

Aaron Wu

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EDUCATION

University of California, San Diego

M.S. Computer Science, GPA: 3.56/4

San Diego, CA

Expected Grad June 2026

University of California, Santa Cruz

B.S. Computer Science, GPA: 3.90/4

Santa Cruz, CA

Sept 2020 – June 2024

EXPERIENCE

Full Stack Developer

Mar 2023 – Sept 2024

jLab in Smart Sensing, UCSC

Santa Cruz, CA

- Led the development of data monitoring platform from the ground up that logs power data from a network of microbial voltage sensors, allowing researchers to analyze their custom sensors in real time
- Designed and built a REST API with Flask to log voltage, current, and temperature sensor data into a PostgreSQL database, modeling the data to simplify analysis for researchers
- Constructed an interactive data dashboard with live graphs using React, featuring filter and zoom capabilities, enabling researchers to showcase live sensor demos at conferences
- Leveraged JWT refresh tokens to manage the account lifecycle and fortify API endpoint security, enhancing overall system authentication and authorization
- Developed support for simultaneous large CSV file exports using Redis and Celery for distributed task processing, improving scalability and efficiency
- Integrated CI/CD pipeline using GitHub Actions and Docker to automate testing (unit, integration, coverage), API deployment on AWS ECS and EC2, and web client deployment on AWS CloudFront

Undergraduate Research Fellow

June 2022 – June 2024

Tech4Good, UCSC

Santa Cruz, CA

- Led the development interview transcript annotating web application used by 100+ students in a business strategy course, helping students collaboratively learn qualitative analysis
- Created the user-interface components, using Firebase, Angular, NgRx, RxJs, Figma, to generate and deliver crowdsourced homework feedback to students
- Engineered a system facilitating collaboration of 100+ students' perspectives on data using implicit voting
- Created an admin dashboard for use by class instructors to manage homework assignments and project teams
- Introduced feedback system for students to iterate on their work and evaluated platform with usability study
- Improved Firestore database schema structure to optimize page loads, reduce reads by 40%, speeding up application

PROJECTS

jsSQL | *JavaScript*

github.com/aaron-wu1/jsSQL

- Created a npm library for a file-based SQL database engine supporting SQLite queries
- Added support for query types including selects, joins, aggregations, and filters
- Implemented B+ tree indexing to speed up query performance

Memory Profiler | *TypeScript, Rust*

github.com/aaron-wu1/Pulse

- Built a macOS memory profiling tool inspired by Activity Monitor and designed to be more intuitive
- Implemented a Rust backend to parse kernel virtual memory statistics and parameters for memory usage data
- Constructed a TypeScript frontend to display real-time process and memory statistics in a sortable table

PantryPal | *Python, Pandas, NLTK, Flask*

github.com/PantryPal-1/pantry-recommender

- Developed a web app that takes list of ingredients and recommends recipes to cook, aiming to reduce food waste
- Engineered a machine learning pipeline using NLTK, TF-IDF and cosine similarity to generate recipe suggestions
- Scraped and cleaned recipe data from Allrecipes and Jamie Oliver using NLTK for input to the ML pipeline

TECHNICAL SKILLS

Languages: Python, JavaScript, TypeScript, Rust, Go, C, SQL, HTML, CSS

Frameworks & Libraries: React, Angular, Next.js, Flask, RxJS, Redux, Vitest, pytest

Databases: PostgreSQL, Firestore, Redis

Cloud: Docker, Kubernetes, Amazon Web Services (AWS)