Jatin Sharma

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Education

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
MS(R) CSE	Indian Institute of Technology, Indore	9.92/10	2024–2026
B.Tech. CSE	University Institute of Technology, HPU, Shimla	9.04/10	2020–2024
Senior Secondary	Central Board of Secondary Education	94.8%	2020
Secondary	Central Board of Secondary Education	88.8%	2018

Experience

- **Encardio Rite** *Sep. 2025 – Current*
  Data Scientist Engineer Intern Hybrid
  – Engaged in exploratory data analysis (EDA), feature engineering, and statistical assessment for large-scale time series datasets related to structural maintenance and monitoring.
  – Developed, validated, and deployed predictive models for failure prediction, anomaly detection, and structural health assessment using classical and deep learning approaches.
  – Implemented end-to-end automated machine learning workflows utilizing MLOps principles with MLflow for model versioning, tracking, and reproducibility.
  – Built real-time model inference APIs and dashboards using FastAPI, ensuring low-latency deployment and integration with operational infrastructure.
  – Collaborated with multidisciplinary teams to deliver insights and predictive analytics for critical infrastructure, supporting maintenance decisions and risk mitigation.

- **Google Cloud Facilitator Program** *Apr. 2021 – Sep. 2021*
  Trainee Remote
  – Completed an intensive curriculum covering core Google Cloud Platform (GCP) services, including Compute Engine, Cloud Storage, BigQuery, and AI/ML products.
  – Engaged in multiple hands-on projects and labs building scalable, secure cloud solutions involving machine learning workflows and data engineering.
  – Successfully finished the "30 Days of Google Cloud" challenge, enhancing practical skills in cloud architecture, automation, and deployment.
  – Earned commendation for proactive participation, consistent performance, and commitment to mastering cloud technologies.

Projects

- **Traffic Flow Prediction using Spatio-Temporal Modeling** *Jan. 2025 – Till date*
  Under the guidance of Dr. Nagendra Kumar, IIT Indore Confidential
  – Technologies: Python, PyTorch, TCN, GAT, MLP, Attention, RAG, Embeddings, GNN
  – Built a sequence-to-sequence spatio-temporal forecasting model combining temporal convolutional networks and attention mechanisms for dynamic pattern prediction.
  – Incorporated retrieval-augmented generation (RAG), contextual embeddings, and lightweight graph-based modules to enhance prediction accuracy and spatial reasoning.
  – **Keywords:** Graph Machine Learning, Time Series Forecasting, Sequence-to-Sequence Learning, Attention Mechanisms, Prediction Models, Spatio-Temporal Modeling

- **IITI Document QA Pipeline: Retrieval-Augmented Generation for Document Querying** *Apr 2025 – Aug 2025*
  IITI-SoC Project GitHub
  – Technologies: Python, Pathway, Langchain, Flask, Streamlit, Selenium, HDBScan, Sentence-Transformer, Attention, RAG, Embeddings, GNN
  – Developed an end-to-end document QA pipeline combining web scraping, preprocessing, and real-time retrieval-augmented chatbot with both API and GUI (Streamlit) interfaces.
  – Implemented phase-based intent classification and RAG response generation, enhanced by memory management, session caching, and efficient batch processing.
  – Integrated OCR, clustering, contextual embeddings, and graph-based modules for robust document processing of PDFs, images, and text from the IIT Indore website.
  – **Keywords:** RAG, ETL streaming, Document QA, Prompt Engineering, Session Management, Langchain, LangGraph

- **Real-Time Object Detection System** *Jan. 2025 – Feb. 2025*
  Personal Project GitHub
  – Technologies Used: Python, OpenCV, YOLOv5, Tkinter, NumPy
  – Built a real-time object detection and removal system using **YOLOv5** integrated with a custom **Tkinter GUI** for live webcam feed interaction.
  – Implemented inpainting-based object removal with interactive region selection and dynamic control features like pause, delete, and track.
  – Achieved an efficient frame rate of **15–25 FPS on CPU**, making it deployable on non-GPU systems.
  – **Keywords:** Object Detection, YOLO, Real-Time System, GUI Development, Tkinter, OpenCV, Computer Vision, Inpainting

