

PRANATHI ALLU

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Professional Summary

AI/ML developer (B.Tech CSE, AI & Data Science, CGPA 9.47) with hands-on experience building end-to-end GenAI pipelines: data ingestion, embeddings, retrieval, LLM inference and evaluation. AI Research Intern at IBM, where I built an agentic RCA recommender with LangGraph, FastAPI. Experienced in Python, RAG, LangChain, and AI applications.

Education

Indian Institute of Information Technology Kottayam (IIIT Kottayam) *Aug 2023 – May 2027*
B.Tech in Computer Science and Engineering with specialization in AI and DS

- CGPA: 9.47/10.0

Experience

IBM *May 2026 – Aug 2026*
AI Research Intern

- Designed and built an agentic AI, Knowledge Tree-based Report Recommender for root cause analysis (RCA) on IBM Z IntelliMagic Vision, using LangGraph and FastAPI to retrieve relevant performance reports during z/OS incident analysis and reduce reliance on manual SME intervention.
- Integrated LLM-driven agent workflows with embeddings-based retrieval and APIs to drive autonomous, step-by-step diagnostic decision-making.
- Worked with IBM RITS to access and run open-source LLMs.
- Structured and organized SME troubleshooting knowledge into 57 Knowledge Trees across 12 z/OS domains, forming the knowledge base for retrieval and recommendation.
- Evaluated generated diagnostic paths against expert ground truth to validate accuracy and recommendation quality.
- **Tech Stack:** Python, LangGraph, Agentic AI, FastAPI, Embeddings, LLMs, IBM RITS (open-source LLMs)

National Institute of Technology Tiruchirappalli (NIT Trichy) *May 2025 – June 2025*
Summer Research Intern

- Developed a CNN-based real-time facial emotion recognition pipeline in TensorFlow using OpenCV and MediaPipe for face detection, achieving 86% accuracy and validating results with Scikit-learn.
- **Tech Stack:** Python, Deep Learning (CNN), OpenCV, MediaPipe, Scikit-learn, TensorFlow

Technical Skills

Programming & APIs: Python, C/C++, Data Structures & Algorithms, SQL, API Integration, FastAPI, HTML/CSS
Generative AI & Agentic AI: RAG, LLM Applications, LangChain, Llama Models, LangGraph, Agentic AI, Multi Agent Workflows, MCP, Tool Calling, Vector Databases (FAISS), embeddings, chunking, prompt engineering, NLP
Machine Learning & Data Science: Scikit-learn, OpenCV, Deep Learning, Machine Learning, EDA, Feature Engineering, Pandas, NumPy, Matplotlib, Seaborn
Cloud, DevOps & Tools: Git/GitHub, Docker, Kubernetes, CI/CD (GitHub Actions, Jenkins), AWS
Relevant coursework: OOPs, DBMS, Operating Systems, Computer Networks

Projects

FloatChat - AI-Powered Conversational Interface for Ocean Data Discovery

- Built an LLM-based conversational AI application for querying and visualizing ARGO ocean float data using natural language.
- Implemented a RAG pipeline using LangChain, FAISS (vector database), embeddings and PostgreSQL to convert natural language questions into SQL queries.
- Integrated a locally hosted LLaMA 3.1 (8B) model via Ollama for query generation and contextual understanding (prompt engineering, NLP).

- Tech Stack: Python, LangChain, FAISS, PostgreSQL, Ollama (LLaMA 3.1), Streamlit, Xarray, Plotly

AI-Powered Flood Risk Assistant for Kerala

- Built an end-to-end AI web app predicting localized flood risk from rainfall, terrain, river proximity, and population density (merged from 6+ geospatial/ census sources: IMD, NASA, HydroRIVERS, Census); achieved 87% balanced accuracy with Random Forest.
- Deployed Streamlit app with FloodBot (Gemini API) for real-time safety advice and an interactive flood risk heatmap for Kerala districts.
- Tech Stack: Python, Pandas, GeoPandas, Rasterio, Scikit-learn, Folium, Streamlit, Google Gemini API