

# Aayush Kumar Singh

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## SUMMARY

AI/ML Engineer and Freelance Developer skilled in deep learning, generative AI, and MLOps. Proficient in C++, Python, and end-to-end AI deployment using Docker and CI/CD. Experienced in building web applications, AI dashboards, computer vision (YOLOv8, DeepFace), and NLP (BERT, GPT) solutions. Track record of delivering production-ready AI systems with measurable improvements.

## PROJECTS

### Agentic Insurance Voice Agent

*Mistral 7B, RAG, FAISS*

- Integrated STT (Faster Whisper) and TTS (ElevenLabs) for a fully functional AI voice agent.
- Developed 31 intent classification models with custom utterances, boosting accuracy by 18%.
- Implemented local inference with FAISS vector DB for cost-free RAG-based testing.

### AI-Based Music Recommendation System

*FastAPI, Librosa, HDBSCAN, YAMNet*

- Built end-to-end content-based music recommender using YAMNet & Librosa embeddings, improving similarity accuracy by 32%.
- Clustered 10K+ songs with HDBSCAN to auto-discover subgenres and deliver personalized suggestions.
- Integrated FastAPI backend with JioSaavn API achieving under 250ms latency.

### DeFi AI Assistant

*LangChain, Pinecone, Redis*

- Built modular FastAPI backend for DeFi queries using RAG and vector DB thresholds.
- Added Redis caching with 300s TTL to persist partial action details and reduce latency.
- Designed cost-efficient query routing with small/tiny models for clarification, reducing costs by 40%.

## EDUCATION

2023 - 2027 (Expected)	B.Tech Civil Engineering (AI/ML-Focused) at <b>BIT Mesra</b>	(CGPA: 7.62)
2022	Class XII CBSE	(76.2%)
2020	Class X CBSE	(94%)

## SKILLS

Languages	C++, Python (OOP, Data Structures, Algorithms)
AI/ML Frameworks	YOLOv8, BERT, GPT, GAN, CNN, LSTM, TensorFlow, PyTorch, RAG, FAISS
MLOps/Infrastructure	Docker, CI/CD, ETL Pipelines, Model Optimization (ONNX, TensorRT)
Tools & APIs	MongoDB, Git, FastAPI, Streamlit, LangChain, ElevenLabs, Faster Whisper
Core Strengths	Problem-Solving, Object-Oriented Programming, System Design, Debugging

## CERTIFICATIONS & COMPETITIONS

### Certifications:

- Data Science & ML Bootcamp — Krish Naik
- GenAI & LangChain Course — Krish Naik
- Docker & MLOps Specialization

### Competitions:

- **Innovate-A-Thon 3.0 (National Level)** — Ranked among Top 30 out of 1000+ participants for developing the DeFi AI Assistant project with advanced RAG capabilities.
- **Smart India Hackathon 2024** — Team Leader (College Level Qualifier). Led team of 6 to design AI-driven solution for Humsafar, surpassing 50+ competing teams.