

KUPPANNAGARI MAHENDRA ARAVIND

Full-Stack Engineer · Applied AI Systems · B.Tech CCE, LNMIIT Jaipur (2027)

+91 63018 00327 | mahendraaravind13@gmail.com | LinkedIn | GitHub | LeetCode | India



Full-stack engineering student who builds **Java/Spring Boot** and **Python/FastAPI** services with **React/Next.js** frontends. Built a multi-tenant, event-driven monitoring platform on **Kafka**, **Redis** and **PostgreSQL** with race-free incident deduplication, and a grounded-RAG platform on **Qdrant** and **LangGraph** deployed to **AWS** via CI/CD. **Finalist, ET AI Hackathon 2.0.**

EDUCATION

QUALIFICATION	INSTITUTION	BOARD / UNIVERSITY	YEAR	SCORE
B.Tech, Communication & Computer Engineering	The LNM Institute of Information Technology, Jaipur	Deemed University	2023 – 2027	CGPA 7.15/10
Class XII	Resonance Junior College, Hyderabad	TSBIE	2023	89.7%
Class X	Bhavan's Sri Ramakrishna Vidyalaya, Secunderabad	CBSE	2021	88%

TECHNICAL SKILLS

LANGUAGES	Java, Python, JavaScript, TypeScript, SQL
CS FUNDAMENTALS	Data Structures & Algorithms, OOP, Operating Systems, Computer Networks, DBMS, System Design
BACKEND	Spring Boot, Spring Security, Hibernate/JPA, FastAPI, SQLAlchemy, REST APIs, JWT, RBAC
FRONTEND	React, Next.js, React Router, Tailwind CSS, HTML/CSS
DATA & MESSAGING	PostgreSQL, Flyway, Redis, Apache Kafka, Qdrant (vector search), hybrid BM25 + dense retrieval
DEPLOY & DEVOPS	AWS EC2, Docker & Docker Compose, nginx, Caddy, GitHub Actions (CI/CD), Testcontainers, Git
AI / ML	RAG, LangGraph, Gemini & Groq APIs, TensorFlow/Keras (CNN, LSTM), scikit-learn, pandas, MATLAB (MILP)

PROJECTS

PulseOps – Multi-Tenant Monitoring & Incident Management Platform Live Demo | GitHub

Java, Spring Boot, Spring Security, Apache Kafka, PostgreSQL, Redis, Docker Compose, nginx, AWS EC2, React, TanStack Query, Gemini API

- Built a multi-tenant monitoring platform in **Spring Boot** where server-side alert rules evaluate streamed host metrics over sliding windows; incidents open, deduplicate and auto-resolve, with **Gemini** root-cause suggestions.
- Designed a **Kafka** ingestion pipeline (partition keys for per-service ordering, consumer groups, dead-letter topic, idempotent consumers) with **Redis** API-key caching and per-tenant rate limiting.
- Guaranteed **one active incident per service and rule** across instances with a **PostgreSQL** partial unique index and blocked lost updates with optimistic locking; indexing cut window queries from **70 ms to 0.3 ms** on 2M rows.
- Verified failover with 2 stateless replicas behind **nginx** (**30/30** requests served with one down); deployed live on **AWS EC2**; **37 tests** including Testcontainers integration tests in GitHub Actions CI.
- Built a **React + TanStack Query** dashboard with 7 auth-guarded pages, live polling and optimistic updates.

Project Atlas – AI Project Intelligence Platform (Grounded RAG) Live Demo | GitHub

FastAPI, PostgreSQL, Qdrant, LangGraph, Next.js, Docker Compose, AWS EC2, GitHub Actions **Finalist · Economic Times AI Hackathon 2.0**

- Built the **FastAPI** backend as layered services with project-scoped RBAC (script-hashed passwords, HMAC-signed tokens, 3 roles) and **SQLAlchemy/Alembic** models on **PostgreSQL** for metadata and audit records.
- Designed the ingestion pipeline (contextual chunking, embeddings in **Qdrant**) and a **LangGraph** workflow: query rewriting, hybrid BM25 + dense retrieval, reranking and an evidence gate that refuses rather than hallucinates.
- Reached **Recall@12 1.0** and **MRR 0.75** (baseline 0.63) on 16 held-out questions with **2.6× fewer input tokens**.
- Built deterministic compliance, CPM schedule and commissioning engines that trace each spec deviation to its impact: **compliance F1 1.0** on 12 labelled cases, **schedule MAE 1.5 days**, **21/21** steps auto-evaluated.
- Deployed the API, **Next.js/TypeScript** dashboard, PostgreSQL and Qdrant to **AWS EC2** with Docker Compose and Caddy TLS via **GitHub Actions** CI/CD; **222 backend** and **22 frontend tests** plus a reproducible evaluation suite.

EXPERIENCE

Research Intern – Learning-Based ISAC Scheduling for UAVs GitHub

The LNM Institute of Information Technology (LNMIIT)

Jaipur, India

- Extended a faculty-provided **MILP** (MATLAB intlinprog) into a randomized dataset generator that labels each of 15 UAV waypoints as sensing, communication or joint ISAC; generated **66K+ trajectories (1M+ rows)**.
- Designed a 3-branch **Conv3D-LSTM** classifier in **TensorFlow/Keras** that imitates the MILP in one forward pass.
- Reached **92.9% per-waypoint test accuracy** on 60,690 unseen trajectories vs. 86.5% for a CNN baseline (joint-mode recall 41% to 75%); sensing (Cramér–Rao bound) and communication CDFs closely track the MILP.
- Co-authored the manuscript, prepared for submission to the **IEEE Vehicular Technology Conference (VTC)**.

Teaching Assistant – Artificial Intelligence & Machine Learning – LNMIIT, Jaipur Jan 2026 – May 2026

- Mentored **80+ students** in weekly AI/ML lab sessions on Python, algorithms and hands-on model implementation.

CERTIFICATIONS & ACHIEVEMENTS

- 1,000+ LeetCode problems** solved (data structures & algorithms); contest rating **1,850+**.
- Finalist, Economic Times AI Hackathon 2.0 (2026)** with Project Atlas; **Claude 101** certification, Anthropic Academy.
- 96.7 percentile** in JEE Main 2023; **Carnatic violinist**, 10+ years of formal training (Capriccio music club, LNMIIT).