

SAGAR AGRAWAL

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EDUCATION

Indian Institute of Technology (IIT), Delhi

Aug 2022 – Nov 2025

M.Tech in Computer Science and Engineering

Heritage Institute of Technology, Kolkata

Aug 2017 – May 2021

B.Tech in Computer Science and Engineering

PROJECTS

Language Laterality in Natural Paradigm for Human Brain

| Prof. Rahul Garg

Dec 2024 – Nov 2025

Python, NumPy, NiBabel, fMRI Analysis (Pieman dataset)

- Implemented language laterality during **naturalistic listening** using the Pieman movie fMRI dataset, contrasting findings with conventional **task-based studies**.
- Implemented **Inter-Subject Functional Connectivity (ISFC)** to compute **Laterality Index (LI)** across cortical language regions, processing 50+ subject scans.
- Developed a complete neuroimaging analysis pipeline covering **data preprocessing, ROI extraction, voxel time-series correlation, ISFC computation, and LI quantification**.
- Discovered **bilateral language activation under naturalistic conditions** — a significant departure from the predominantly left-lateralized patterns reported in prior literature.

Climate Data Visualization Web Application

| Prof. Srikanta Bedathur

Sep 2023 – Nov 2023

Python, Flask, PostgreSQL, JavaScript, External Weather API

- Developed a **full-stack web application** using **Flask** to visualize climate data across multiple locations in India, serving dynamic charts and forecasts to end users.
- Integrated a **real-time external weather API** to display forecasts and automated weather alert notifications, improving user engagement.
- Designed and managed a **PostgreSQL database** schema for efficient climate data storage and retrieval, optimizing query performance.

AI-Powered Multimedia Transcript Analyzer with RAG-based Q&A

Apr 2026 – May 2026

Python, LangChain, OpenAI Whisper, Mistral AI, ChromaDB, Streamlit, RAG

- Built an end-to-end **AI meeting assistant** that ingests YouTube URLs or local audio/video files, transcribes speech locally using **OpenAI Whisper**, and generates structured meeting intelligence - title, summary, action items, key decisions, and open questions using **Mistral AI** via **LangChain**.
- Built a **Retrieval-Augmented Generation (RAG)** pipeline using **ChromaDB** as the **vector store** and HuggingFace's **all-MiniLM-L6-v2** for **semantic embeddings**, allowing users to ask natural-language **questions** over **top-k vectors** extracted based on similarity of the documents with the question instead of using full meeting transcripts.
- Orchestrated the **full pipeline** using **LangChain** and an interactive web interface using **Streamlit**.

Real-Time Network Multiplayer Game

| Prof. Rahul Narain

Nov 2023 – Jan 2024

TCP Sockets, Multithreading, Client-Server Architecture

- Developed a real-time multiplayer game where players compete by clicking disappearing squares, supporting concurrent sessions over TCP connections.
- Implemented server-side timestamp validation to ensure synchronization across clients and prevent duplicate scoring in high latency scenarios.
- Demonstrated expertise in real-time networking with TCP, multithreaded client-server architecture, and low-latency game logic development.

Recommendation System with Content-Based Filtering | Deployed on AWS

Nov 2023 – Jan 2024

Python, Flask, Scikit-learn, AWS Elastic Beanstalk, GitHub, TMDb API

- Built a **content-based movie recommendation engine** using **cosine similarity** on **TF-IDF feature vectors**, achieving high relevance scores on benchmark test sets.
- Integrated a **Naive Bayes sentiment classifier** trained on user reviews, then fetched reviews via the TMDb API enabling real-time sentiment scoring for those reviews and providing the sentiment using the trained model on this review.
- Deployed the application on **AWS Elastic Beanstalk** with an automated CI/CD pipeline (GitHub + AWS Code Pipeline), enabling zero downtime deployments.

CERTIFICATIONS

- **Deep Learning Specialization** — DeepLearning.AI, Coursera | 2026
Completed 5-course series covering neural networks, optimization, ML project structuring, CNNs, RNNs, LSTMs, NLP, Transformers.
Credential: [[Certification link](#)]

TECHNICAL SKILLS

- **Languages:** C/C++, Python, JavaScript, HTML, SQL
- **Frameworks & Libraries:** Flask, React, NumPy, Scikit-learn, PyTorch, LangChain
- **Tools & Platforms:** Git, Linux, RAG, Docker, Kubernetes, AWS (Elastic Beanstalk, CodePipeline)