Aaron Sharif

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EDUCATION

University of California Santa Cruz — Santa Cruz, CA
Bachelor of Science in Computer Science — *June 2026*
- **Relevant Coursework:** Data Structures and Algorithms, Discrete Mathematics, Object Oriented Programming in Python, Machine Learning Basics, Computer Architecture, Artificial Intelligence, Probability Theory, Operating Systems, Calculus I,II,III, Linear Algebra

EXPERIENCE

Undergraduate Machine Learning Researcher — September 2024 – Present
University of California, Santa Cruz — *Santa Cruz, CA*
- Conducting machine learning research under the mentorship of **Professor Jason Eshraghian**, focusing on advanced topics such as **Deep Learning**, **Neural Networks**, and novel architectures for spiking neural networks.
- Designed and implemented a variety of **Convolutional Neural Network (CNN)** architectures to analyze complex time-series datasets, utilizing **PyTorch** to build robust models for accurate prediction and pattern recognition.
- Optimized model training by distributing tasks across a cloud-based **GPU** cluster using **Kubernetes**, reducing training time by **50%** and significantly improving computational efficiency.

Data Structures and Algorithms Group Tutor — September 2024 – December 2024
Baskin School of Engineering — *Santa Cruz*
- Led weekly instructional sessions covering core concepts in **C/C++**, with a focus on advanced debugging tools such as **GDB**, **Valgrind**, and **UNIX** commands to help students troubleshoot and optimize their code.
- Mentored over **50+** students weekly, providing guidance on assignments, projects, and test preparation, which contributed to a **15%** improvement in overall class performance for attendees.
- Collaborated with teaching assistants and faculty during regular feedback sessions to evaluate and implement strategies that enhanced student engagement and academic success.

Software Engineering Fellow — July 2024 – September 2024
HeadStarter AI — *Remote*
- Built 5+ AI projects as part of an intensive fellowship, developing skills in **HTML**, **CSS**, **ReactJS**, **NextJS**, **Firebase**, **OpenAI**, **AWS**, **Auth**, **StripeAPI**, **RAG**, and **Vectors**.
- Coached by Amazon, Google, and Capital One on Agile, CI/CD, **git**, and microservice patterns.
- Developed projects from design to deployment, leading 3+ engineering fellows using **MVC** design.

Software Engineering Intern — June 2024 – August 2024
CodeDay Labs — *Remote*
- Collaborated with a team to enhance the **Leaflet JavaScript library** by **30%**, resolving critical issues and improving performance by optimizing rendering processes and implementing data clustering techniques.
- Utilized **CI/CD pipelines** to automate testing, integration, and deployment, ensuring consistent and reliable updates to the **Leaflet** library.
- Developed and executed unit tests using the **Chai** library in conjunction with **Mocha**, increasing code coverage by **25%** and ensuring robust functionality across key features of the **Leaflet JavaScript library**.

Computer Science Tutor — January 2024 – June 2024
Baskin School of Engineering — *Santa Cruz, CA*
- Tutored over **200** students in courses such as **Computer Systems**, **Assembly Language**, **Foundations of Game Design**, and **Linear Algebra**.
- Developed and modified **30+ Python and Bash** grading scripts to automate the grading of students' labs and projects, reducing runtime by **31%** and improving overall assessment accuracy.
- Facilitated weekly office hours to assist students with projects, lab assignments, and theoretical concepts, resulting in a **15%** average increase in assignment scores for attendees.
- Held workshops covering programming concepts in **MATLAB**, **HTML**, **CSS**, **JavaScript**, **Python**, and **RISC-V**.

PROJECTS

AI Flashcard Generator | *Gemini, React, Firebase* — July 2024
- Designed and developed an AI-powered flashcard generator with a **React** frontend, providing a seamless and interactive user experience.
- Integrated **Firebase** for efficient backend operations, enabling real-time data storage and retrieval.
- Leveraged **Gemini** to generate high-quality flashcard content, tailored to user input.

Distributed HTTP Server | *C, Kubernetes, Sockets, HTTP Protocol* — October 2024
- Designed and implemented an HTTP server in **C** supporting **GET** and **PUT** requests, handling client connections using socket programming. Developed the ability to read and write data over HTTP in compliance with the protocol's structure.
- Implemented a robust request processing system for error handling, ensuring the server produces appropriate **HTTP 200**, **400**, **404**, and **500** responses based on the request's validity and file presence.
- Tested server functionality using **cURL** and **netcat** to ensure correct parsing of client requests, file management operations, and response generation under various conditions.

TECHNICAL SKILLS

Languages: Java, Python, C/C++, SQL (PostgreSQL), JavaScript, HTML/CSS, RISC-V
Frameworks/Libraries: React, Node.js, FastAPI, NumPy, Sci-kit Learn, Express.js, Firebase, OpenAI API, gemini, pytorch, snnTorch
Tools: Git, Docker, Google Cloud Platform, VS Code, UNIX, valgrind, GDB