

Sambhav Jaiswal

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EDUCATION

Harcourt Butler Technical University (HBTU)

Bachelor of Technology in Civil Engineering (CGPA: 7.3)

Kanpur, India

Aug. 2024 – May 2028

Modern School

Class XII (CBSE) - 90%

Noida, India

2021 – 2022

TECHNICAL SKILLS

Languages: Python (Pandas, NumPy), C++ (Advanced DSA), SQL (PostgreSQL, PostGIS), Dart (Flutter), LaTeX

Data Engineering: Apache Kafka, Apache Spark Streaming, Apache Airflow, Docker, Supabase, Delta Lake

AI/ML Frameworks: Scikit-Learn, PyTorch, YOLOv8, LangChain, CrewAI, Ollama (Llama 3.2), SHAP, RAG

Tools & Software: SolidWorks, Microsoft Excel (Advanced), ArcGIS, Git, FastAPI, Matplotlib, Seaborn

EXPERIENCE & RESEARCH

Independent Researcher

Jan. 2025 – Present

Environmental AI Modeling

Noida, India

- Synthesized findings from established academic theses and research papers to build a deep understanding of hydrological modeling and neural network architectures.
- Developed a feed-forward backpropagation ANN to predict COD/BOD/DO levels in the Ganga River with a testing accuracy of $R = 0.9960$.
- Engineered a Recurrent Neural Network (RNN) using Quickprop to forecast flood onset in Kanpur utilizing 3-year daily precipitation datasets.
- Integrated GIS-IDW with ANN models to map spatiotemporal distribution of PM10 and NO2 pollutants in industrial zones.

Technical Associate

Aug. 2025 – Present

Association of Civil Engineers (ACE), HBTU

Kanpur, India

- Coordinating technical structural design workshops and managing academic documentation for Civil Engineering projects.
- Facilitating knowledge transfer between faculty and student members regarding AI integration in Civil Engineering.

PROJECTS

Intelligent Vehicle Ecosystem (IVE) | Kafka, Spark Streaming, YOLOv8, FastAPI

Dec. 2025

- Architected a real-time streaming pipeline to ingest telemetry from 100+ simulated vehicles at 10 Hz with PostgreSQL.
- Deployed YOLOv8 and MediaPipe for computer vision tasks including object detection and driver drowsiness monitoring via EAR optimized for RTX 3050 hardware.
- Implemented a Dynamic Programming optimizer to solve the Optimal Gear Shift Problem, minimizing acceleration time.

My Neural Space (Personal OS) | Flutter, Supabase, Behavioral AI, Graph Theory

Sept. 2025

- Architected a cross-platform cognitive ecosystem using Flutter and Supabase to audit behavioral efficiency across a 4-device hardware stack, implementing a 1440px grid for precision time-tracking.
- Developed a recursive Neural Tree for knowledge mapping and a predictive analytics model for HBTU attendance optimization using constraint satisfaction logic.

Smart Infrastructure Lifecycle Manager | PostGIS, XGBoost, Survival Analysis, CrewAI

Nov. 2025

- Developed a geospatial data lake using PostGIS to handle coordinate-based queries for bridge structural health monitoring.
- Utilized Survival Analysis (Cox Proportional Hazards) and XGBoost to predict deterioration rates and maintenance costs.
- Integrated a 0/1 Knapsack optimizer via Dynamic Programming to maximize network safety within a fixed budget.

- Built an ETL pipeline with Apache Airflow featuring PII masking and Parquet partitioning for financial data governance.
- Leveraged Llama 3.2 via Ollama for NLP-based transaction parsing and XGBoost with SHAP for explainable credit risk assessment.
- Developed an autonomous wealth agent using CrewAI and RAG to provide personalized strategies based on Monte Carlo simulations.

ACHIEVEMENTS & CERTIFICATIONS

Competitive Programming: Solved 200+ problems across LeetCode and GeeksforGeeks (Focus: DP and Graph Theory).

Kaggle Certifications: Python, Pandas, Machine Learning, Data Visualization, Feature Engineering, Data Cleaning.

Financial Markets: Completed Zerodha Varsity modules on Technical Analysis and Fundamental Analysis.

Academics: Scored 90% in Class XII CBSE Boards; Coursera Certification in Advanced Microsoft Excel.