

Jacob Kuczynski

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EDUCATION

University of California, Berkeley

Dec 2024

B.S. EECS, B.S. Mechanical Engineering

GPA: 3.85

Embedded Cyber Physical Systems | Computer Security | Operating Systems | Data Structures | Algorithms | Programming Languages/Compilers | Vehicle Dynamics and Control | Feedback Control Systems | Computer Architecture | Software Engineering

- NCWSA Waterski Team Treasurer supporting development from 1st year team to national championship attendee.

EXPERIENCE

Tesla

Palo Alto, CA

Embedded Systems Integration Intern, Body Controls - Steering

Aug – Dec 2023

- Enabled over 300 unique **Pytest** regression tests to run nightly by expanding the capabilities of **HIL** system by configuring new hardware.
- Parsed 1M+ vehicles alert data via **SQL** queries and created custom database tables via Caspian, improving performance by 10x.
- Developed ad-hoc alert analysis **Jupyter Notebooks** scripts using **Pyspark**, visualizing insights with **Matplotlib**.
- Integrated and tested firmware updates by cherry-picking critical patches, ensuring stable production builds through **Git**-based **CI/CD** pipelines in **Jenkins**.

Applied Materials

Santa Clara, CA

System Engineering Intern, ICAPS Engineering

May – Aug 2023

- Designed a solution to automate cryopump regeneration by controlling **IO** pins on a PLC, minimizing manual intervention.
- Developed proposals for cost reduction of supplier constrained parts by switching to an in-house owned and produced package.
- Created 3D models and drawings using Siemens NX and outlined BOMs through Teamcenter.

Schneider Electric

Andover, MA

Mechanical Engineering Intern, R&D - UPS Systems

Jun – Aug 2022

- Developed mechanical design changes using Creo and documented changes with engineering drawings and PDM.
- Performed and assisted a multitude of DVT procedures from drop testing, HALT, and Hi-pot testing.
- Experimented with **STM32** development boards with embedded **Rust** and Real-Time Operating System **TockOS** for the firmware team.

Stackbase

Windham, NH

Software Engineering Intern, Startup

Jan – May 2021

- Developed user intuitive web software using **Django** on **Python** framework used by local industrial and educational organizations.
- Wrote 3D visualization software for view and editing printable STL files with Three.js.

TECHNICAL SKILLS

Languages: C/C++, Python, Rust, Java, MicroPython, x86 Assembly, MATLAB, SQL, Bash, Javascript

Tools and Frameworks: Linux, Git, GDB, GCC, Raspberry Pi Pico, Arduino, Bare Metal, Hardware-in-the-loop (HIL), Pytest, Simulink, RTOS, Jupyter Notebooks, Lingua Franca, Pandas, Matplotlib, State Machines, Oscilloscopes

Methodologies: Agile, REST, CI/CD, Issue Tracking (Jira)

Hardware/IO: PSoC6, ESP32, Raspberry Pi Pico, STM32, CAN, UART, I2C, Ultrasonic Sensors, Accelerometers (IMUs)

PROJECTS

“FlyderBot”: Autonomous wall climbing robot

Oct – Dec 2024

- Developed modular embedded **C** code for sensors and actuators, integrating components into a cohesive modal system using **Lingua Franca** with interrupt driven reactions, run on **Raspberry Pi Pico**.
- Implemented a PI controller to optimize performance and achieve dynamic transitions between floor and wall.

“Brewt Force”: Automated french press

Sep – Dec 2024

- Starting with a state machine, abstracted actions of a french press to fully automate the system process in a single **Arduino** app.
- Instantiated interrupt service routines for **IO** pins creating a multi-tasking, real time system.

“Aquatic Housekeeper”: Smart Fish Feeder

Sep – Dec 2022

- Configured WiFi connection to Adafruit application using **MQTT** protocol for remote actuation and sensor readings display on web-app.
- Developed using **MicroPython** and deployed on **ESP32** microcontroller.