

AMIT KUMAR

☎ (+91) 9608011035

✉ kr.amit2226@gmail.com

🌐 [LinkedIn](#)

🐙 [Github](#)

🔗 [Portfolio](#)

Education

• IIIT Naya Raipur

B.Tech in Data Science and Artificial Intelligence

Nov. 2022 – Jul 2026

CGPA: 8.69

Experience

• IronLabs AI – ML Intern

Mar 2025 – Present

- Designed an **agent-optimization service** that takes a user's agent code and autonomously improves it, with a meta-agent proposing rewrites and deciding on changes through a **propose-benchmark-decide loop**.
- Ran every iteration in a **sandboxed environment** with smoke testing, N-iteration benchmarking, and end-to-end observability, requiring no human oversight.
- Version-controlled optimized versions to GitHub, exposing them for direct inference through a UI or a **custom-built CLI**.
- Built a **model-routing service** that dynamically selects between LLMs based on user-specific data, backed by a unified **model gateway**.
- Developed the accompanying **Python SDK** and a **plugin/skills** system, letting agents load modular capability packages for specific tasks.

• Mahyco – Computer Vision Intern

Aug 2024 – Dec 2024

- Built a **deep learning pipeline** to predict crop yield from drone-captured images using supervised data, with standard image preprocessing feeding the model.
- Improved low-quality drone images with a **GAN-based enhancement** step before detection, and addressed occlusion issues by fine-tuning the trained model on a curated subset of occluded samples.
- Reduced counting MAE by **25%** and improved detection mAP over baseline models through these architecture and training refinements.

Projects

ChessMate



- AI-powered chess coach delivering personalized game analysis, best-move suggestions, and custom practice puzzles through an interactive chessboard, built on **Streamlit** and the OpenAI API.
- Built a **RAG pipeline** that retrieves similar historical games from an **Elasticsearch** index to ground analysis and study recommendations, with PostgreSQL storing conversation history and user feedback.
- Built a deep analysis pipeline achieving **95% accuracy** in error detection, containerized with **Docker** for deployment.

Advanced RAG for Company Document Analysis



- Built a **Retrieval-Augmented Generation (RAG)** system for Q&A over company annual reports, parsing financial tables and multi-page PDF layouts, with **90%+ accuracy**.
- Serialized tables into context-independent blocks and indexed embeddings in **FAISS** for retrieval; used **Pydantic** schemas to enforce structured answer formats across OpenAI and Gemini APIs.
- Improved response relevance by **30%** using parallel async API requests and **cross-encoder reranking**, with retry logic and JSON repair for robustness.

Publications

- V-Surveillance: A Hybrid Deep Learning Framework for Real-Time Aerial Surveillance Using Drone Imagery**, IEEE CICT 2025
- A Deep Learning Approach for Stress Severity Prediction Using Electrodermal Activity through Wearable Devices**, IEEE ICPR 2024

Technical Skills

Languages: Python, C/C++, SQL

Backend & APIs: FastAPI, Flask, Streamlit

Databases: PostgreSQL, Elasticsearch

ML & Data Science: PyTorch, TensorFlow, OpenCV, NLTK, Pandas, NumPy

LLMOps: LangChain, LangGraph, RAG, MCP, FAISS, Pinecone

Tools & DevOps: Docker, Git/GitHub, CI/CD