Aakriti Shah

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Research Interests

I have a passion for using machine learning for social good and am drawn to leveraging my skills to cultivate a **better society**. I am very open to exploring different topics, but am interested in and have experience with conducting research in **Natural Language Processing** (LLMs specifically), **Computer Vision**, and **Healthcare AI**.

Education

MS **University of Southern California**, Computer Science — Aug 2024 – Exp. May 2026

- Dean's List
- **Coursework:** Algorithms, Natural Language Processing, Quantum Computing, Quantum Cryptography

BS **Rollins College**, Computer Science & Business Management — Sept 2020 – Dec 2023

- Honors Degree Program; President's List; Magna Cum Laude
- **Coursework:** Operating Systems, Algorithms, Software Engineering, Computer Organization & Architecture, Data Science & Analytics, Discrete Math, Calculus, Software Engineering

Research Experience

Research Assistant, AIMed Lab - Dr. Rakesh Shiradkar — May 2025 – Ongoing
Project Abstract

- Conducting digital pathology research focused on the detection of prostate cancer through tissue compartment segmentation (stroma, lumen, epithelium).
- Introducing method to add lumen back into segmentation during postprocessing.
- Using DL and foundational models such as UNet, nnUnet, and UNI. Average inference Dice score is around to 0.845.

Research Assitant, ARKAI Lab - Dr. Thai Le — May 2025 – Ongoing
Project

- Conducting research on targeted unlearning in LLMs and how it ties to the way humans store, retrieve, and erase information.
- Prompting a Harry Potter–unlearned Llama 2-7B model and applying ACT theory from psychology to explore how unlearning in LLMs parallels the entanglement of ideas in the human mind and how this effects recollection.

Research Assistant, Dr. Anita Penkova — Sept. 2024 – Ongoing

- Conducting computer vision medical imaging research focused on early detection of Diabetic Retinopathy.
- Optimizing preprocessing techniques (CLAHE, Gaussian Blur, MGA-CSG) with optimization for retinal fundus images to combat the lack of quality data.

Research Project, Natural Language Processing — Jan. 2025 – May 2025
Project Paper

- Developed a Hinglish conversational chatbot by curating and augmenting multilingual datasets with code-switched data and synthetically generated samples.
- Fine-tuned LLMs using instruction-tuned datasets for open-domain dialogue generation and evaluated outputs based on syntactic and semantic criteria.

Honors Thesis, Dr. Daniel Myers — Jan. 2023 – Dec. 2023
Project Paper

- Manually labeled real-world interview data from non-profit Crave; compared human-coded sentiment to LLM-generated output.

- Explored the implications of LLM sentiment performance in low-resource or nuanced emotional contexts.

Research Intern, National Science Foundation — Jan. 2023 – Dec. 2023
Paper

- Investigated vulnerabilities in ML models for autonomous driving under adversarial perturbations.
- Participated in weekly seminars on research practices, methods, and ethics, covering both qualitative and quantitative approaches, with perspectives from computer science and psychology.
- Analyzed robustness and transfer learning across model architectures.

Technical Projects

voteSmarter, Civic Engagement Mobile App — Feb. 2024 – June 2024
Project

- Created a mobile app connecting users to political candidates based on values and location.
- Some features include voter registration, polling locations, candidate database.

ASLearning, ML for Accessibility — Jan. 2023 – May 2023
Project

- Built a mobile app using object detection to assist communication between hearing-impaired and English-speaking users.
- Used Dart, TensorFlow, Firebase, and agile methods to prototype and deploy.

Technical Skills

Programming: Python, SQL, Java, JavaScript, R, Assembly (ARM), C, C++, XML, Dart, C#, LaTeX, Swift
Frameworks & Libraries: Node.js, pandas, Angular, Numpy, React, Flask, TensorFlow, MongoDB, Tomorrow.io, HighCharts
Tools & Technologies: Trello, Jupyter Notebooks, Figma, Canva, Tableau, CSS and HTML, Miro, Photoshop, GCP, Docker
Other Skills: Agile Development, Data Validation and Processing, Collaboration, Web and Mobile App Development

Teaching and Outreach

Volunteer, Viterbi Impact — Aug. 2024 – Ongoing

- Engaging in local community service projects including fire prevention, premature baby care, and food distribution.

Volunteer, AAPI Coming Together (ACT) — May. 2024 – Ongoing

- Supporting civic outreach and cultural advocacy within the Asian American community.
- Developed **voteSmarter** to support ACT's voter education efforts and empower civic engagement in the Asian American community.

Instructor, iDTech Camps — June 2022 - Aug. 2022

- Taught Java, Python, C#, and game development to grade school students.
- Promoted creative thinking and logical reasoning in early tech learners.

Extracurriculars

Volunteer for Viterbi Impact (USC) — 2024 - Ongoing
Member of Crochet Club (USC) — 2024 - Ongoing
Volunteer for Annenberg Media (USC) — 2024 - 2024
Rollins Rowing Team — 2020 - 2022
Member of Association of Computer Machinery (Rollins College) — 2021 - 2023