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EXPERIENCE

Climatebase Fellowship - Cohort 4

September 2023 - December 2023

- The fellowship is a community-focused climate education program and career accelerator.
- I facilitated study groups on technology and research, emphasizing climate modeling, battery technology, and building decarbonization

SpaceX, Los Angeles — *Lead Software Engineer*

July 2016 - July 2023

I worked on the Falcon, Dragon, and Starship programs.

Starship Displays — *Lead Software Engineer*

April 2022 - July 2023

- On-console operator for Starship Orbital Test Flight 1 - the largest and most powerful rocket ever flown - my displays can be seen on the screens in this video and this tweet.
- Designed Starship Crew Displays onboard architecture and presented it to NASA as part of a $57M payment milestone..
- Built an app for evaluating different tablets performance under radiation & vacuum conditions.
- Created an IDE-like visualizer for ControlCode, an in-house programming language, using Monaco.
- Using Three.js, I wrote a new WebGL-based rendering engine for our time-series plotting tool.
- Using kubernetes, created a read-only version of the displays to scale to 10k internal viewers.

Starship - Stage 0 Software — *Lead Software Engineer*

March 2021- April 2022

- Stepped up to lead the team responsible for “All the mission-critical software on the ground”.
- Made multiple hires & internal transfers to build up team size to 10 engineers.
- Began development of orbital launch tower, using Siemens PLCs for kinematics integrated with traditional pad software.
- Developed integration of orbital pad infrastructure with worldwide ground station network.
- Using kubernetes and playwright, created a performance testing framework to preemptively find and prevent problems when under heavy load.

Starship - Stage 0 Software — *Software Engineer II*

January 2020 - March 2021

- Key members of the hardware backend team departed, so I needed to diversify my skills: I learned C++ to contribute features to the rocket runtime, including a new batch commanding mode.

EDUCATION

Brown University

Graduated May 2016

B.A. Computer Science

SKILLS

- Expert knowledge of web technologies.
- Product management and leadership, with a strong customer focus.
- People management and mentoring.
- Unique eye for ergonomics and simplicity.
- Quick, cross-disciplinary learning.

KEYWORDS

Javascript, Typescript, Python, C++, Node.js, React, Lit, Three.js, Cesium, Real-time, Websockets, WebGL, Redux, Reselect, Monaco, Docker, Postgres, Supervisor, Alembic, Flask, Embedded Systems, Playwright, Puppeteer, Visual Snapshot Testing, Kubernetes, TensorFlow, Git, Java, Ansible, Web Test Runner, Jasmine, PWA

- Built Linux-based tooling for managing software on NI DAQ chassis, allowing us to cut Windows out of the loop.
- Worked with 3rd-party vendors, network administrators, and electrical engineers to investigate numerous issues with field-deployed hardware.
- Using Docker, created a white-label version of the user interface which could be used by other vehicle programs at SpaceX.
- Created framework to monitor and fix JS memory leaks.

Starship - Stage 0 Software — *Software Engineer II*

December 2018 - December 2019

- Created a new ground software system for Starship. I led the development of a browser-based user interface for realtime visualization and control of Starship and the launch pad.
- Built a web-based live plotting tool for visualization of high-rate time-series data coming off the pad and rocket.
- Created alerting system for notifying operators of urgent issues.
- Led frontend squad through shipping initial MVP – one of two engineers sent to Boca Chica, TX for initial activation of the system.
- Supported Hopper campaign in Boca Chica.

Dragon Crew Displays

October 2018 - November 2019

- Developed error handling and reporting subsystems (FDIR) to catch bugs prior to and during flight.
- Built tooling for recurring audits of 3rd-party software.
- Developed custom visualizations based on the Crew Displays for our Emmy Award-winning broadcast of the Demo-1 flight.

Launch App — *Software Engineer*

February 2018 - October 2018

- Led a small strike team assigned to build a futuristic launch overview under the personal direction of Elon Musk. I carved out an identity and roadmap for the product, created our operational processes, and recruited stakeholders across the company.
- While Elon was the initial user of this app, we scaled it to the entire company - it is now used on the public webcast, as a deliverable to the FAA, and in the contract of SpaceX launch customers as part of their launch-day experience.
- I implemented live video with picture-in-picture and 3D visualizations of the rocket's flight with Cesium.js

Autotest — *Software Engineer*

July 2016 - Feb 2018

- Founding member of the Autotest project, the universal python ecosystem for testing & production at SpaceX.
- I embedded on customer teams to develop features for testing fully assembled vehicles, HITL subassemblies, and avionics
- I created web-based mobile and desktop interfaces for test execution and monitoring, the central test results database, and core python libraries for recording test results.

OPEN SOURCE PROJECTS

Flexion Friend

2023

Mobile-first PWA which uses computer vision (TensorFlow) to measure and track knee flexion recovery.

Reselect Tools

2018

Developer tools for working with the Reselect library. (Chrome Extension)

SPACEX SIDE PROJECTS

Fairing Recovery UI

Sept 2018 - Nov 2019

I created an app for visualizing fairing recovery – catching fairings falling from space on a boat with a net. This proved useful and eventually we legitimized it and began using it to control the boats.

Hipster Prism

May 2017

Created the first web-based real-time telemetry visualizer at SpaceX - still in use today!

Debris DB

September 2016

After the AMOS-6 explosion, worked with 2 other engineers to build DebrisDB - an app to catalog and track rocket debris. Initial version went live less than 48 hours after the explosion.