Mitchell Elliott

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Santa Cruz, CA 95060

EDUCATION

University of California, Santa Cruz Sept. 2022 – June 2024 (Expected)
M.S. Computer Science GPA: 3.66

- **Coursework**: A.I., Advanced Operating Systems, Database Systems, Distributed Systems, Archival Storage System Design, Cryptography, Computer Security, Computer Architecture, Algorithms, Programming Languages

University of California, Santa Cruz Sept. 2018 – June 2022
B.S. Computer Science GPA: 3.61

- **Coursework**: A.I., Algorithms, Assembly Language, C Programming, Compiler Design, Computer Architecture, Computational Models, Computer Networks, Computer Security, Computer System Design, Data Structures, Database Design, Distributed Systems, Embedded Operating Systems, Functional Programming, Network Programming, SQL, Web Applications
- **Achievements**: UCSC Dean's List (>3.74 quarterly GPA) in Fall 2019, Winter and Spring 2020

EXPERIENCE

UC Santa Cruz Jan. 2023 – June 2023, Sept. 2023 – Present
Teaching Assistant Santa Cruz, CA

- Head Teaching Assistant for CSE 130: Principles of Computer System Design (5x)
- Reviewed course material and assisted students with programming assignments and exam prep
- 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 Richmond, BC, Canada

- Developed a custom MRP system with BOM management using Python, MySQL, Node.js, and React
- Automated manufacturing process management and part tracking
- Pulled order data from the Shopify API to create dashboards and reports to provide insight into the daily build plan
- Integrated product testing software into a mobile app to streamline the build procedure

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

- Redesigned and implemented new alert condition policies for several Kubernetes clusters in New Relic
- Eliminated false-positive alert tickets, which increased engineer productivity and allowed for critical alerts to have higher visibility
- Created a Jira automation to mute all alerts for a cluster during an upgrade using the New Relic NerdGraph API
- Analyzed log files, viewed alert incident data, and wrote NRQL queries to investigate cluster outages

UC Santa Cruz April 2022 – June 2022
Undergraduate Course Tutor Santa Cruz, CA

- Tutor for CSE 130: Principles of Computer System Design (Spring 2022)
- Helped students solve problems and debug code in programming assignments
- Reviewed course material and taught useful programming and debugging techniques to students

uLab Systems, Inc. June 2021 – Sept. 2021
Software Engineer Intern San Mateo, CA

- Migrated a WordPress website from Amazon Lightsail to EC2
- Designed and implemented a three-stage pipeline to streamline development and testing
- Created a secure private network to authenticate users and filter out unwanted web traffic
- Wrote AWS CLI/API Python scripts to sync data and automate the code pipeline

Nevtec, Inc. June 2019 – Sept. 2019, June 2020 – Sept. 2020
Data Analyst Intern San Jose, CA

- Created a real-time ticket monitoring system using Power BI and SQL to display data from a ConnectWise database
- Wrote Power BI Data Analysis Expressions (DAX) scripts to create calculated columns and transform data
- Analyzed service ticket data to measure engineer performance and compare customer IT requests
- Built dashboards to highlight key data points, including ticket response and closing times, billable hours, and project time utilization

PROJECTS

Embodied Carbon Cost Simulator
Jan. 2024 - Present

- UCSC M.S. project, co-advised by Professor Andrew Quinn and Professor Heiner Litz
- Currently researching and analyzing the total cost of ownership of embodied carbon in storage-heavy data center workloads
- Designing a system model to evaluate the estimated cost of performing real-world workloads on different storage systems/media

Thread-safe Reader-Writer Lock
Oct. 2023 - Nov. 2023

- Created a thread-safe reader-writer lock to synchronize access to shared resources
- Allowed for N-Way blocking, enabling up to N reader threads to acquire the lock between waiting writers
- Written as a C library that could be included in a multithreaded web server to support access to files fairly

In-Memory File System
April 2022

- Built a Unix-style in-memory filesystem with a tree-structured hierarchy in C++
- Program was simulated in a terminal shell environment with support for several GNU Core Utilities commands
- Shell commands modified an inode tree consisting of a root node and mappings to files and directories

Deduplicating Key-Value Store
May 2021 - June 2021

- Designed and built a deduplicating key-value block storage system for FreeBSD in C
- File system mapped 160-bit keys to unique 4 KiB blocks stored on a mounted memory disk
- Utilized a superblock to store the file system metadata and inodes to contain the mappings to data blocks

Multithreaded RPC Server
Oct. 2020 - Dec. 2020

- Implemented a multithreaded remote procedure call (RPC) server to perform arithmetic operations and file services in C
- Client requests and server responses were sent in network byte order using a custom protocol
- Server was scalable and supported recursive name resolution for variables, persistent key-value pairs, and fault tolerance

Jakes's Hockey Pool
June 2020 – Oct. 2020

Jake's Hockey Pool is a private, hockey-themed fantasy sports website
Website: https://github.com/melliott18/jakes-hockey-pool

- Wrote a live data feed interface and built a map to the undocumented NHL REST API
- Contributed to the data structure and schema designs of the pool and called for architecture review and design specs
- Employed a modular approach to the code design to simplify and speed up development and testing
- Wrote the code in Python and used MySQL to manage the database

SKILLS

General: DevOps, CI/CD, UI/UX, CloudOps, Full Stack Development, Systems Programming, IT, Data Analytics, Agile, Scrum
Languages: Python, C, C++, Java, JavaScript, Bash, Git, SQL, NoSQL, HTML, Latex, MIPS, Perl, JSON, YAML, NRQL, DAX, CSS, Go, OCaml, PHP, Scheme, Smalltalk, RISC-V
Libraries and Frameworks: React, Bottle, Bulma.css, Flask, Py4Web, Vue.js, NumPy, pandas
Applications and Tools: Docker, Kubernetes, Node.js, Word, Excel, PowerPoint, Power Apps, Power Bi, SSMS, MS Teams, Slack, MySQL Workbench, Okta, Auth0, Apache, Nginx, Jira, New Relic, Jenkins, Sourcetree, Kafka, WordPress, VirtualBox, Ghidra, MMLogic
Databases: MySQL, PostgreSQL, SQL Server, SQLite, Redis, Cassandra, Elasticsearch, MongoDB
IDEs: Visual Studio, VSCode, Sublime Text, Eclipse, Xcode, PyCharm, CLion, Conda, Matlab, Terminal, Vim
AWS: EC2, RDS, S3, Boto3, API Gateway, Lambda, VPC, IAM, Elastic Beanstalk, Lightsail, ECS, EKS, ELB, Route 53, VPN, ACM
Operating Systems: macOS, Windows, Linux, Ubuntu, CentOS, Kali Linux, Fedora, FreeBSD, Raspberry Pi OS