows (Win32 and UWP), macOS, iOS, Android, Qt

Rapid prototyping: CAD in Fusion 360 and SolidWorks, 3D printing, laser cutting

Electronics: PCB debugging and rework, soldering, firmware programming