

Nikhil Murali

Buffalo, NY

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Summary

Results-driven Computer Science graduate student with 3+ years of experience in backend engineering and AI research. Skilled in PyTorch, TensorFlow, LangChain and ML model optimizing techniques (prompt engineering, finetuning, RAG). Proven ability to lead research projects and software development lifecycles. Actively seeking AI/ML engineering roles.

Education

University at Buffalo, State University of New York

Masters of Science, in Computer Science (GPA: 3.81)

Aug 2024 – Dec 2025

Buffalo, NY

National Institute of Technology Karnataka, Surathkal

Bachelor of Technology, in Electrical and Electronics Engineering

July 2017 – April 2021

Surathkal, India

Professional Experience

SUNY Research Foundation

Graduate Research Assistant (Supervisor: Dr. Hongxin Hu)

Sep 2024 – Present

Buffalo, NY

- Worked on **toxic speech detection** 🔗 in children's online games using multimodal LLMs, helping design a **chain-of-thought prompting** framework for real-time voice moderation.
- Conducted evaluations comparing GPT-4o with existing voice safety systems (Roblox, Perspective API), achieving a **30% improvement in F1-score** using a curated toxic/non-toxic audio dataset.

Standard Chartered Bank

Software Development Engineer

July 2021 – July 2024

Bangalore, India

- Reduced authentication latency by 38% (from 2100ms to 1300ms) by decoupling **ThreatMetrix** into a standalone **Spring microservice** and implementing distributed caching with Hazelcast.
- Upgraded **Java(11→18)**, restructured **Postgres** database to improve query performance by 25%, and integrated **Kafka** to enhance message throughput, enabling reliable processing of up to 1M events/day.
- Led the end-to-end SDLC of Kong API Gateway routes, leveraging **Agile** methodologies and cross-functional collaboration to onboard global financial clients into the Open Banking ecosystem.
- Designed and deployed containerized API gateway application on AWS EC2 with **Docker** and Azure DevOps, automating **CI/CD** pipelines for internal API routing.
- Developed **Python** scripts for REST API testing (using Postman), log/file parsing, and system health checks. Also created **Ansible** playbooks for automated deployments.
- Used **ELK stack** to monitor real-time API Gateway traffic logs, debug errors, and analyze usage patterns.

Projects

Personalized Conversational AI for Enhanced AAC Communication

- Designed and implemented an advanced conversational AI system integrating **fine-tuned FLAN-T5** and **RAG** with personalized narratives, significantly enhancing empathetic and contextually relevant interactions for AAC users.
- Leveraged dynamic prompting techniques and context-aware retrieval using **FAISS**, combined with Mistral LLM for final response generation, achieving a **16% improvement** in BLEU and ROUGE scores. Built a **React** UI with **Flask** backend.

NoteWiz: An AI-Powered Study Assistant 🔗

- Developed a **Streamlit-based** web application integrating **Mistral's LLM** for real-time study material generation (summaries, flashcards, quizzes). Optimized few-shot learning prompts to enhance the accuracy and relevancy.

RGB-D Salient Object Detection 🔗

- Developed a cascaded saliency detection pipeline using **BBS-Net model** to extract salient regions from RGB-D images.
- Converted the trained BBS-Net model to **ONNX** format and optimized it using **TensorRT**, achieving low-latency inference for real-time saliency detection on RGB-D input with NVIDIA GPU acceleration.

Technical Skills

Languages: Java, Python, JavaScript, C++, SQL, Bash, HTML, CSS

Machine Learning: PyTorch, Tensorflow, Scikit-Learn, Numpy, Pandas, Keras, LangChain, NLTK, Librosa, Hugging Face

Data Management Tools: ChromaDB, Kafka, StreamLit, Spark, Elasticsearch, Tableau, MS Excel

Cloud & DevOps Tools: AWS, Azure DevOps, Kubernetes, Jenkins, Ansible

Developer/API Frameworks: Spring Boot, Node.js, React, Flask, Docker, Kong, FastAPI, Postman

Certifications

- AWS Certified: Solutions Architect Associate 🔗, AWS Certified: Developer Associate 🔗