

# RUDRAKSH CHAKRABORTY

New Delhi, India

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Second-year B.Tech CSE student at Sikkim Manipal Institute of Technology with strong coding skills and growing expertise in AI, data science, and cloud technologies. Worked on deep learning models and API development, with hands-on experience in projects like medical image segmentation and hate speech detection.

A confident communicator and team leader, with a background in debating, and leadership roles such as School President and MUN Director General. Eager to apply both technical and interpersonal skills in meaningful internship opportunities.

## KEY COMPETENCIES

- Programming Proficiency
- Problem Solving
- Team Leadership
- Public Speaking
- Project Management
- Research Skills
- Presentation Skills
- Communication
- 8+ Academic CGPA

## PROFESSIONAL EXPERIENCE

### 1Stop Data Science Analytics

Dec 2023 - Mar 2024

#### Data Science and Analytics Intern

Worked on a machine learning-based Hate Speech Detection project using Python, Scikit-learn, and NLP libraries. Contributed to model development, data collection via structured questionnaires, and performance evaluation. Managed confidential data and coordinated team meetings, gaining experience in both technical and collaborative aspects of data science.

- Contributed to a research-intensive machine learning project focused on **Hate Speech Detection**, leveraging natural language processing (NLP) techniques and supervised learning algorithms to build and optimise classification models.
- Actively participated in **model development, training, and validation cycles**, including data preprocessing, feature engineering, hyperparameter tuning, and performance evaluation using metrics such as accuracy, precision, recall, and **F1-score**.
- Designed and deployed data collection frameworks through structured data science questionnaires, enhancing dataset diversity and relevance for improved model generalisation.
- Facilitated seamless team collaboration by scheduling and coordinating virtual meetings, sprint reviews, and internal knowledge-sharing sessions, ensuring project milestones and deliverables were met on time.
- Handled sensitive datasets and confidential documentation with a high level of professionalism and data privacy awareness, contributing to the ethical standards of the research project.
- Gained hands-on experience with tools and technologies such as **Python** (Pandas, Scikit-learn, NLTK/spaCy), Jupyter Notebooks, Git, and basic data visualisation libraries.
- Developed strong soft skills including stakeholder communication, time management, and cross-functional teamwork within a dynamic and fast-paced research environment.

Built a **multi-agent GenAI chatbot** powered by Azure OpenAI (GPT-4o), Pinecone, and Azure PostgreSQL, capable of answering questions over both uploaded documents (RAG) and structured databases (SQL). Designed a full pipeline for document ingestion, validation, embedding, and retrieval, integrated with LangGraph-based agent orchestration (Moderator, RAG Agent, SQL Agent), and deployed an interactive Gradio web app with chat history storage and PDF upload support.

- Designed and deployed a **multi-agent RAG chatbot** integrating Azure OpenAI, Azure Document Intelligence, Azure Blob Storage, Pinecone DB, and Azure PostgreSQL.
- Built a **document ingestion pipeline**: PDF upload → text extraction (Form Recognizer) → chunking & embedding (OpenAI) → semantic retrieval (Pinecone).
- Developed **LangGraph-based multi-agent system** with Moderator, RAG, and SQL agents for context-aware Q&A and analytical insights.
- Designed **PostgreSQL** schema for chat history with session tracking, query classification, error logging, and performance indexes.
- Created a **Gradio web app** with drag-and-drop PDF uploads, real-time Q&A, secure file logging, and persistent chat history.
- Implemented **validation checks** to ensure PDF integrity and processability before indexing.
- Gained hands-on experience in cloud computing, MLOps, LangChain/LangGraph, database design, and scalable AI deployment.
- Delivered a **production-level chatbot** supporting both unstructured document queries (RAG) and structured SQL queries, demonstrating end-to-end AI engineering.

## Sikkim Manipal Institute of Technology

Aug 2024 - Present

### Academic Research

Working on a personal deep learning project for abdominal organ segmentation using the MICCAI FLARE 2022 dataset, applying CNN-based methods and U-Net architecture. Conducting detailed research and reporting on machine learning and medical imaging topics, while presenting key insights and model evaluation outcomes across academic panels.

- Developing a deep learning model for **abdominal organ segmentation** using the **MICCAI FLARE 2022 dataset**.
- Applying advanced medical image processing techniques, including **CNNs and U-Net** architectures.
- Conducting in-depth research and writing technical reports on machine learning and medical imaging developments.
- Delivered presentations to academic panels, showcasing model training results, evaluation metrics, and insights.
- Strengthened expertise in **deep learning, computer vision, and scientific communication**.

Completed hands-on labs and coding assignments as part of the Google Cloud & Generative AI Program, gaining practical experience in building APIs, deploying notebooks using Vertex AI, and working with cloud-based AI/ML workflows. Covered key topics including model deployment, data handling, prompt engineering, and ethical AI practices, while also preparing technical reports and presentations to summarize project outcomes.

- Completed all course labs and coding assignments focused on **Google Cloud and Generative AI technologies**.
- Built and deployed **APIs and Jupyter notebooks** using cloud-based tools like Vertex AI and Cloud Functions.
- Gained hands-on experience with data processing, model deployment, and automation workflows in cloud environments.
- Finished advanced modules on Generative AI, including transformers, prompt engineering, and ethical AI practices.
- Prepared and delivered structured reports, presentations, and technical documentation to communicate project outcomes.
- Strengthened practical skills in cloud computing, **AI/ML pipelines**, and applied problem-solving with real-world tools.

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## EDUCATION

**St. Columba's School, New Delhi**  
Graduate, High School Diploma

**Sikkim Manipal Institute of Technology**  
Bachelor of Technology, Computer Science and Engineering