- **Sentiment Analysis using Transformers** *Sep. 2024 – Dec. 2024*
  Under the guidance of Dr. Nagendra Kumar, IIT Indore GitHub
  – **Technologies Used:** Python, TensorFlow, HuggingFace Transformers (BERT, RoBERTa, GPT), Scikit-learn, OpenCV, XGBoost
  – Built a multimodal sentiment classification system integrating textual (BERT) and visual (CNN) signals for improved opinion mining from social and market data.
  – Fine-tuned BERT and RoBERTa for ABSA, Twitter, and market sentiment analysis.
  – Analyzed transformer attention heads for feature attribution, discovering task-specific attention head contributions and transfer learning patterns.
  – **Keywords:** Sentiment Analysis, Multimodal Learning, NLP, BERT, ABSA, Market Sentiment, Transformer Fine-tuning, Deep Learning, Contextual Embedding

- **Optimal File Compressor** *Dec. 2023 – Apr. 2024*
  Under the guidance of Dr. Balvir Singh Thakur, UIT Shimla GitHub
  – Technologies Used: C++ (core logic), Python (UI and routing), LZW Algorithm, Huffman Coding
  – Engineered a hybrid file compression system combining **LZW** and **Huffman Coding** to achieve enhanced compression ratios over traditional methods.
  – Implemented the compression logic in **C++** for high performance, and built a **Python**-based GUI for intuitive user interaction and file routing.
  – **Keywords:** Data Compression, LZW, Huffman Coding, Hybrid Algorithms, File Systems, C++, Python, GUI Development

- **Chatify – Real-Time Chat Application** *Oct. 2023 – Feb. 2024*
  Personal Project GitHub
  – Technologies Used: React.js, Firebase, Chakra UI, JavaScript, HTML, CSS
  – Built a full-stack real-time chat application with user authentication, message persistence, and instant updates using Firebase Realtime Database.
  – Designed responsive UI components using Chakra UI, with features like active user tracking, media sharing, and chat room switching.
  – **Keywords:** React, Firebase, Chakra UI, Real-Time System, Chatting Application, Frontend Development, Web App, JavaScript

Technical Skills

- **Programming**: C/C++, Python (NumPy, Pandas, PyTorch, TensorFlow), Java
- **Machine Learning**: Graph Machine Learning, Sequence-to-Sequence Modeling, Generative AI, Agentic AI, LangChain, LangGraph, NLP, Meta-Learning, Retrieval-Augmented Generation (RAG), MLflow (MLOps)
- **Data Science & Statistics**: Similarity Search (ANN, LSH), High-Dimensional Vector Databases (Faiss, Pinecone), Financial Forecasting, Data Visualization, Time-Series Analysis, Probabilistic Modeling
- **Database Systems**: DBMS, SQL, Vector Databases, Information Retrieval (DPR, BM25)
- **Web Development**: NextJS, React, Firebase, FastAPI, jQuery
- **Additional Skills**: System Design, Optimization Techniques, Performance Tuning, Linux, Windows

Key courses taken

- **Mathematics**: Linear Algebra, Basic Calculus, Discrete Maths, Probability, Statistics
- **Computer Science**: Algorithms, Data Structures, DBMS, Programming Languages, OOP, Operating Systems, Computer Networks, Computer Organization
- **Artificial Intelligence**: Machine Learning, Data Science, AI, Data Warehousing and Data Mining

Achievements

- **Successfully Cleared GATE Exam Multiple Times**, *2023 – 2024*
  Achieved All India Ranks of 535, 831, 1433, and 2425 through dedicated self-preparation and comprehensive study.