

# Avery Burke

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## EXPERIENCE

### Recurse Center, Participant — May 2023 - Sep 2023

#### Learned C

- Completed 90% of the exercises in Kernighan and Ritchie's *The C Programming Language*.
- Contributing to an ongoing project to write a [DNS resolver in C](#).

#### SICP

- Completed 75% of the exercises in Sussman and Abelson's *Structure and Interpretation of Computer Programs*.

#### Learned WebGPU

- Built a [WebGPU-based Game of Life](#) in React, enabling users to change board size (256 cells to 1M+), simulation speed, and cell states via intuitive interactions. [Review the code](#).
- Wrote an algorithm for generating a Voronoi mesh of 1000+ cells, over a convex polygon, using compute shaders. [Review the code](#).

### First Principles Advisory Group, Technical Cofounder of TrialTrace — Dec 2018 - May 2023

#### Digital Transformation of First Principles Advisory Group

- Founded the TrialTrace project, within First Principles [FP], along with three other founders, to create a data visualization and management web app for biotech analysts.
- Led sprints, participated in sprint planning, managed a team of developers and mentored an FP employee to become a contributing developer to the Trail Trace project.

#### Web Application Design and Development

- Architected backend and frontend state management and designed UI.
- Designed and implemented user authorization hierarchy, allowing user admins to delegate sharing and authoring privileges to team members.
- Implemented backend in Rails and 3LO with Google for seamless data syncing from Google Sheets; streamlining visualization and data analysis for users.
- Gained expertise in TypeScript, React and d3.js to implement frontend; allowing users to generate pixel-perfect visualizations and reducing boardroom presentation prep time by 2 hours.

#### Team Leadership

- Built 90% of the app, as the sole developer, focusing on prototyping, testing, deploying and responding to user needs.
- Managed a team, as lead developer, and coordinated development pipeline and sprint planning with senior management; accelerating response time to ticket items by 30% and mentoring teammates.

#### Optimization

- Learned WebGL to optimize a critical algorithm, resulting in a 10x reduction in computation time for processing large data sets.
- Engineered a custom canvas target for d3.js, enabling smooth animation with minimal latency for up to 500 data points, improving user experience and enhancing data visualization capabilities.

[Trial Trace Demo](#)

## PROJECTS

[Pie](#): Interactive and customizable data visualization of users in an imaginary database. [Review the code](#).

## EDUCATION

**San Jose State University— San Jose, CA**

*Bachelor of Arts, Philosophy, May 2008*

**San Jose State University— San Jose, CA**

*Bachelor of Arts, Mathematics, May 2008*