

JOSEPH PERRELLO

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Software Engineer · AI Systems & Infrastructure

AI-focused software engineer working across backend systems, LLM evaluation, retrieval, and protocol design. Specializing in Python, Go, TypeScript, and SQL.

SKILLS

Languages: Python, Go, TypeScript, SQL, Rust (also Lua, Shell)

AI / ML: LLM evaluation, prompt engineering, agent architectures, retrieval, OpenAI / Anthropic / Google / OpenRouter APIs

Backend & Infrastructure: Docker, FastAPI, Node.js, PostgreSQL, REST APIs, SSE streaming

Systems & Research: Protocol design, mDNS/DNS-SD, cognitive walkthrough, STRIDE threat modeling, technical writing

WORK EXPERIENCE

UNIVERSITY OF CALIFORNIA, SANTA CRUZ

SANTA CRUZ, CALIFORNIA

TEACHING ASSISTANT, DATABASE SYSTEMS

JANUARY 2025 - JANUARY 2026

- Led weekly labs on **SQL, PostgreSQL, and Docker for 161 students**; authored the study materials used through midterms and finals.
- In anonymous evaluations, **87.5% rated assignment help and 82.5% rated concept explanation as "Very Frequently"** delivered.

ELEGANT BAY DESIGN

CONCORD, CALIFORNIA

LOGISTICS MANAGER

JANUARY 2024 - APRIL 2026

- **Managed operational logistics and scheduling workflows** for a fast-paced Bay Area staging company.
- Coordinated operational logistics, scheduling systems, and technical workflow improvements at a high pace.
- Identified and **resolved operational bottlenecks to improve scheduling efficiency**.

ID TECH CAMPS AT STANFORD UNIVERSITY

STANFORD, CALIFORNIA

IN-PERSON INSTRUCTOR

JUNE 2025 - AUGUST 2025

- **Taught Python, ML, and Unity to students** aged 10-16 in groups of about eight; designed curriculum each student could ship the same day.
- Held responsibility for the safety of minors on campus; CPR/First Aid certification, and ACA training.

COSMO BY FILISIA

LONDON METROPOLITAN UNIVERSITY ACCELERATOR

SOFTWARE ENGINEER INTERN

JULY 2023 - AUGUST 2023

- Redesigned the analytics layer of a mobile app used by educators and therapists, **writing modular Python that improved performance**.
- **Worked Agile with a London-based engineering team** across the internship.

CALIFORNIA STATE UNIVERSITY, STANISLAUS

TURLOCK, CALIFORNIA

LEARNING SERVICES STUDENT ASSISTANT

AUGUST 2022 - AUGUST 2024

- Provided on-campus tech support for faculty for two years; troubleshoot A/V mid-class and deployed new classroom technology as it rolled out.
- **Diagnosed unfamiliar systems under time pressure** with a class waiting, translating technical issues for non-technical users.

PROJECTS

SATURN: MS THESIS

SEPTEMBER 2025 - APRIL 2026

- **Designed a zero-configuration mDNS protocol** that lets AI services advertise themselves on a network, removing manual endpoint setup. Implemented in Go, Python, and TypeScript.
- **Cut AI service setup complexity by up to 94%** in a structured walkthrough; reduced credential exposure from indefinite to minutes via ephemeral key rotation.
- **Proved interoperability across seven client implementations** in Go, Python, TypeScript, Rust, and Lua against four mDNS libraries; MS thesis accepted for open-access release on ProQuest.

LLM AGENT EVALUATION FRAMEWORK

RESEARCH TEAM LEADER

EXTENSION OF BAHAR BATENI AND JIM WHITEHEAD, "LANGUAGE DRIVEN PLAY" (FDG '24) 2025

- **Built a multi-provider eval harness in Python** benchmarking six agent architectures (RCoT, CoT, MCTS, backtracking, zero-shot, random) across 125+ game simulations.

**ORACLE: RETRIEVAL SYSTEM FOR AI-THAT-WORKS PODCAST OPEN-SOURCE CONTRIBUTOR
PYTHON, BM25, RECIPROCAL RANK FUSION, CLAUDE CODE SKILL 2026**

- **Shipped a RAG system** for the ai-that-works podcast repo, letting listeners query transcripts in natural language with timestamped answers.
- **Built Reciprocal Rank Fusion across four sources** (metadata, transcripts, code, tags) with BM25 and a lightweight reranker; packaged as a Claude Code skill.

EDUCATION

**UNIVERSITY OF CALIFORNIA, SANTA CRUZ
MASTER OF COMPUTER SCIENCE AND ENGINEERING**

**SANTA CRUZ, CALIFORNIA
SEPTEMBER 2024 - MARCH 2026**

GPA: 3.92 · Advisor: Adam Smith

Thesis: Saturn - Zero-Configuration Service Discovery for AI Endpoints (escholarship.org/uc/item/74r4d4c5)

Coursework: Game AI (LLM agents, MCTS), Database Systems, Network Security, Teaching with Generative AI

CALIFORNIA STATE UNIVERSITY, STANISLAUS

TURLOCK, CALIFORNIA

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

GRADUATED 2024

Honors: Graduated with departmental honors; ASPIRE undergraduate research program