Samvrit Srinath

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Education

B.S./M.S. Computer Science   September 2022 – June 2026
University of California, San Diego   *Regents Scholar(Top 1% of incoming freshman), GPA: 3.97/4.00*
Relevant Coursework: Advanced Data Structures, Algorithms, Graduate Intro to Machine Learning, Recommender Systems, Computer Architecture, Parallel Computing, Wireless Networks, Internet Measurement, AI: Search & Optimization, Databases, Software Engineering, Scalable Analytics

Experience

Returning Software Engineering Intern | *Arista Networks*   March 2025 – June 2025

Network Security Researcher | *Center for Networked Systems*   June 2023 – Present
Asset Ownership Platform   *August 2024 – Present*
- Developing a scalable research application in **Python** and **Go** to determine ownership of **238M** IPv4 Addresses
- Leveraging **Google BigQuery** and **GCP** to amass and process **1.9TB** of multi-protocol data (DNS, WHOIS, HTTP, TLS) with **SQL** queries
- Integrating a custom **GPT-o1 Model** into an end-to-end pipeline to reduce data retrieval latency and enhance operational efficiency
- Developing robust regular-expressions to extract and filter critical network data from **DNS** and **TLS** records, streamlining the data pruning process.

Country in the Middle: Measuring Paths Between People and their Governments | PAM '25   *June 2023 – September 2024*
- Designed a **Python**-based analytical framework to identify vulnerabilities and data exfiltration paths in government networks
- Constructed an efficient data pipeline utilizing the **RIPE Atlas API** to process over **18K** network traces, ensuring precise path analysis
- Webscraped external databases to integrate **AS Numbers** and **IP Addresses**, uncovering network anomalies and potential operational risks
- Authored comprehensive design specifications and integration test plans, ensuring reproducibility and clarity in data analysis workflows

Advanced Data Structures & Algorithms Tutor | *UC San Diego - CSE*   December 2023 – March 2025
- Created an inclusive environment for students to discuss Treaps, Trees, Disjoint Sets, and Aho-Corasick Automatons
- Guided students in implementing and debugging Huffman Trees and Graph Search Algorithms using **GDB** and **Valgrind**
- Developed Questions for Summative Assessments to assess proficiency in **C++** and Data Structures

Software Engineering Intern | *Arista Networks*   June 2024 – September 2024
- Developed diagnostic software to validate high-speed Ethernet switch performance, used **Go** to run cloud regression testing for 400+ devices
- Modularized and enhanced diagnostic shell for device bring-up and SKU verification, boosting regression efficiency by 20%
- Created performance tests for Arista's proprietary ASICs and switches, focusing on packet integrity and PRBS testing
- Developed **Python** diagnostics for PCIe Linkup and ASIC resets, streamlining hardware initialization
- Implemented cross-device telemetry audits to verify hardware consistency and performance, reducing boot-up time by 50%

Education Researcher & Head Tutor | *UC San Diego - CSE*   July 2023 – August 2024
- Designed a brand-new curriculum(Exams, Labs, Projects) and wrote an Experience Journal documenting a LLM-backed Intro to Python Course
- Led a Team of 33+ Instructional Staff and stood as an interim TA for the course
- Ran Lab Sections for over 100+ Students and held open lab hours to expose students to **Pandas** and **Pygame**
- Published Journal Paper to Computers & Education Journal on the efficacy of the new curriculum

Full Stack Software Developer | *UC San Diego - Information Technology Services*   July 2023 – April 2024
- Created a live Full-Stack Application using **Java** and **JSP** used by 40K users to alter and display names on websites and official documents
- Validated Performance and Integration of APIs across 5+ databases using **SQL** and **Postman**
- Emulated user behavior using **Playwright** to automate QA, reducing manual testing time by 30%
- Implemented a scalable REST API solution used in 6 applications for CRUD Operations and SSO on Student Databases

Projects

Developer Journal Web App | *HTML, CSS, JS, Electron, Playwright, SQLite3*   March 2024 – June 2024
- Led team of 10 Students to Develop an All-in-One Task Hub, Journal, and File Storage System catered for Developers.
- Used Electron to create a Progressive Web App that was local first, stored all entries using a SQL Database and File System.
- Created a comprehenesive CI/CD Pipeline developed in Github Actions using Playwright & Prettier for Testing and Deployment.

Inventory Processing System | *React, Next, Typescript, Firebase, MongoDB*   November 2023 – June 2024
- Developed a Full-Stack Application for 501(c)(3) Non-Profit to manage Furniture Requests and Inventory for Veterans.
- Implemented a Firebase Backend to handle Authentication, Tiered Roles, and Storage of Site Context and User Management.
- Developed a responsive frontend using React and Next.js, interfacing with MongoDB for item availability and modularity.
- Created a Firebase Middleware to distinguish between Admins, Volunteers, and Veterans for CRUD Operations.

Political Sentiment Text Classifier | *PyTorch, Numpy, Tensorflow, MatplotLib*   September 2022 – December 2022
- Deployed **BERT Transformers** to predict and analyze political sentiment from documents with an accuracy of 85%
- Implemented Data Processing and Visualizations of loss, validation accuracy and of Confusion Matrices using **Numpy**
- Parsed and Wrangled 13K Reddit Thread entries and filtered charged political texts, used k-fold Cross Validation to mitigate overfitting

Skills

Languages: Python, C++, Java, Javascript, HTML/CSS, SQL, C, Go, ARM64, Typescript
Technologies: Pandas, PyTorch, Tensorflow, Numpy, React, MongoDB, Node, Vite, Firebase, Stripe, PDB, Postman, Unix/Bash
Libraries & Tools: Dask, Spark, Hadoop, TorchVision, OpenCV, Matplotlib, Redux/Sagas, Sklearn **Cloud Services**: AWS EC2, AWS S3