

jobs

SuperFocus.ai Senior Software Engineer

July 2023 to present

tech: Elm, Rust, Python, LLMs, Voice AI, GRPC, Axum, TypeScript, Next.js, React, Postgres, Websockets, Tailwind, Sqlx

SuperFocus makes superhuman AI customer service agents, by solving the LLM hallucination problem, ensuring reliability and accuracy

- Consolidated ~10 independent AI codebases into a single database-configurable application, streamlining the deployment and development of AI agents.
- Led the research and prototyping of a system that allowed dynamic rearrangement of core AI components, optimizing code reuse and scalability.
- Acted as a liaison between management and the engineering team, proactively coordinating the efforts of individual developers. Fostering trust and ensuring project clarity through communication and understanding.

StructionSite Lead Software Engineer

May 2021 to July 2023, acquired by DroneDeploy 🎉

tech: Rust, Elm, WASM, Bevy, GraphQL, React, Warp, Postgres, Tailwind, Sqlx

StructionSite served the largest construction companies by providing them with ML powered weekly "google street views" of construction sites so that project managers can remotely track material progress.

- Actively contributed to the development of a data-intensive construction project tracking system. Along with my team, we utilized techniques such as asynchronous task queues, event sourcing, and the architecture of a video game engine.
- Ran our weekly sprint meetings, collaborating closely with the product and design teams, and worked closely with engineers to ensure our team had a good mutual understanding of the project, and that we stayed on track.

MackeyRMS Principal Software Engineer

June 2022 to April 2021, merged with InsiderScore 🎉

tech: Elm, Haskell, JavaScript, Angular, Servant, Web Components

MackeyRMS is a tool for investors to collect, retrieve, and discuss their market research.

- Led team through delicate overhaul of entire frontend, both in terms of design and code architecture.

Humio Senior Software Engineer

November 2018 to April 2020, acquired by CrowdStrike 🎉

tech: Elm, Scala, GraphQL, Highcharts, Web Components

Humio provides high performance data querying to large enterprise customers. On a 25 node system, Humio can query 2.2m events per second and ingest 100TB of data a day.

- Engineered through small iterative pieces, an advanced infinite scroll system, for time-based and unbounded data by dynamically measuring irregularly sized DOM elements to accurately adjust scroll position. This system was bi-directional, and could focus on specific elements despite a continuous high volume flow of data.
- Set the standards for code reviews by consistently providing clear and detailed pull requests, that were recognized by leadership, elevating our code review process.
- Designed and implemented broad architecture of large frontend code base, through research, discussion, and experimentation.

Shore Senior Software Engineer

August 2017 to November 2018

tech: **Elm, TypeScript, React, Algolia, Web Components**

Shore provides scheduling and appointment software for small businesses and their customers.

- Took full ownership of implementing core frontend application for customers to edit and create appointments.
- Maintained and fixed bugs for a large calendar user interface and skeleton "App Shell" architecture, that loaded and ran smaller frontend applications in designated slots in the page layout.
- Mentored fellow engineers in Elm programming, guiding team members towards adopting best practices through code review, pairing sessions, and hosting Elm workshops.

LocalMotors

Lab Manager

February 2015 to September 2015

tech: **React, JavaScript, CAD, CNC Water Jet, Electronics, FireBase**

Local Motors was an experimental car manufacturer that pioneered crowd sourced engineering and made the world's first 3D printed car

- Taught regular classes on CNC milling and 3D printing, enabling members from the general public to visit and use our machinery.
- Leveraged my years of makerspace experience to enhance lab operations and foster a creative productive environment.
- Ran tech events almost nightly, building a network of makers and engineers.

Chadtech

Programming Freelancer

October 2013 to July 2017

tech: **Elm, React, Hardware, Go, C++**

Consultancy for various clients, including programming, hardware, and graphic design.

- For Carvana, a website for buying and selling used cars, I wrote high performance audio processing code as part of a larger project of generating immersive online video car reports.
- For an early stage Fintech startup, I made a authenticated frontend application with custom RSA encryption that depicts stock and investment options in a network graph.

projects

Roc

tech: **Rust, Zig, LLVM**

During my weekends from 2019 to 2021, I contributed to the Roc programming language.

- wrote a large majority of the Roc code formatter, which takes an abstract syntax tree, and converts it into textual code.
- Wrote the first implementation of the core List functions compilation down to LLVM machine code.
- Designed Roc's HashMaps.
- Made the code that generates html files rendering Roc module documentation.

Radler

tech: **Haskell, Elm, Electron**

I made Radler myself to make music with. The user interface is for writing a musical score, and the backend generates audio of the music and efficiently updates the audio as the user makes changes to the musical score.

CtPaint

tech: **Elm, Html Canvas, Node, AWS Lambda**

In 2016 I ran an (unsuccessful) kickstarter campaign for online pixel art software. I made the software anyway, with not only the complete functionality of drawing images, but also connectivity features to import any image from the web, and tiered access granting bonus features like uploading images.

elm-community/list-extra

tech: **Elm**
List.Extra is one of the most downloaded Elm packages. It provides helper functions for working with lists. Most of my impact on this project is not so much writing code, but refereeing submissions from others. I make sure every submission is truly useful, and implemented in a performant way. Every major version update risks disrupting the wider Elm community, and every contribution risks confusing developers if not carefully thought through.

Orbiter13
tech: **Elm, CoffeeScript, Express**
A difficult videogame based on orbital mechanics.

elm-canvas
tech: **Elm, JavaScript, Html Canvas**
To make CtPaint (listed above), I needed to use HTML Canvas. Elm Canvas is a library that brings the canvas HTML element into Elm, and provides an api for drawing on HTML canvases through JavaScript FFI. The main challenge was how to use the mutable canvas element in an immutable functional programming language.

Himesama
tech: **CoffeeScript**
A reimplementatation of React from scratch with my own attempt at state management. Incidentally, Himesama has a much smaller bundle size than React, which is a significant performance bottleneck for many large React projects.

Solafide Forbes Nash Machine
tech: **Circuitry, Laser Cutting**
To explore my interest in unusual music tuning systems, I designed and built 3 audio synthesizers. With help, I designed a sine wave oscillator circuit, etched 48 of these oscillators onto circuit boards, and then put them into wooden enclosures I designed and laser cut.

- talks
- "Hash Maps" 2022
How Hashmaps work, as well as summarizing what I learned working on Roc's HashMap
 - "Analytics and Architecture in Elm" at Elm Online Meetup 2021
In this talk I detail how I do frontend analytics in Elm, utilizing some tricks in Elm's type system to remind developers where they need to make changes.
 - "What has excited me about Audio Synthesis Theory" at Elm Europe 2019
I demonstrate how to synthesize various instrument sounds in terms of the theories of additive synthesis and granular synthesis.
 - "Using Elm at Shore" at Munich Frontend 2018
Shore's frontend lead engineer and I summarized what our experience has been with Elm.
 - "How React works under the hood" at Desert Code Camp 2016
My audience and I make React from scratch through incremental and small steps.
 - "CtPaint" at QueensJs 2016
 - "Lightning Talk on Audio Synthesizer" at 29C3 2012

- awards
- Winner of jury prize at Arduino Wearables hackathon 2014
 - Winner of jury prize at HTML5 Game hackathon 2012

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|----------------------------------|-------------------------------------|
| education | volunteering |
| Arizona State University | HeatSync Labs, 501(c)(3) non-profit |
| Bachelor of Science in Economics | Treasurer and active member |
| Graduated 2013 | 2012 to 2014 |