Spencer Nelson

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EDUCATION

University of California, Berkeley — July 2022 – May 2026
Bachelor of Arts in Computer Science — *Berkeley, CA*

Relevant Coursework: Computer Security, Data Structures and Algorithms, Efficient Algorithms and Intractable Problems, Introduction to the Internet, Principles and Techniques of Data Science, Machine Structures, Full-Stack Web Development, iOS Development, Discrete Mathematics and Probability Theory

TECHNICAL SKILLS

Strongest Languages: Python, Java, C, Go
Tech Stack: NumPy, pandas, AWS, MERN, SQL, RISC-V, x86, Swift
Developer Tools: VS Code, IntelliJ IDEA, Jupyter, Git, Xcode
Certifications (in progress): CompTIA A+, AWS Cloud Solutions Architect

EXPERIENCE

Software Engineering Fellow — Feb. 2025 – Present
Relativity Space — *Berkeley, CA*
- Developing a **3D visualization tool** with **Three.js** and **WebGL** for CAD model integration and real-time simulations
- Building a **Flask (Python)** and **Node.js** backend to process CAD files, manage sensor data, and handle API requests
- Containerizing services with **Docker** for scalable deployment and optimizing rendering performance

IT Client Services and Technician — Feb. 2025 – Present
UC Berkeley Student Technology Services — *Berkeley, CA*
- Diagnose and resolve **network** issues, assist with VPN configuration, and advise users on best security practices
- Configure and maintain devices, networks, and security using **IT protocols** to improve performance and protection

Academic Intern and Tutor — Aug. 2023 – Dec. 2023
UC Berkeley EECS — *Berkeley, CA*
- Led office hours for **40-50 students**, teaching **functional**, **declarative**, and **imperative programming** concepts
- Tutored **7-8 students per session**, improving their grasp of **trees**, **linked lists**, **queues**, and **hash maps**
- Improved **teaching**, **debugging**, and **collaboration** skills via **project management** and **code troubleshooting**

PROJECTS

Traceroute and Routing | *Python* — Spring 2025
- Developed a **DV Routing** protocol for **dynamic route updates** and ensure efficient **data packet forwarding**
- Implemented **protocol parsing** for **IPv4**, **UDP**, and **ICMP** for accurate routing decisions and error handling
- Addressed **network anomalies**, like packet loss and duplicate responses, ensuring robust, reliable performance
- Built a **traceroute function** to identify and visualize intermediate routers and paths between end hosts
- Implemented **probing** with varying **TTLs** to capture router responses and generate hop distance visualizations

Gitlet: A Simplified GitHub | *Java* — Summer 2023
- Developed a **version-control** system using Java, SHA-1 hashing, and serialization to track **1000+** commits efficiently
- Implemented **blob storage** and a **staging area** to manage file versions and support add/commit workflows
- Engineered **DAG-based** commit tracking using **hash maps** and trees to enable fast branching and merging
- **Optimized merge** runtime using **union-find** with path compression, reducing ancestor lookup from $O(n)$ to $O(1)$

Email Classification Model | *Python* — Spring 2024
- Developed a **logistic regression model** to classify emails, achieving over **85% accuracy** on the validation set
- Conducted **EDA** on a dataset of **5,000 emails** to identify key features, enhancing model performance by **15%**
- Visualized model performance using **ROC curves**, demonstrating an **AUC of 0.90** for strong predictions
- Gained insights into **feature engineering** and **model evaluation**, improving my data-driven decision-making

CS61CPU | *RISC-V* — Spring 2024
- Designed and simulated a **CPU** using Logisim, achieving functional specifications for operations and memory
- Gained insight into **computer architecture**, memory hierarchy, and the interactions of caches, registers, and RAM
- Enhanced **debugging** and planning skills, gaining insights into common issues encountered in CPU design

MyFitnessPal Lite | *Swift* — Spring 2024
- Developed a fitness app with an **intuitive user interface**, enhancing user experience and engagement
- Improved understanding of Swift and the **end-to-end app development** process, from design to deployment