RAMAN SINGH

ACADEMIC DETAILS

Year	Degree / Board	Institute	GPA / Marks(%)
---	M.Sc in Mathematics	Indian Institute of Technology Delhi	9.44
2024	B.Sc.(Hons.) Mathematics	Sri Venkateswara College,DU	8.9
2021	Central Board for Secondary Education (CBSE)	Jhamkudevi Sr. Sec. School	96.6
2019	Central Board for Secondary Education (CBSE)	Jhamkudevi Sr. Sec. School	94.4

TECHNICAL SKILLS

- **Languages:** Python,SQL,C,C++,Latex
- **Libraries:** Scikit-learn,Keras,Pytorch,Numpy,Pandas,Flask,OpenCV
- **Tools/Techs**: Git,DVC,MLflow,Docker,Power Bi,Github Actions,AWS(EC2,ECR,S3),Hugging Face Spaces,Dagshub
- **Links:**Github ,Website

IIT DELHI THESIS

Title: AI-Driven Portfolio Optimization
Supervisor: Dr. Aparna Mehra
Description:ML, RL, GNNs, and LLMs to design hybrid models that improve portfolio efficiency and risk-adjusted returns.
- Investigating ML, RL, GNNs, and LLMs to design hybrid AI models for portfolio optimization and financial decision-making.
- Exploring how GNNs capture market dependencies and how LLMs enhance intelligent asset selection in financial markets.
- Aiming to develop a hybrid AI framework that integrates ML and LLMs with finance to improve portfolio efficiency and risk-adjusted returns.

PROJECTS

- **FinApp RAG Agent :** AI-Powered Financial Data Analysis
  - Built a **Retrieval-Augmented Generation(RAG)** system with **LangChain** & **Gemini API** to process natural language queries on finance.
  - Integrated **ChromaDB, Pandas & PyPDF** for efficient retrieval, automated parsing, and interactive **CSV/PDF financial analysis.**
  - Delivered a **Dockerized**, session-based pipeline with streaming responses, error handling, and scalable **cloud deployment.**
- **Automated Sentiment Analysis with MLOps and Explainability** :
  - Designed an end-to-end sentiment analysis MLOps pipeline using **DVC, MLflow** & Flask for training, tracking, and deployment.
  - Automated CI/CD pipelines with **GitHub Actions, Docker & AWS ECR**, achieving seamless transition from staging to production.
  - Enhanced transparency by integrating **LIME-based explainability** in a Flask app for real-time sentiment prediction insights.
- **End-to-End ML Pipeline for Loan Approval**:
  - **Developed a complete ML pipeline** for loan approval including preprocessing, feature engineering, training, and evaluation.
  - Built a **FastAPI** application exposing training and prediction endpoints; **containerized** with Docker for portability and scalability.
  - Implemented **CI/CD with GitHub Actions** to build/push Docker images to **AWS ECR** and deploy on **EC2**, ensuring reliable production releases.

——————————————— Research Paper Implementation ———————————————

- **Lipnet** (Lip-Reading App) :
  - Reproduced **LipNet (3D CNN + Bi-LSTM + CTC loss)** using **TensorFlow/Keras** on the **GRID dataset** for lip-reading prediction tasks.
  - Built a Flask-based web demo with **DVC** for reproducible lip-to-text experiments, ensuring reliable model experimentation.
  - Applied **Google Mediapipe** for lip detection and tested multiple deep learning models to enhance recognition accuracy.

——————————————— IIT Delhi Coursework ———————————————

- **Multi Linear and Logistic Regression from Scratch**(Dr. Aparna Mehra) :
  - Implemented linear regression models from **scratch using Python and NumPy**, developed cost function and gradient descent with visualizations, and strengthened understanding of supervised learning concepts.

QUALIFYING EXAMS

- **Joint Admission Test (JAM) Rank:** 267

SCHOLASTIC ACHIEVEMENTS

- **INSPIRE-SHE Scholar (DST, Govt. of India)**: Awarded to **top 1%** Class XII students nationwide for academic excellence.

EXTRA CURRICULAR ACTIVITIES

- **Relevant Courses**:
  - **Machine Learning Specialization** – Coursera (Stanford, Andrew Ng): Supervised & Unsupervised Learning, Regression, Classification ,Clustering
  - **Deep Learning Specialization** – Coursera (DeepLearning.AI): Neural Networks, CNNs, RNNs, LSTMs, GRUs, Sequence Models
  - **Machine Learning in Production** – Coursera (DeepLearning.AI): ML Pipelines, Deployment, Containerization, Monitoring, CI/CD
- **House Working Comittee Member,Satpura House**-Contributed to hostel governance, event management, and student welfare initiatives.
- **Freelance QnA Expert – Chegg**: Delivered accurate subject solutions, enhanced problem-solving and academic writing skills.
- **Research Intern – SRIVIPRA**, Sri Venkateswara College: Worked on Applications of Partial Differential Equations (Jun–Sep 2023)

Disclaimer: All the information on this page is entered by student.

RAMAN SINGH

IIT COURSE

Degree	Institute	CGPA	Dept. Rank
M.Sc in Mathematics	Indian Institute of Technology Delhi	9.44	---

COURSES DONE

Linear Algebra, Computer Programming, Mathematical Programming, Biomedical Data Analysis

EXTRA CURRICULAR ACTIVITIES

• 'House Working Comittee Member, House Working Comittee'