Alexander Scott Clanton

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Education

University Of California Santa Cruz — Santa Cruz, CA
B.S. Computer Science *GPA: 3.55* — 2020 - 2023

Internships

General Dynamics Mission Systems — San Jose (Onsite)
Software Engineer Intern — June 2023 - Present

- Working on a non-classified project that deals with space vehicles.
- Using JavaScript, C++, and CesiumJS to visualize objects for a web application.
- Made and containerized a C++ Server, which takes in data and formats the data into a update packet which is sent via a WebSocket to a Node.js Server.
- Multiple instances of this server can be spun up via a docker compose file, depending on the variety and number of data sources required for the space vehicles.
- Node.js server for Cesium deals with the incoming connections from the C++ instances and combines the time stamped packets for Cesium.
- The whole solution is utilizing, a Tile Server, Redis Database, C++ Servers, and Node.js which are all containerized and running on AWS EC2.

Black Box LTD — San Diego (WFH)
Solutions Architect Intern — May 2022 - August 2022

- Researched cloud solutions to improve the companies offerings in enterprise networking.
- Intern project on how the company can improve its solutions globally.

Skills and Interests

Programming Languages:	C, C++, Python, and JavaScript.
Technologies:	WebSockets/Client-Server, Threads/Mutexes, Distributed Systems, Redis and Docker.
Parallel Programming:	Minimize Cache Misses, TSO Memory Model and Concurrent Data Structures.
Computer Architecture:	Passionate about CPUs/GPUs and have experience with RISC-V Architecture.

Personal Projects- https://github.com/AlexanderClanton

HTTP Server *C*
A single thread and multi-threaded HTTP Server. Utilizing a queue to accept and manage incoming connections. Using GET and PUT requests and error handling for other requests.

Vroomers Web App *JavaScript/React*
Team of 5 project that was a basic social media app utilizing JavaScript and React to find other users interested in creating and joining a car meet. Used Google Maps API and Firebase to have login and search functionality.

Multi-Threaded Password Cracker *C++*
Had access to 4, 24 Core Servers to make the fastest password cracker I could. Utilizing techniques to minimize cache misses and spread the workload across servers.

Multi-Threaded Radix Sorter *C++*
Utilizing a single 24 Core Server to make a fast radix sort, dealing with data via sockets and dividing up data to maximize workloads per core.

Red-Black Tree Dictionary *C++*
Developed an efficient Red-Black Tree for dictionary usage. Ensured optimal search, insertion, and deletion with enhanced utility functions such as tree printing, and 'begin' and 'end' retrievals. This structure supports higher-level data-driven applications.

Huffman Encode & Decode *C*
The program can take any file type to compress. It works by creating a histogram of 256 ASCII values from character frequency. The characters are added into a tree where I use a min heap for ordering. The encoded file can be decoded back using the produced tree.

Awards

Dean's Honors List — Dean
Top 15% of their academic group — 2020/2021