Ruthvika Kosuri

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EDUCATION

University of North Carolina at Chapel Hill - M.S. in Computer Science August 2024 - May 2026

University of North Carolina at Charlotte - B.S. in Computer Science August 2021 - May 2024
(Minors in Bio-informatics, Mathematics, Summa Cum Laude, ***GPA:*** 3.93/4.00*)*

RELEVANT COURSEWORK

Machine Learning, Natural Language Processing, Deep Learning, Reinforcement Learning, Optimization for ML, LLMs for Software, Software Engineering, Data Structures and Algorithms, Computer Vision, Artificial Intelligence

PROJECTS

Agentic Planner - Adaptive LLM Selection Framework for Query Optimization [GitHub] 2025
- Developed an **agentic planner** LLM (DeepSeek Distill Llama) to dynamically route queries to the most suitable LLM, leveraging a **fine-tuned LoRA model** trained on 15K+ examples from diverse benchmark datasets (MMLU, SQuAD, PIQA, GSM8K)
- Integrated **reinforcement learning with user feedback**, improving response accuracy by $\sim 25\%$ and reducing average query latency by $\sim 20\%$ compared to single-LLM baseline
- Collaborated with peers to refine design choices and jointly conducted 50+ **evaluation** runs across multiple query types, demonstrating teamwork and adaptability in fast-paced research

Mosaic Music - Full Stack Music Streaming Platform [GitHub] 2024
- Engineered a **scalable back-end** using Flask and PostgreSQL, supporting 200+ concurrent users with <300ms average API response time
- Implemented **comprehensive testing** suite with 65% code coverage, including several unit and integration tests to ensure robust functionality
- Integrated external APIs and utilized JSON for efficient data exchange improving recommendation accuracy by $\sim 25\%$

EXPERIENCE

Research Intern - Computational Drug Discovery Chapel Hill, NC
School of Medicine - UNC Chapel Hill *June 2025 – Present*
- Designed **computational workflows** to study peptide inhibitors for CDK2 using Molecular Dynamics and AlphaFold3, improving stability predictions and drug candidate evaluation
- Automated analysis pipelines in **Python** and NetworkX, reducing manual effort and accelerating experiment turnaround time by 40%
- Collaborated with interdisciplinary researchers, adapting technical outputs for non-CS teammates and enhancing cross-team **communication**
- Supervisor: **Dr. Venkat Reddy Chirasani**

Research Assistant - ATLAS Project Chapel Hill, NC
BIND Lab - UNC Chapel Hill *May 2025 – Present*
- Developed a containerized platform for deploying **generative ML models** (SafeGPT, MolMIM, F-RAG) used for novel-molecule generation on **GPU clusters** (Longleaf, Sycamore) to support molecule generation research
- Packaged applications with **Docker** and **Kubernetes**, enabling scalable access and improving reproducibility
- Led a team of 4 undergraduate students in planning and executing 50+ docking experiments to identify optimal molecule binder positions, improving binding affinity predictions by $\sin 25\%$
- Supervisor: **Dr. Konstantin Popov**

SKILLS / RELEVANT COURSEWORK

Programming Languages: **Python(Django, Flask, Jinja), Java, C/C++**, SQL, BASH, JavaScript(NodeJS, Express), TypeScript, Linux/Unix, HTML, CSS, Assembly

AI/ML Frameworks and Libraries: **TensorFlow, PyTorch, Keras, LangChain**, numPy, pandas, scikit-learn, matplotlib, HuggingFace

Cloud / Architecture: AWS (Lambda, EC2), Docker, Kubernetes, Terraform, RESTful APIs, Microservices, Serverless Architecture

DevOps and Tools: Jenkins, Git, GitHub Actions, Postman, Maven, Gradle, Agile (SCRUM, Kanban)