

# ADITYA RAMESH

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## EDUCATION

### University of Illinois at Urbana-Champaign

Bachelor of Science in Statistics and Computer Science

May 2026

Urbana-Champaign, IL

**Relevant Courses:** Distributed Systems, Data Management in the Cloud, Compilers, Data Structures, Algorithms, Computer Systems, Database Systems, Applied ML, Statistical Modeling

## TECHNICAL SKILLS

**Languages:** Python, C/C++, SQL, Java, R, Bash, Kotlin

**Libraries & Frameworks:** PyTorch, Hugging Face, LangChain, NumPy, Pandas, Scikit-learn, Keras, Flask, Django

**Tools & Platforms:** AWS, Azure, GCP, Docker, Redis, Git, Postman, DBeaver

## PROFESSIONAL EXPERIENCE

### Synchrony Financial

Jan 2026 – May 2026

*Incoming Software Engineering Intern (Data Engineering - Cloud Data Platform)*

### 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 and automated PESQ/POLQA score-calculations via **Bash** scripts, reducing internal testing runtime by **90%**.
- Benchmarked STT services (**Azure, AWS, GCP**) using WER/Intent metrics, directing language translation architecture.
- 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** enabled trash/recycling classifier for UIUC, enhancing waste-sorting efficiency by 43%.
- Preprocessed over 17,000 images with **pandas/NumPy** for YOLOv9 **CNN** model, allowing for 87% classification success.

### Discovery Partners Institute

May 2024 – Jul 2024

*Course Instructor*

- Conducted CS 124 lectures for 130 underprivileged 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

### Confluence-Data Contextualized LLM Enhancement Tool

- 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.
- Deployed **Ollama API** to host Llama 3.1 8B LLM locally, using **Redis** as a cache for chat-history-persistence.

### Eco-Journey Travel Planner

- Constructed a **MySQL** backend analyzing **45 million+** weather records to generate personalized travel rankings.
- Accelerated geospatial queries via composite indexing and coordinate-rounding for efficient large-scale data retrieval.
- Enforced 5-trip user quotas via **SQL Triggers**, automating **FIFO** rotation to manage active sessions and data integrity.

### ML-Based Packet Anomaly Detector

- 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.

### Spotify 3D Visualizer

- 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.
- Validated **RESTful APIs** using **Postman** to compute plots for **Three.js** integration, providing interactive music analytics.