Rajat Satonkar

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Education

The LNM Institute of Information Technology, Jaipur *August 2022 – Present*
Bachelor of Technology in Computer Science Engineering

Technical and Soft Skills

Languages: Python, C++, C, SQL

Core Skills: Machine Learning, Data Science, Artificial Intelligence, Deep Learning, Computer Vision, Natural Language Processing, Data Structures and Algorithms, Data Analysis, Vector Databases, Embeddings, ML Fundamentals, LLMs, RAG, Strong Communication, Analytical Thinking

Tools/Frameworks: TensorFlow, PyTorch,, Docker, Scikit-learn, Pandas, NumPy, Matplotlib, Seaborn, Langchain, Hugging Face, WhisperAI

Experience

Data Science Intern *July 2025 – Present*
King's College London — London, UK
Project: AI-Powered Multimodal Analysis of Sleep's Effect on Memory Recall

- Built a scalable pipeline to classify memory recall from 10,000+ experimental audio recordings; fine-tuned and deployed OpenAI Whisper achieving a 4.15% WER and 3.1% CER.
- Devised a "Caption-Then-Compare" strategy to address zero-shot model limitations (CLIP, BLIP-2), enabling better similarity-based image-text alignment.
- Designed a robust classification system using BLIP-2 and Flan-T5 for rule-based decision-making on experimental images.

Projects

RAG- Financial Knowledge Extraction And Retrieval System *GitHub* ⌨

- Automated extraction of Apple's 2024 10-K filing (240+ pages) into 2,500+ optimized chunks and 1,200+ XBRL facts
- Built hybrid chunking algorithm with metadata enrichment and generated 1,024-dimensional L2-normalized embeddings using BAAI/bge-large-en-v1.5 for vector similarity search.
- Deployed Qdrant vector database via Docker storing embedded chunks (1,024-dim vectors), integrated with Mistral-7B LLM for context-aware generation achieving accurate financial query responses.

Automatic Number Plate Recognition with Deep Learning *GitHub* ⌨

- Trained a custom YOLOv8 on 5,000+ images and integrated SORT for real-time, multi-frame plate detection with high accuracy.
- Applied EasyOCR on plate regions and used regex validation for compliance with Indian formats, detecting and validating number plates 30% faster.

Leadership

Public Relations and Outreach Head at Desportivos: Led outreach initiatives for LNMIIT's annual sports fest, managing engagement with 100+ colleges, a crowd of over 1000, and multiple promotional events.