

Fred Durham

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📁 Experience

Software Engineer [🔗](#)

Umbra - umbra-collab.com

Sep 2023 – present

Umbra is an open-source, real time collaborative code execution platform with support for multiple programming languages.

- Engineered and developed the backend of Umbra, a service-oriented architecture comprising a web/API server, real-time collaboration service, and standalone, secure code evaluation (**Node.js, Express, AWS EC2, Cloudflare Workers, Durable Objects, R2 Storage, Edge network**)
- Spearheaded the design and implementation of a value-add feature facilitating user storage of 'code snippets' in an individualized 'Code Library,' crafting schema and data layer; managed relational database on AWS RDS server (**Postgres, SQL, AWS RDS**)
- Engineered and deployed real-time, multiplayer code-editing feature using CRDT data structures with Yjs and Codemirror, enabling conflict resolution and consistent state synchronization across users in a collaborative coding environment
- Crafted a user-centric frontend for <https://umbra-collab.com> [🔗](#), prominently featuring a central code editor and a streamlined navigation system (**Typescript, React, ChakraUI**)
- Formulated and executed user login and authentication mechanisms utilizing AWS Cognito, granting users secure access to private code libraries; improved user experience and facilitated seamless data access for increased user satisfaction
- Built a RESTful API to support the user authentication, code library, and code execution services (**TypeScript, Node.js, Express, REST**)
- Containerized server code and automated the deployment process for codebase updates which reduced a ~20 step process to a single push command (**Docker, GitHub Actions**)
- Authored an in-depth case study, analyzing Umbra's use cases, problem domain, system design, and engineering decisions. (<https://umbra-collab.net> [🔗](#))
- Collaborated with a remote team of four engineers across three time zones, employing agile methodologies and practices such as daily standups, pair programming, and code reviews

Open-Source Projects

May 2021 – Dec 2023

Developed and authored open-source and personal web applications including:

- *ReqBin* - A web app for inspecting and collecting webhooks (**JS, React, Node.js, Express, PostgreSQL, MongoDB**)
- *Weather CLI* - Command line program that fetches local weather data (**JavaScript, Bash, Linux**)
- *Obsidian Timer Plugin* - A time tracking plugin for the Obsidian note taking app (**JavaScript**)

Federal Express, DoT Certified Courier

Mar 2010 – Sep 2021

Managed time-sensitive, secure deliveries as a DOT Certified Courier for FedEx Express, meeting monthly 100% on-time delivery metrics; applied route optimization and customer service skills to ensure efficient and reliable service.

📁 Skills

Front End

TypeScript, JavaScript (ES6+), React, ChakraUI, Handlebars, Pug, HTML, CSS

Back End

Node.js, Express, Ruby, Sinatra, Go, PostgreSQL, MongoDB, REST APIs, Python

Cloud

AWS, DigitalOcean, CloudFlare, Render, Heroku

Other

Git, Github, Docker, Websockets, HTTP, Yjs, Codemirror, Bash, Nginx, Jest

🎓 Education

Launch School

May 2021 – Dec 2023

A multi-year, mastery based curriculum that teaches web development and software engineering from first principles.