

Professional Summary

Senior Software Engineer with 8+ years of experience delivering high-impact solutions across software and hardware domains. Skilled in architecting scalable systems, leading projects involving cross-functional teams, and solving complex challenges in resource-constrained environments. Proven ability to take ownership of critical processes and align technical efforts with business goals to drive transformative results.

Work

Hyperfine – Senior Software Engineer

Guilford, CT; March 2024 – Present

- Architected a state synchronization library bridging structured Python objects with a React/TypeScript frontend, enabling real-time, consistent state management between hardware and multiple clients. This eliminated bugs caused by stale data and inconsistent ownership, improving reliability and accelerating the development of a new UI by a full major release cycle.
- Led the development of a Python factory test framework with a React UI, empowering imaging, firmware, and electrical engineers to create automated protocols for programming and testing MRI components at contract manufacturing sites.
- Solved deferred algorithmic issues to improve user experience, including accurate protocol time estimation and optimal image layout.
- Modernized the codebase by replacing a vendored PDF viewer with a new, touch-friendly React-based solution, deleting 150k lines of code while improving usability and maintainability.
- Replaced an unmaintained medical image viewer with Niivue, further reducing technical debt by 40k lines of code while enabling new 3D imaging features.

454 Bio – Software and Electrical Engineering Consultant

Guilford, CT; July 2023 – January 2024

- Developed embedded camera control software in C++ 17 and Python for purpose-built microscope cameras and bare sensors, enabling automated data collection and analysis for DNA sequencing.
- Solved critical system limitations by reverse engineering undocumented vertical sync functionality, enabling precise camera control and unlocking new sequencing capabilities.
- Integrated hardware-software solutions, including synchronized LED flashes, PID temperature control, automatic optical filter selection, and focus assistance, addressing specific needs from biochemical engineers.

Butterfly Network – Senior Software Engineer

Guilford, CT; May 2018 – August 2022

- Developed factory test frameworks and systems in C++ 17 and Python to ensure the quality of MEMS ultrasound transducers, PCBs, and assembled probes.
- Implemented a calibration storage system to dynamically adapt imaging algorithms to hardware variances, improving imaging quality and production efficiency. Designed firmware APIs for data retrieval, updated the iOS and Android apps to integrate the data, and created factory tests to characterize probe variances and write calibration to the hardware.
- Optimized the ASIC validation pipeline, reducing validation time from 10 minutes to 2 minutes per chip, enabling a 5x increase in throughput and significantly improving manufacturing efficiency.
- Built a hardware-software test harness for continuous integration, integrating iPhones and ultrasound probes to automate end-to-end testing of imaging and firmware updates.
- Ensured FDA compliance by implementing monitoring and logging systems for probes across firmware and mobile platforms, ensuring long-term reliability.

Work (continued)

Microsoft – Software Engineer

Redmond, WA; July 2014 – November 2017

- Improved accessibility across Word, Outlook, and Windows 10 Mail by implementing text scaling, screen reader support, and high contrast mode fixes.
- Enhanced image usability by implementing automatic resizing for large email attachments and providing scaling options for inserted images when composing an email.
- Temporarily acted as release manager for Microsoft Word, overseeing release branches, backporting bug fixes, and ensuring smooth, stable product rollouts for millions of users.

Google – Software Engineering Intern

Mountain View, CA; June 2013 – August 2013

- Extended internal version control APIs, enabling seamless management and testing of changelists across Google's codebase.

Education

Rensselaer Polytechnic Institute

Troy, NY; August 2011 – May 2014

- Bachelor of Science in Computer Science *cum laude* with a minor in Economics

Projects

/u/alternate-source-bot

January 2018 – October 2021

- Developed a Reddit bot in Python that analyzed and responded to news posts, providing unbiased context to mitigate filter bubbles and encourage informed discussion.

Noise

January 2017 – May 2018

- Developed a peer-to-peer messaging protocol and Android app for offline communication by using automatic Bluetooth connections, prioritized epidemic routing, proof-of-work spam prevention, and end-to-end encryption.

Painting Sound

July 2016

- Drove development of a proof-of-concept AR app for Microsoft HoloLens that visualizes sound for the hearing-impaired.
- Served as the sole full-time engineer, leading a team of interns to design and implement the solution.
- Won first place in the HoloHack category at the 2016 Microsoft OneWeek Hackathon.
- 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.

Skills

Programming languages: C, C++, Python, TypeScript, JavaScript, Java, Swift

Frameworks: React, Linux, embedded systems, iOS, Android, Qt

Developer tools: Continuous integration (Buildkite, GitHub Actions), deployment automation

Embedded: Hardware-software integration, low-power design, Bluetooth Low Energy (BLE)

Rapid prototyping: CAD (Fusion 360), 3D printing, laser cutting

Electronics: Digital circuits, PCB debugging and rework, SMD soldering, firmware programming