DHRUV MENDIRATTA

+919013669130 | dhruv.mendiratta4@gmail.com | dhruv.portfolio | dhruv-mendiratta | dhruvm-18 | Delhi,India

AI Engineer | LLMs & RAG Systems | Full-Stack Developer |

Summary

Final-year Computer Science student with hands-on experience developing Retrieval-Augmented Generation (RAG) AI systems during a Generative AI internship at EY, leveraging tools like LangChain, FAISS, and Gemini APIs. Strong foundation in cloud computing through an AWS-focused internship at Deloitte, optimizing deployments using EC2, S3, and Lambda. Published researcher in applied deep learning, with contributions in CNN, GAN, and hybrid LSTM-GRU models for finance and medical imaging. Skilled in building full-stack AI products using Python, FastAPI, React, and PostgreSQL. Passionate about developing scalable, human-aligned AI solutions that bridge research and real-world impact.

Experience

- **Ernst & Young (EY) [🌐]** *May 2025 - Present*
  AI Intern – Generative AI & RAG Systems Delhi, India
  - Developed RAG-based enterprise AI chatbots using LangChain, FAISS, and Gemini APIs to enhance internal knowledge retrieval workflows.
  - Designed and optimized LLM pipelines integrated with proprietary document stores, improving response relevance and latency.
  - Built scalable ingestion systems with chunking strategies and efficient embedding models to improve contextual accuracy by 30
  - Collaborated cross-functionally to implement prompt engineering, vector store tuning, and pipeline deployment using modular workflows.
  - Contributed to internal automation tools focused on knowledge access and compliance documentation.

- **Deloitte Touche Tohmatsu India LLP [🌐]** *May 2024 – Jul 2024*
  Software Engineering Intern – Cloud Computing (AWS) Gurugram, India
  - Completed an intensive internship focused on cloud computing fundamentals and AWS services including EC2, S3, and Lambda.
  - Participated in the development of cloud-based solutions with guidance from senior engineers, gaining exposure to deployment workflows and infrastructure design.
  - Learned best practices in cloud architecture, cost optimization, and real-time monitoring.
  - Contributed to internal documentation and knowledge-sharing sessions around DevOps tooling and AWS ecosystem.
  - Developed adaptability, communication, and teamwork skills in a fast-paced, professional environment.

Education

- **Manipal University Jaipur** *Sep 2022 - Present (Expected Graduation: 2026)*
  B.Tech in Computer Science and Engineering Jaipur, India
  - **Relevant Coursework:** Data Structures & Algorithms, Machine Learning, Artificial Intelligence, Cloud Computing, Database Systems, Operating Systems
  - **Achievements:**
  - Student Excellence Award for outstanding overall performance (5th semester & 6th semester)
  - Active Member – Google Developer Student Club (GDSC) – AI/ML & Full Stack Domains
  - Published 3 AI-focused research papers (Deep Learning, RAG Systems, Stock Forecasting)

- **The Vivekanand School** *July 2022*
  Class XII Delhi, India
- **Somerville School Noida** *July 2020*
  Class X Noida, India

PROJECTS

- **Enterprise RAG Chatbot:** *May 2025 - July 2025*
  Tech Stack: [LangChain, FAISS, Gemini APIs, Python, LLMs] [GitHub]
  - Developed an internal enterprise chatbot using Retrieval-Augmented Generation (RAG) techniques for efficient document retrieval and question answering.
  - Integrated vector search (FAISS) with Gemini APIs and LangChain pipelines for improved contextual accuracy.
  - Contributed to prompt engineering, document chunking, and embedding optimization, leading to a 30% gain in response relevance.
- **Hybrid Stock Price Prediction – LSTM + GARCH** *Jan 2025*
  Tools: [Python, TensorFlow, Keras, Pandas, ARCH, Matplotlib] [GitHub]
  - Designed a hybrid model combining LSTM (time-series) and GARCH (volatility modeling) for S&P 500 data forecasting.
  - Achieved high prediction accuracy (R^2 = 0.9901, RMSE = 0.0125) and submitted findings for academic publication.
  - Conducted feature engineering, cross-validation, and error analysis using visualization tools.
- **Product Sentiment Analyzer (Full-Stack NLP App)** *March 2025*
  Tools: [FastAPI, React, NLTK, PostgreSQL, Chart.js] [GitHub]
  - Designed and implemented a custom sentiment analysis algorithm using NLTK, capable of classifying product reviews into positive, neutral, and negative categories.
  - Built and deployed a FastAPI backend for processing and analyzing user-submitted reviews in real-time.
  - Developed a responsive React frontend with dynamic graphs and visual sentiment indicators for improved UX.
  - Implemented keyphrase extraction to highlight core customer feedback themes.
  - Integrated PostgreSQL for data storage and created preprocessing pipelines for structured review datasets.
- **Railway Ticketing Chatbot (Rule-Based NLP)** *May 2025*
  Tools: [Python, NLTK] [GitHub]
  - Built a rule-based chatbot simulating a train ticket booking flow using keyword mapping and intent matching.
  - Designed a text interface and input validation pipeline for a streamlined booking simulation..
  - Applied early NLP techniques to classify queries and respond contextually.

