

AAYUSH SAHU

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EDUCATION

IIIT Naya Raipur

M.Tech in Data Science and Artificial Intelligence

2025–Present

CGPA: 9.15/10

Government Engineering College Raipur

B.Tech in Computer Science and Engineering

2021–2025

CGPA: 8.02/10

TECHNICAL SKILLS

- **Languages:** C/C++, JavaScript, HTML, CSS, Python
- **AI/ML:** Machine Learning, Deep Learning, NLP, RAG, LLMs, Computer Vision
- **Libraries & Frameworks:** Scikit-learn, Pandas, NumPy, LangChain, Streamlit, Express.js, Flask, GitHub
- **Database:** PostgreSQL, PostGIS, ChromaDB, Mysql, Docker

EXPERIENCE

AI/ML Intern (CMIT Fellow) – CHiPS, Government of Chhattisgarh

May 2026 – Present

- Developing a GIS-based conversational AI system for CHiPS, Government of Chhattisgarh — implemented a Text-to-SQL pipeline integrated with LLMs that converts natural language queries into SQL to retrieve geospatial data from government databases and render results on interactive maps in real time.

RESEARCH & PUBLICATIONS

Dynamic Query Handling with RAG Fusion for PDF-Based Knowledge Retrieval Systems

[\[Link\]](#)

IEEE Xplore, 2025

- Proposed a retrieval-augmented framework for efficient document understanding and query handling over unstructured PDFs.

Shift-Aware Meta-Reinforcement Learning for Robust Auto-Scaling in Serverless Clouds

[\[Link\]](#)

ICTIS 2026 (Accepted & Presented, Bangkok, Thailand)

- Proposed a KL-divergence-based shift detection mechanism integrated with Meta-PPO for adaptive autoscaling under dynamic workloads.

PROJECTS

QueryDocs || *Streamlit, LangChain, RAG Fusion, Ollama (Mistral), Chroma DB*

- Collaborated with a team to develop an intelligent PDF query system, leveraging Retrieval-Augmented Generation (RAG) with Ollama's Mistral model and the LangChain framework to enhance response accuracy and minimize hallucinations.

Shift-Aware Meta-PPO for Cloud Auto-Scaling || *Python, PyTorch, PPO, Reinforcement Learning, Meta-Learning*

- Developed a Shift-Aware Meta-PPO framework that combines KL-divergence-based workload shift detection with meta-reinforcement learning for adaptive cloud auto-scaling, improving resource utilization and SLO preservation.

Oil Spill Detection || *Python, YOLO, SNAP Tool, Sentinel-1 Dataset*

- Collaborated on a system to detect and distinguish oil spills from look-alike objects using AIS anomalies and Sentinel-1 data. Applied Isolation Forest for anomaly detection, SNAP for satellite image processing, and YOLO for real-time object detection, enabling real-time alerts and enhancing maritime safety.