James Contini

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EDUCATION

University of California, Santa Cruz, CA   FALL 2021 - CURRENT

Computer Science B.S. - *Computer System Design, Stochastic Analysis, Data Structures and Algorithms in C, Calculus III, GPA: 3.69.*

EXPERIENCE

SlugSat, Santa Cruz, CA - *Club Secretary & Software Engineer*   FALL 2023 - CURRENT

- Actively ameliorating our system's last mile network protocol by integrating Cal-Poly's PROVES architecture into the OBC allowing our ground station to take advantage of a more robust telecommunications framework.
- Delegation of duties to members as well as outreach to companies and other organizations

PROJECTS

Multi-threaded HTTP Server | C

- Developed a customizable, thread-safe database read/write lock using POSIX's thread library and synchronization primitives for secure processing of concurrent GET and PUT requests. Users can configure the server to efficiently utilize up to N threads.
  - The database lock utilizes a linked hash map to reference individual file locks.

HTTP Server, Postgres traversal, and data visualization | Python

- Utilized Psycopg2 Postgresql adapter to traverse a Postgres database, then visualized said data using Matplotlib to post on a local HTTP server capable of processing GET requests for acquiring the data visualization.

Integer Arithmetic Module | C++

- Developed a subtraction, addition, multiplication integer calculator capable of dealing with operands between $\pm10E1000$.
  - Utilizes linked lists and modular arithmetic.

Website | HTML CSS JS

- Stylized embedded systems project portfolio, designed on Figma website prototyping tool. Site developed using HTML, JS, CSS and Figma hosted on a Git Pages web server.

Huffman Compression Module | C

- Constructed a Huffman compression ADT framework and lightweight I/O library in C, enabling compression to harness bit-level optimizations and I/O to operate with decreased overhead using a straightforward, system call-based I/O interface.
  - My implementation of the Huffman algorithm utilizes a bit vector stack, binary tree and priority queue to implement the ADT.

Heliostat & Autonomous Vehicle | C++

- Four semester-long projects in teams of two, focusing on embedded systems.
- Personally addressed signal noise complications in Heliostat and Autonomous Vehicle systems by devising a sliding window algorithm in Arduino C++ to reduce photoresistor noise and improve signal accuracy.

SKILLS

Development Tools

- ☑ C, C++, Bash, Python, UNIX, Git + Github, RISC-V, GNUPlot, GMP Lib.
- ☑ HTML, CSS, Javascript, Google Sheets API, Figma.
- ☑ ExpeDocker, Postgres dbs.

Breadth

- ☑ UCSC 100m school record holder.
- ☑ Fluent in English, Spanish, and proficient in French.
- ☑ Musician: guitar, ukulele, and piano.