Anil Kumar

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Education

Indian Institute of Technology (Indian School of Mines) (IIT-ISM) Dhanbad — Expected May 2026
M.Tech. in Computer Science (CGPA: 7.71 / 10.00) — *Dhanbad, Jharkhand*

Central University of Rajasthan (CU - RAJ) — May 2024
B.Tech. in Computer Science (CGPA: 7.1 / 10.00) — *Jaipur, Rajasthan*

Projects

Medical Chatbot for Homeopathic Treatment — *Llama-2, Python, LangChain, NLP* — **Project Report**

- Developed a Llama-2 chatbot generating structured, **symptom-based homeopathy recommendations**.
- Implemented **NLP-based health issue classification** to produce more relevant, consistent responses per query.
- Integrated **domain medical knowledge** into the response pipeline to improve the **quality** of recommendations.

CodeCollaborate — *React, Node.js, MongoDB, Socket.io, CodeMirror, WebRTC* — **Github Link**

- Built a **real-time** collaborative coding platform for interviews and pair programming.
- Integrated **WebRTC video calling** , enhancing communication and collaboration.
- Enabled real-time **code editing with CodeMirror**, boosting coding efficiency by 30%.

Intrusion Detection System With Cluster Federated Learning — *Python, Cybersecurity, Blockchain* — **Github Link**

- Built a **Intrusion detection system** in CFL while Implementing Dummy **blockchain.**
- Mitigating **traditional machine learning challenges**, including network latency, SPOF, and data privacy etc.
- Handled **Non-IID data** and Enhance detection accuracy through Clustered Federated Learning (CFL)

Ontology-Grounded GraphRAG for Multi-Hop Reasoning — *LangChain, ChromaDB, Gene Ontology* — **Github Link**

- Built an ontology-augmented GraphRAG system to support **multi-hop biomedical QA** with better entity grounding.
- Extended Microsoft-style GraphRAG with **Gene Ontology (GO)** entity disambiguation and **LLM-based entity/relation extraction** to build a biomedical knowledge graph.
- Enabled multi-hop reasoning by applying **Leiden community detection** to split the graph into thematic subgraphs + a **MapReduce** summarization workflow for local-to-global answers.
- Evaluated against a baseline RAG pipeline using an **LLM-as-a-judge** framework; analyzed comparative scores + failure cases to guide iteration.

Achievements & Social Engagements

GATE : Cleared GATE 2024 in two papers **(CS/IT and DS/AI)** with distinguished All India Ranks (AIRs).

Hackathon : Secured **1st Rank** in Individual PS and Rank **5/66 teams** at Agglomeration 1.0 Hackathon, IIT'D.

TCS CodeVita: **Global Rank 747**; demonstrated strong algorithms and data structures proficiency.

Competition: Secured AIR 2 in **SRMC'2025** (Round 1), organized by **IIT Madras & IIT Bombay**

Vice-President (Jan 2025 - Jan 2026) : Computer Science and Engineering Society, IIT (ISM) Dhanbad.

PG - Coordinator : Udbhav'24, IIT (ISM) Dhanbad.