Naman Shimoga Satish

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Education

University of California, Berkeley: Electrical Engineering and Computer Science **May 2025**
Regents' and Chancellor's Scholar: Merit Scholarship given to top 2% of undergraduates GPA: 3.6/4.0

Relevant Coursework: CS61A(*The Structure and Interpretation of Computer Programs*), **CS61B**(*Data Structures*), **CS61C**(*Great Ideas of Computer Architecture*), **CS161**(*Computer Security*), **CS168**(*Internet Architecture and Protocols*), **CS170**(*Efficient Algorithms and Intractable Problems*), **CS180**(*Computer Vision and Computational Photography*), **CS184**(*Computer Graphics and Imaging*), **CS189**(*Introduction to Machine Learning*), **CS194-196**(*Large Language Model Agents*), **EE106A**(*Introduction to Robotics*)

Technical Skills

Languages: Python, **Java**, Type/**Javascript**, Golang, C/++/#, RISC-V, *PHP*, *SQL*
Tools: OpenCV, Pytorch, **Numpy, Pandas, FSL,** React, Django, ROS, CrowdStrike, *Vue.js*, *Node.js*

Technical Experience

Undergraduate Researcher, *University of California, San Francisco – Roland Henry Lab* **Sept. 2023 – Sept. 2024**
- Investigated the use of deep learning models to describe aging and disease processes in Multiple Sclerosis pathology to create a clinically reinforced statistical model of Percent Brain Volume Change.

Technology Officer, *University of California, Berkeley – Berkeley Model United Nations* **April 2023 – April 2024**
- Automated scheduling for over 90 members for a 3-day 1500+ attendee conference, saving 15+ hours of prior work.
- Maintained our open-source Django/React conference management application and developed documentation.

Cybersecurity Intern, *iTradeNetwork* **June 2023 – Aug 2023**
- Analyzed Created CrowdStrike analysis flows to assess vulnerabilities across the organization and quantify risk scores.
- Presented data-driven recommendations and strategies to the CISO for mitigation and risk reduction.
- Implemented automated tracking of penetration testing findings to improve average response time and provided insight into the severity of findings and solutions.
- Managed adherence to CIS benchmarks and developed goals for engineering teams to improve infosec posture.

Academic Intern, *University of California, Berkeley – CS61BL Data Structures* **Apr 2023 – Aug 2023**
- Provided individualized support to 30+ students in bi-weekly sections teaching asymptotics, linked lists, trees, searching and sorting algorithms.

Projects

Handshake Bot | Python, OpenCV, ROS, MoveIt!, Computer Vision
- Developed a robotic system that performs human-like handshakes by integrating CV, transforms, and motion planning.
- Implemented real-time hand tracking using MediaPipe and Intel RealSense depth camera to extract 3D positions.
- Designed and executed smooth trajectories with MoveIt! to create natural motion without unnatural joint rotations.
- Integrated Python, OpenCV, ROS, and MoveIt! cohesively, achieving a functional robotic handshake interaction.

(Auto)Stitching and Photo Mosaics | Python, OpenCV, NumPy, NetworkX, RANSAC, BLIP
- Developed an image mosaicking pipeline by computing homographies to align & blend overlapping images seamlessly.
- Implemented robust feature matching with ANMS and RANSAC to estimate transformations between images.
- Utilized NetworkX to model intra-image relationships, and Salesforce blip-image-captioning to generate mosaic names.

E2E File Sharing | Golang, E2E Encryption, Penetration Testing
- Enabled secure file sharing on unsafe data storage services using RSA, Digital Signatures, and HMACs.
- Performed penetration and fuzz testing to ensure malicious users would be unable to violate file permissions.
- Ranked in the top 95% of CS161 students in implementation and testing of safety standards in open-ended project.

Path Tracing | C++, Ray Tracing, BVH, Monte Carlo Sampling
- Implemented ray generation and scene intersection algorithms in C++ to efficiently handle thousands of rays per pixel.
- Optimized rendering performance over 100x by utilizing a Bounding Volume Hierarchy with a Surface Area Heuristic to reduce computational costs associated with ray-primitive intersection tests.
- Simulated global illumination through recursive ray tracing, capturing indirect lighting effects for more lifelike renders.

SIXT33N Mobile Robot | Arduino, Circuitry, Python, Voice Sensing, Advance Linear Algebra
- Designed and built a 3-wheeled mobile robot, utilizing an Arduino Leonardo as its microcontroller.
- Utilized System ID techniques to gather open loop parameters and set desired eigenvalues to ensure smooth driving.
- Trained a speech pattern classifier using centroids and utilized PCA to retain accuracy and increase efficiency.