

HARDIK AGARWAL

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Education

Vellore Institute of Technology, Bhopal

B.Tech in Computer Science Engineering, CGPA: 8.53/10 Expected Graduation: May 2027

2023 – Present

Bhopal, India

St. Joseph's College, Prayagraj

Class XII (ISC): 91.25%

2023

Prayagraj, India

St. Joseph's College, Prayagraj

ICSE Class X: 93.6%

2021

Prayagraj, India

Technical Skills

Languages: Python, Java, SQL, JavaScript

Core CS: Data Structures & Algorithms, OOP, DBMS, Operating Systems, Computer Networks

Machine Learning: TensorFlow, Keras, Scikit-learn, CNN, LSTM, GRU, Deep Learning, Time Series Forecasting

Generative AI: RAG, LLMs, Whisper, Ollama, BGE-M3, Semantic Search

Research: Causal Inference, Convergent Cross Mapping (CCM), Neural Granger Causality, Feature Engineering, Model Evaluation

Frameworks & Tools: Next.js, React, Flask, Django, REST APIs, AWS, Git, GitHub

Experience

Motilal Nehru National Institute of Technology Allahabad

May 2026 – Jun 2026

Research Intern (Supervisor: Prof. Anil Kumar Singh)

Prayagraj, India

- Reproduced and extended a causality-powered stock forecasting framework using Pearson Correlation, CCM and Neural Granger Causality on Indian equity markets.
- Built a preprocessing pipeline for 700+ trading days including chronological splitting, normalization and sliding-window generation.
- Designed and evaluated DNN, CNN, LSTM and GRU models using TensorFlow/Keras.
- Evaluated models using RMSE, MAE, MAPE and R^2 , demonstrating improvements from causal feature integration.
- Prepared reproducible experiments and technical documentation.

Projects

RAG-Based Educational Video Assistant

Python — Whisper — Ollama

- Built a Retrieval-Augmented Generation system for semantic search across educational videos.
- Integrated Whisper Large-v2, BGE-M3 embeddings, cosine similarity retrieval and Llama 3.2 via Ollama.
- Automated transcript generation, vector indexing and context-aware responses.

Smart-Seva — Frontend — Backend — Live

Next.js — Flask

- Developed a full-stack agricultural decision support platform integrating weather, crop pricing and educational APIs.
- Implemented RBAC authentication and modular frontend/backend architecture.
- Integrated analytics and ML inference modules.

Causality-Powered Stock Price Forecasting

Python — TensorFlow

- Implemented causal stock forecasting using CCM and Neural Granger Causality.
- Developed DNN, CNN, LSTM and GRU forecasting models and compared baseline versus causal approaches.
- Evaluated using RMSE, MAE, MAPE and R^2 .

Certifications

- Research Internship Completion Certificate – MNNIT Allahabad
- NPTEL Elite Certification – Machine Learning (IIT Madras)
- Google – Bits and Bytes of Computer Networking
- HackerRank Gold Badges – Java, Python and C++