TIM KRAEMER

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EDUCATION

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

University of California, Santa Cruz - Computer Engineering, B.S. **July 2020 - June 2024**
GPA: 3.85 - Tau Beta Pi Engineering Honors Society

SKILLS

Programming Languages	Python, Typescript/Javascript, C, C++, SQL, JSON/XML, HTML, CSS
Technologies	Git, Cloud Services (AWS, Azure), REST APIs, PostgreSQL, MongoDB, Docker, Postman
Libraries/Frameworks	Flask, Node.js, Express, React, Angular.js, Pandas, NumPy

EXPERIENCE

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

- Engineered a robust data pipeline for a greenhouse temperature monitoring system using C/C++, integrating Git for version control and adhering to Agile methodologies throughout the development lifecycle.
- Achieved a **90%** reduction in power consumption by optimizing system architecture and presenting results to the PI and team.
- Created a custom temperature interface library and I2C communication library, ensuring rapid and reliable data transmission.
- Architected a scalable, high-performance communication framework that significantly enhanced data transmission speed and reliability, leveraging protocols such as UART, SPI, I2C, and ModBus to ensure seamless integration and efficient communication across hardware components.

Engineering Course Lab Instructor **Jan 2023 - Jun 2024**
University of California, Santa Cruz *Santa Cruz, CA*

- Provided personalized guidance and conducted unit testing for lab checkoffs to over **800 students** in subjects such as Logic Design, Assembly Language, and Sensing Technology.
- Assisted students in mastering technical topics, including Structural Verilog, RISC-V assembly programming, hardware interfacing, and general scripting, ensuring they gained practical, hands-on experience across diverse engineering disciplines.
- Staffed weekly guided lab sessions on topics such as IDEs, Git, logging, testing, and Logic Design.

PROJECTS

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

- Lead a design **team of 7 engineers** 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, architecting using Nginx and Flask, and optimized to handle **100+ simultaneous IoT device connections** with high reliability.
- Innovated an IOS specific app using Swift and SwiftUI, incorporating a login procedure, JWT token verification to display user specific data and metrics.

Distributed Task Management System — *Python, FastAPI, SQL, Apache Kafka, Docker, Azure, Angular.js*

- Designed and implemented a scalable task management system using Python and FastAPI, enabling real-time updates and collaboration for teams.
- Developed a robust backend API, integrated a real-time notification system with Kafka, and optimized a SQL database schema for efficient data management.
- Implemented real-time updates using FastAPI and Kafka to enhance team efficiency by **30%**, facilitating better task tracking and project visibility workflows, and providing valuable insights into project progress through analytics.

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

- 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, with dynamic SKU # lookup.
- Adopted OpenAI 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.