PUBLICATIONS

C=CONFERENCE, J=JOURNAL

[C.1] Dhruv Mendiratta, et al. (2025). **Skin Disease Detection using Deep Learning: A Comparative Analysis of CNN Models on the ISIC Dataset**. In *2nd International Conference on Computing and Machine Learning (CML 2025), Sikkim Manipal University*

- Designed a hybrid model combining CNN, GAN, and XGBoost to classify skin diseases from dermoscopic images.
- Achieved 96.3% accuracy, outperforming EfficientNet and ResNet; used Grad-CAM and saliency maps for interpretability.

[C.2] Dhruv Mendiratta, et al. (2025). **Enhanced Stock Market Forecasting Using Hybrid BiLSTM-GRU Models** . In *ICAESRTA – 2K25, Karmaveer Bhaurao Patil College of Engineering*

- Developed a hybrid deep learning model for S&P 500 stock prediction, integrating BiLSTM and GRU architectures.
- Achieved R^2 = 0.9901, MAE = 0.0101, and RMSE = 0.0125 using rigorous preprocessing and cross-validation.

[J.1] Aryan Gupta, Dhruv Mendiratta, Author 3, et al. (Year). **Driving Medical Diagnostics Forward: The Role of AI in Innovation and Implementation** . *Cuestiones de Fisioterapia*, Vol. 52, Issue 2, pp. 155-184. DOI: Cuest.fisioter.2025.54(2):155-184

- Reviewed the role of AI in radiology, dermatology, and pathology, with focus on diagnostic accuracy, clinical integration, and ethical challenges..
- Explored applications of AI-driven image analysis, disease classification, and workflow automation in healthcare systems.

Skills

- **Programming Languages:** Python, C, SQL, HTML, CSS, JavaScript
- **Data Science Analysis:** NumPy, Pandas, Matplotlib, Seaborn, GARCH, ARCH, Feature Engineering, Model Evaluation (R^2, RMSE, MAE), Grad-CAM
- **Database Systems:** PostgreSQL, MySQL, MongoDB
- **Data Science & Machine Learning:** Scikit-learn, TensorFlow, Keras, CNN, LSTM, BiLSTM-GRU, GANs, XGBoost
- **Cloud Technologies:** AWS (EC2, S3, Lambda), Gemini APIs, Cloud Architecture Optimization
- **DevOps & Version Control:** Git, GitHub, CI/CD Basics, Jenkins, VS Code
- **Specialized Area:** LLMs, LangChain, Retrieval-Augmented Generation (RAG), Prompt Engineering, FAISS
- **Mathematical & Statistical Tools:** ARCH/GARCH models, Time Series Analysis, Probability & Stats, Regression Analysis, Statistical Inference
- **Other Tools & Technologies:** FastAPI, React, Node.js, Chart.js, PowerBI, REST APIs
- **Research Skills:** Comparative Model Evaluation, Academic Writing, Dataset Curation, Paper Presentation, Literature Review, Explainability Techniques

Honors and Awards

- **Student Excellence Award** *Sept 2024*
  Manipal University Jaipur
  ◦ Awarded for learning and contribution during the AWS-focused internship at Deloitte Touche Tohmatsu LLP
- **Student Excellence Award – Research Recognition (2025)** *May 2025*
  Manipal University Jaipur
  ◦ Honored by university for publishing peer-reviewed research on AI-driven medical diagnostics in an international journal
- **HACKX Hackathon – Round 2 (2024)** *2024*
  HACKX, Manipal University Jaipur
  ◦ Advanced to the final round of a university-level hackathon hosted by Manipal University Jaipur
- **Paper Presentation – CML 2025, Sikkim Manipal University** *2025*
  Sikkim Manipal University
  ◦ Presented research paper on Skin Disease Detection using Deep Learning
- **Paper Presentation – ICAESRTA 2K25, KBP College of Engineering** *June 2025*
  KBP College of Engineering
  ◦ Presented research on hybrid stock forecasting using BiLSTM-GRU models

Certifications

- **Deloitte:** Internship Certificate – Cloud Computing & AWS (EC2, S3, Lambda)
- **NPTEL:** Design & Analysis of Algorithms (SWAYAM, Govt. of India)
- **Oracle:** Java Foundations
- **AWS Academy:** Cloud Foundations
- **Cisco:** Certified Cybersecurity Specialist
- **IBM:** Getting Started with Enterprise AI
- **Vanderbilt University:** MATLAB for Data, Signal & Image Analysis
- **Great Learning:** HTML Tutorial
- **Great Learning:** CSS Tutorial
- **Great Learning:** Introduction to JavaScript

Additional Information

Languages: English (Fluent), Hindi (Native)
Interests: Generative AI, Research Writing, Financial Markets, Technology Blogging, Building AI Bots