

Malco Salcedo

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EDUCATION

University of California, Santa Cruz

Bachelor of Science in Computer Science

Santa Cruz, CA

Graduated June 2026

- **Relevant Coursework:** Data Structures & Algorithms, Computer Systems & C Programming, Parallel & Concurrent Programming, Computer Architecture, Machine Learning, Software Engineering, Analysis of Algorithms

EXPERIENCE

DAWLab

Software Engineering Intern

Santa Cruz, CA

January 2026 – Present

- Worked as a developer on a **4-person** team building an Electron and React/TypeScript desktop app that adds Git-style version control, including file hashing, content-addressable storage, branching, and history, to **Logic Pro, Ableton, FL Studio, and Pro Tools** projects, and deployed a beta to the **UCSC Music Department**.
- Built the backend cloud infrastructure with Supabase for auth and Postgres, FastAPI for the service layer, and S3/MinIO for storage across separate local, staging, and production environments, and integrated Sentry for monitoring.
- Defined the product roadmap and UX flows from real producer pain points, validating designs with early users and covering core logic with a Vitest test suite.
- Currently redesigning the storage layer into a pluggable architecture supporting local and Google Drive backends, backed by a persistent, retry-safe job queue, to remove the hosted-backend dependency for open-source distribution.

Blueprint at UCSC, Technology for Nonprofits

Software Developer

Santa Cruz, CA

October 2023 – June 2026

- Delivered **2 production applications** for nonprofit clients over **2.5 years**, working in agile sprints with bi-weekly stakeholder demos.
- **YFIQB:** Built a career-matching algorithm using student interest profiles and regional labor-market data to generate personalized recommendations, designed to scale across YFIQB's countywide programming that reaches **1,900+ students annually**.
- **United Way:** Built a public resource-access portal linked to the **211** program, giving residents searchable access to community services; designed to support 211's **6,600+** annual resident service requests.

PROJECTS

Wildfire Risk Prediction Model | *Python, scikit-learn, Flask, React*

October 2025

- Trained a binary classification model on a **105,000-sample** geospatial dataset, achieving **90.2% accuracy** and **84.3% recall**.
- Engineered **16 features** from NASA satellite and sensor data, including NDVI, evapotranspiration, precipitation deficit, soil moisture proxies, and land surface temperature.
- Tuned a cost-sensitive classifier using spatial covariates such as terrain slope, road distance, and population density to minimize false negatives.
- Deployed a visual decision-support interface with a live geospatial risk map and auto-generated operational reports.

Concurrent Barrier Synchronization | *C++, POSIX Threads, x86 Atomics*

March 2026

- Implemented and benchmarked three multithreaded barrier strategies for a parallel array-blur workload, spanning spawn/join, sense-reversing, and an optimized sense-reversing barrier with relaxed peeking and yielding, measuring throughput at 1x, Nx, and 2Nx core counts.
- Reproduced x86 TSO weak-ordering behavior via the store-buffering litmus test using relaxed atomics across **64K+ trials**, then eliminated it by strengthening to sequentially consistent memory order.
- Implemented Dekker's mutual-exclusion algorithm under three memory models: relaxed, sequentially consistent, and a TSO-fixed version using explicit **mfence** placement, then verified correctness with ThreadSanitizer.

TECHNICAL SKILLS

Languages: Python, JavaScript/TypeScript, C++, SQL, HTML/CSS

ML & Data: PyTorch, scikit-learn, TensorFlow, pandas, NumPy, Feature Engineering, Geospatial Analysis

Systems & Concurrency: POSIX Threads, C++ Atomics, Memory Models, ThreadSanitizer, Parallel Programming

Frameworks, Tools & Cloud: React, Node.js, Electron, Flask, FastAPI, Supabase, AWS S3 / MinIO, Docker, Vitest, Git

Spoken Languages: English, Spanish