David Glover

Santa Cruz, CA

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Education

University of California, Santa Cruz, Santa Cruz, CA **B.S. Computer Science (Expected March 2027)**
GPA: 3.7/4.0 **Relevant Coursework:** Data Structures & Algorithms, Computer Architecture, Artificial Intelligence, Machine Learning, Computer System Design, Software Engineering

Work Experience

Research Pathways Fellow, JLab Smart Sensing June 2026 - March 2027

- Designed and executed machine learning experiments for RF-based soil sensing across four field and laboratory datasets, including leave-one-site-out validation, feature ablation, and ground-truth comparisons.
- Built reusable ML evaluation pipelines to train and compare regression models across handcrafted, PCA, kernel PCA, autoencoder, and CNN-based feature representations.
- Built and documented an end-to-end **radar signal-processing pipeline** that transforms raw radar captures into soil permittivity estimates, enabling reproducible experimentation by other researchers.
- Contributed experimental methodology, machine learning evaluation, and analysis to a research paper on non-invasive soil compaction sensing using a commodity radar.
- Built a multithreaded Python data-collection tool to concurrently stream and log measurements from three sensor systems into structured experimental datasets.
- Developed curriculum and onboarding materials for *Introduction to Research for Engineers*, supporting students entering engineering research in Fall 2026 and Winter 2027.

Undergraduate Researcher, JLab Smart Sensing January 2026 - Present

- Led development of **NodeFlow**, a full-stack irrigation monitoring and control platform used across four farms, enabling farmers to visualize real-time sensor data, manage hardware, and automate irrigation workflows.
- Designed REST APIs and backend services for sensor ingestion, hardware management, device grouping, authentication, and retrieval of historical sensor data.
- Built an automated irrigation engine that evaluates real-time sensor measurements against configurable thresholds and controls grouped solenoids with support for manual overrides.
- Implemented real-time sensor updates with Socket.IO and developed simulated sensor and solenoid servies for end-to-end testing without physical hardware.
- Strengthened application reliability through Alembic database migrations, frontend and backend test suites, GitHub Actions CI/CD, and containerized AWS deployment.

Technical Projects

ArrowBerry — React Native, Expo, Supabase, Gemini, Jest March 2026 – June 2026

- Developed a full-stack mobile application that converts grocery receipts into structured pantry inventories and recommends recipes based on available ingredients and spoilage priority.
- Designed the Supabase relational schema and authentication workflow to support persistent, user-specific pantry, ingredient, and recipe data.
- Integrated Gemini-based receipt image processing to extract items and automatically populate structured pantry records.
- Built automated recipe scraping and ingredient-parsing pipelines that normalized unstructured recipe data for storage and recommendation workflows.

Custom HTTP Server — C, POSIX Sockets, Multi-threading, Systems Programming November 2025 - December 2025

- Built an HTTP/1.0 server in C using POSIX sockets, supporting concurrent connections and static file serving.
- Implemented an HTTP request parser with header parsing, URI validation, Content-Length support, and input validation.
- Built a multithreaded request architecture for concurrent clients and validated memory safety using Valgrind.

Skills

Languages	Python, C, C++, Java, JavaScript, SQL
Frameworks	React, React Native, FastAPI, Flask, Expo, Material UI
Databases	PostgreSQL, Supabase, MongoDB
Tools / Platforms	Git, Docker, GitHub Actions, Linux, AWS, Alembic, Jest
Concepts	REST APIs, CI/CD, Unit Testing, Multi-threading, Networking, Database Design