TIM KRAEMER

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EDUCATION

University of California, San Diego, Computer Science & Engineering, M.S. **Expected June 2026**

University of California, Santa Cruz, Computer Engineering, B.S. - GPA: 3.90 **July 2020 - June 2024**
Dean's Honor List, Tau Beta Pi Engineering Honors Society

SKILLS

Programming Languages	Python, Javascript, C, C++, Swift, Verilog, SQL, HTML, CSS
Technologies	Git, Linux, SQL, REST API, PostMan, NginX, GDB, Valgrind, Makefile
Libraries	Flask, Node.js, Express.js, Psycopg2, Pandas, MediaPipe, OpenCV

EXPERIENCE

Software Research Intern **Jun 2023 - Sept 2023**
JLab Sensing - University of California, Santa Cruz *Santa Cruz, CA*

- Engineered a robust data pipeline for a greenhouse temperature monitoring system using C/C++, utilizing Git and followed Agile methodologies throughout development process
- Devised a custom temperature interface library, as well as a custom I2C communication library for fast data communication.
- Conceptualized and implemented a scalable communication framework using various protocols (UART, SPI, I2C, ModBus), showcasing expertise in network programming and distributed systems
- Optimized software for low-power operation, incorporating LoRa RF transmission to achieve a 90% reduction in power consumption compared to standard monitoring systems

Advanced Logic Design Course Staff **Jan 2023 - Mar 2024**
CSE Department - University of California, Santa Cruz *Santa Cruz, CA*

- Taught 500 students over the course of 2023-2024 in the University's Logic Design class, supporting those struggling with lab assignments and performing unit tests for lab checkoffs
- Used Structural Verilog and the Vivado interface, pulling from topics that include state machine design, sequential logic, counters, VGA protocol, logic design techniques

UCSC Rocketry - Deployment & Payload Subteam **Oct 2020 - Oct 2022**
University of California, Santa Cruz *Santa Cruz, CA*

- Modeled the deployment subsystem for the rocket's payload, leading to successful deployments during 2021-2022 NASA's Student Launch
- Developed and performed tests on deployment electronics and source code in C, reducing altitude measurement inaccuracies by 20% as well as shortening payload deployment time

PROJECTS

IoT Water Consumption Meter — *NginX, Flask, AWS, PostgreSQL, Swift, RESTful API*

- Team lead for Senior Capstone Design project, designing an IoT water consumption faucet attachment that measures and records isolated water flow, providing useful data metrics and recommendations to consumers via IOS app
- Spearheaded the development of a webserver on an AWS LightSail instance, utilizing NginX as a reverse proxy service to a Python Flask backend, RESTful APIs for data storage, retrieval, and metric updates interfaced with a postgreSQL database.
- Innovated an IOS specific app using Swift and SwiftUI, incorporating a login procedure, JWT token verification to display user specific data and metrics.

PantryAI — *Node.js, Express.js, Nginx, AWS, MongoDB, RESTful API, React*

- Prototyped and implemented a comprehensive pantry management system that tracks inventory, provides recipe recommendations, and integrates with a React application for user interaction.
- Programmed robust backend services using Node.js and Express, handling CRUD operations for pantry items, user authentication, and third-party API integrations.
- Adopted the ChatGPT LLM API to generate personalized recipe suggestions based on current pantry contents and user-defined parameters.

ML Tweet Sentiment Stock Analyzer - Stanford Hackathon — *Python, Pandas, VADER, Jupyter Notebook*

- Executed VADER Sentiment analysis, Pandas, Kaggle data, and Pyplot to show the correlation between a company's stock price and tweet sentiment in the same time period using graphs and plots.
- Synthesized a formula using Laplace smoothing to weight tweets with higher engagement more heavily in the overall sentiment calculation, implementing the algorithm with data scraping, presentation, and public datasets from Kaggle.