

MAILARALINGAPPA

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PROFESSIONAL SUMMARY

AI Engineer with hands-on experience in Deep Learning, Generative AI, RAG, and Agentic AI, complemented by software engineering and data science internship experience. Experienced in building LLM-powered applications, LangGraph agentic workflows, RAG pipelines, AI evaluation systems, FastAPI services, and production-oriented AI systems using Python and PyTorch. Strong foundation in AI engineering, backend development, model evaluation, and deployment.

TECHNICAL SKILLS

- **Generative AI & Agentic AI:** LLMs, RAG, Agentic AI, LangGraph, LangChain, Prompt Engineering, Tool Calling, Embeddings, Vector Search, LLM Evaluation, Hugging Face
- **AI / Machine Learning:** Deep Learning, PyTorch, TensorFlow, scikit-learn, CNN, LSTM, Transformers, Transfer Learning, Model Evaluation, Feature Engineering
- **Backend & Data:** Python, FastAPI, REST APIs, PostgreSQL, pgvector, Redis, Pandas, NumPy, Data Pipelines
- **Big Data:** Big Data Fundamentals, HDFS, Distributed Data Processing Concepts, PageRank
- **Deployment & Tools:** Docker, AWS, Git, CI/CD, Model Deployment, Observability, Streamlit

PROFESSIONAL EXPERIENCE

IIT Dharwad

March 2026 – Present

Project Associate (Deep Learning)

- Designed and trained CNN and hybrid CNN-LSTM architectures for 5-class sequence classification, achieving 93% validation accuracy.
- Developed reproducible Python/PyTorch data pipelines for data preparation, automated labeling, model training, and evaluation.
- Applied FFT-based spectral feature engineering to multimodal sensor data, reducing noise variance by 30%, and benchmarked architectures across 5 operating regimes.

Bluestock

July 2025 – August 2025

SDE Intern

- Developed the frontend for an IPO-focused web application, implementing user-facing components and application functionality.
- Developed and integrated REST APIs using FastAPI, gaining hands-on experience in backend development and API-based application architecture.

Zidio Development

March 2025 – June 2025

Data Science & Analytics Intern

- Developed data preprocessing workflows and reusable pipelines for regression-based machine learning models, including data preparation and transformation.
- Supported end-to-end machine learning pipeline development from preprocessing through model-ready dataset generation.

PROJECTS

Enterprise AI Knowledge & Operations Copilot

Python · FastAPI · LangGraph · PostgreSQL · pgvector · Redis · Docker · AWS

- Engineered an enterprise RAG and agentic AI platform for reasoning over structured and unstructured organizational data using hybrid retrieval, metadata filtering, query decomposition, and LLM reranking.
- Built LangGraph-based workflows integrating document retrieval, SQL analytics, and automated reporting through FastAPI, PostgreSQL/pgvector, and Redis, with tenant-isolated data access and role-based tool permissions.
- Developed an automated RAG evaluation framework with 20 benchmark cases, achieving 80% Recall@5 and 0.775 MRR, with deterministic retrieval and citation-quality metrics for regression testing.
- Implemented production safeguards including JWT authentication, prompt-injection defenses, structured JSON logging, rate limiting, security headers, SSE streaming, and Docker-based deployment infrastructure for AWS.

Autonomous AI Research & Decision Intelligence Platform

Python · LangGraph · RAG · FastAPI · PostgreSQL

- Developed a multi-agent research workflow that decomposes complex queries into retrieval, analysis, verification, and synthesis tasks.
- Implemented stateful LangGraph orchestration with parallel execution, tool calling, evidence collection, citation validation, and failure recovery.
- Built evidence-grounded RAG pipelines linking generated claims to source documents and confidence signals to reduce unsupported responses.
- Developed automated evaluation for retrieval quality, factual grounding, answer relevance, and research completeness.

EDUCATION

PES University

2021 – 2025

B.Tech in Computer Science

Relevant Coursework: Data Structures & Algorithms, OOP, SDLC, Database Systems