Mitchell C. Elliott

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Santa Cruz, CA 95060

ABOUT

Software engineer specializing in systems programming, storage architectures, cloud infrastructure, and sustainability-driven design. Experienced in R&D, DevOps, and full-stack development with a focus on performance, scalability, and carbon-aware solutions.

EDUCATION

University of California, Santa Cruz
M.S. Computer Science | Sept. 2022 – Dec. 2024
B.S. Computer Science | Sept. 2018 – June 2022

EXPERIENCE

University of California, Santa Cruz Dec. 2024 – Present
Research and Development Engineer Santa Cruz, CA

- Designing sustainability-focused hybrid storage architectures to reduce end-to-end carbon impact in data center lifecycles
- Applying life cycle assessment (LCA) to compare storage media by cost, energy consumption, and environmental footprint
- Developing simulation tools to model carbon emissions, performance impacts, and tradeoffs of storage system configurations

University of California, Santa Cruz Jan. 2023 – Dec. 2024
Teaching Assistant Santa Cruz, CA

- Served as the Head TA for CSE 130: Principles of Computer System Design across 6 quarters; mentored 1000+ students
- Conducted group discussion sections, created assignments and quizzes, proctored exams, and managed course infrastructure
- Created and maintained an automated CI/CD pipeline for grading programming assignments on GitLab

Perfectly Snug July 2023 – Sept. 2023
Software Engineer Intern Remote

- Developed a Material Requirements Planning (MRP) system with BOM management using Python, MySQL, Node.js, and React
- Automated part tracking and manufacturing workflow management to reduce manual effort and production delays
- Built dynamic dashboards and analytics pipelines using Shopify API data to optimize daily build plans and inventory decisions

ParkourSC, Inc. July 2022 – Sept. 2022
DevOps Engineer Intern Remote

- Redesigned and deployed alert condition policies across multiple Kubernetes clusters in New Relic to improve signal quality
- Eliminated false positives, reducing noise in incident queues and increasing engineering focus on high-priority alerts
- Automated cluster alert muting during upgrades by integrating New Relic's NerdGraph API with Jira workflows

PROJECTS

Data Center Carbon TCO Simulator Jan. 2024 – Present

- Created CarbonStream, a Python-based simulator that models end-to-end total cost of ownership (TCO) for data centers
- Developed a multi-metric optimization framework integrating cost, performance, and sustainability to guide tiered storage layouts
- Identified energy-efficient hybrid storage designs using workload-aware simulations and access pattern profiling

Deduplicating Key-Value Store May 2021 – June 2021

- Designed and built a deduplicating key-value block storage system for FreeBSD in C
- Engineered a custom file system mapping 160-bit content hashes to unique 4 KiB blocks stored on a memory-mounted disk
- Created file system metadata structures using a superblock and inode-based indexing to manage data block mappings efficiently

SKILLS

Languages and Frameworks: Python, C, C++, Java, JavaScript, Bash, SQL, MIPS, RISC-V, React, Node.js, NumPy, Pandas
Tools and Platforms: Docker, Kubernetes, AWS, Git, Jira, MySQL, PostgreSQL, SQLite
Methodologies: System Design, DevOps, CI/CD, Agile, Scrum