TIM KRAEMER

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EDUCATION

Computer Engineering, B.S., University of California, Santa Cruz - GPA: 3.90 — July 2020 - June 2024
Dean's Honor List, Tau Beta Pi Engineering Honors Society
Computer Science & Engineering, M.S. (Expected) — September 2024 - June 2026

SKILLS

Programming	C, C++, Python, MATLAB, HTML, CSS, Arduino
Technologies	Git, Linux, UART, GDB, Valgrind, Makefile, HTTP Requests
Libraries	Flask, Pandas, MediaPipe, OpenCV, Selenium, VADER

EXPERIENCE

Embedded Research Intern — **Jun 2023 - Current**
JLab Sensing - University of California, Santa Cruz — *Santa Cruz, CA*

- Collaborated with a team of researchers and graduate students on a large embedded project, implementing a low-power solutions interfacing temperature and humidity sensors into a greenhouse actuation system
- Wrote and tested custom firmware libraries for the HDC2021 Temperature and Humidity Sensor
- Designed and implemented using standard communication protocols such as UART, SPI, I2C, and ModBus in addition to low-power LoRa RF transmission to achieve 5x less power consumption compared to standard monitoring system

Verilog Logic Design Lab Tutor — **Jan 2023 - Current**
CSE Department - University of California, Santa Cruz — *Santa Cruz, CA*

- Tutored a class of approximately 100 students in the University's Logic Design class, aiding those struggling with lab assignments and performing unit tests for lab checkoffs
- Labs are written in structural verilog using the Vivado interface and the Basys 3 Artyx-7 FPGA board. Topics also included state machine design, sequential logic, counters, VGA protocol, among other logic design techniques.

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

- Designed the deployment subsystem for the rocket's payload in collaboration with other engineers, 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

Smart Weather Station — *Flask, HTML, CSSlm, Pandas, HTTP, Ajax, Arduino* — Project link

- Designed, prototyped, and implemented a smart weather station which could collect data from an array of sensors (Temperature, Humidity, Luminosity) via microcontroller, and sent to single-board computer via USB serial communication.
- Data collected is filtered, stylized, and then sent via HTTP Get Request to remote web-server for display and viewing every 10 seconds, providing accurate real time updates.
- Developed a web-app using Python's Flask framework, HTML, and JavaScript Ajax functions for constant updates.

Desktop Manipulator Using Hand Tracking — *MediaPipe, OpenCV, PyautoGUI* — Project link

- Created a tool that allows the movement and manipulation of the desktop mouse using hand tracked movements. Focused on increasing tolerance for small hand movements
- Programmed using the MediaPipe for hand feature tracking, OpenCV for camera operations, and Pyautogui for desktop operation manipulation

Twitter Sentiment Stock Analyzer - 2021 Stanford Hackathon — *Pandas, VADER* — Project link — Article

- Used 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.
- Developed a formula using Laplace smoothing that allowed us to weight tweets that got more engagement had a higher weight for the overall sentiment calculation, implementing our algorithm. scraping and presentation, and public databases provided by Kaggle

Automated Daily Survey Completer — *Selenium, SMTP, IMGHDR* — Project link

- Developed a script to automatically complete a daily survey by logging in, completing the survey, and sending proof of completion as a screenshot by email back to the user
- Programmed in Python using the libraries Selenium, SMTP, IMGHDR, and EmailMessage