Aditya Ramesh

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Education

University of Illinois at Urbana-Champaign **May 2026**
Bachelor of Science in Statistics and Computer Science *Urbana-Champaign, IL*

Relevant Courses: Data Structures (C++), Computer Systems (C), Database Systems (SQL), Algorithms, Applied ML (Python), Discrete Mathematics, Linear Algebra, Numerical Methods, Statistics I & II, Statistical Modeling I & II, Calculus III

Technical Skills

Languages: Python, C/C++, Java, SQL, R, Kotlin
Libraries/Frameworks: HuggingFace Transformers, LangChain, PyTorch, Flask, aiohttp, NumPy, pandas, scikit-learn, libtins
Developer Tools: Git, VSCode, Docker, Azure, AWS, Pytest, Postman, DBeaver

Professional Experience

Motorola Solutions **Feb 2025 – Dec 2025**
Software Engineering Intern

- Developed streamable, low-bitrate (**4.4 kbps**) AI Vocoders in **Python**, enabling wideband audio for first responders.
- Parallelized automated PESQ/POLQA quality scoring with **Bash** scripts, reducing internal testing runtime by **90%**.
- Benchmarked Cloud STT providers (**Azure, AWS, GCP**) using WER/Intent metrics to guide translation pipelines.
- Deployed **PyTorch Mobile** models onto embedded Android systems, enabling field-ready inference for APX NEXT radios.

FOCAL Lab at UIUC **Aug 2024 – Dec 2024**
AI Undergraduate Researcher

- Extended UIUC's QuaCer-B framework to detect intersectional biases using **LlamaGuard** for **LLM-as-a-judge** evaluation.
- Constructed 1600 mixed-prefix prompts in **Python** to jailbreak **HuggingFace** and **API** models, eliciting biased responses.
- Proved feasibility of scalable, multi-attribute LLM bias detection, winning Best Presentation at UIUC URSA Symposium.

ATLAS at UIUC **May 2024 – Dec 2024**
Machine Learning Intern

- Implemented a **computer-vision** reliant trash/recycling classifier for ATLAS, enhancing waste-sorting efficiency by 43%.
- Preprocessed over 17,000 images with **pandas/NumPy** for YOLOv9 **CNN** model, allowing for 87% classification success.
- Highlighted data pipelines through **Matplotlib/Seaborn**, providing key insights to stakeholders via agile methodologies.

Discovery Partners Institute **May 2024 – Jul 2024**
Course Instructor

- Conducted CS 124 lectures for 130 under-privileged students, teaching object-oriented-programming in **Java** and **Kotlin**.
- Maintained a 93% attendance rate with a 35% year-on-year increase in student lesson completion & skill progression.

Projects

Spotify 3D Visualizer **Dec 2024**

- Architected **Flask** routing and **SQLite** integrations for a 3D music-visualization platform using Spotify user data.
- Implemented an **OAuth2** authentication flow for seamless login and data-caching, enabling minimal backend latency.
- Designed **API** endpoints using **Postman** to compute plots for **Three.js** integration, providing interactive music analytics.

Confluence-Data Contextualized LLM Enhancement Tool **Aug 2024**

- Engineered a custom-LLM tool with **RAG** on **Confluence API** data through **LangChain**, enhancing query responses.
- Embedded textual inputs as vectors using **HuggingFace** to conduct semantic/lexical search with **Pinecone** Vector DB.
- Facilitated **Ollama** API to host Llama 3.1 8B LLM locally, using **Redis** as a cache for chat-history-persistence.

ML-Based Packet Anomaly Detector **Jul 2024**

- Developed a **C++** packet sniffer with **libtins** capable of 0.05 millisecond packet capture, parsing, and serialization.
- Transmitted data to **Python** using Circular Buffers in **Redis**, bolstered by the **GeoLite2 Web API** for location tracking.
- Processed inputs with **pandas** and trained a **scikit-learn** based **Isolation Forest** model, outputting anomalous activity.

Stock Prediction Platform **Nov 2023**

- Built a **LSTM-RNN** Model for stock prediction using **Keras**, removing Look-Ahead Bias to provide 81% accuracy.
- Preprocessed 8 years of data from **Alpaca Trading's API** through **pandas** and **NumPy**, used for sliding-window training.
- Integrated with front-end team through **Django** and **SQLite** for interactive web application showing predicted price.