OJAS SINGH

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Education

Vellore Institute Of Technology   Sept. 2022 – Apr. 2027
Integrated M.Tech - Computational and Data Science   *(CGPA:- 8.45)*

Projects

Diabetic Retinopathy Detection System | *Python, TensorFlow, OpenCV, Scikit-learn, XGBoost*   **July 2025**
- **Developed** an **ensemble detection system** with **CNN, RF,** and **XGB**, preprocessing **2750 retinal images**, achieving 75.27% accuracy.
- **Resolved imbalanced data** with **weights** and optimized **memory usage** for efficient processing.
- **Addressed imbalanced data** with class weights, **resolved overfitting** using **Dropout layers** and early stopping during **100-epoch training.**

Zomato EDA and Regression Analysis | *Python, Pandas, Matplotlib, Seaborn, Scikit-learn*   **May 2025**
- **Conducted** in-depth **EDA** on Zomato's restaurant data to identify factors influencing ratings, cleaning 20+ features including location, cuisines, and cost with **missing and inconsistent values** resolved using mapping and imputation.
- **Engineered** features and trained **XGBoost and Linear Regression models**, achieving an R^2 **score of 86.4%**, enabling robust prediction of restaurant ratings based on food, service, and cost parameters.
- **Tackled multicollinearity** by performing **correlation analysis** and **feature selection**, significantly reducing model complexity while maintaining high prediction accuracy.

Algerian Forest Fire Prediction System | *Python, Pandas, Scikit-learn, Flask, NumPy, Matplotlib*   **April 2025**
- Engineered & cleaned **Algerian Fire Weather Index dataset (FFMC, DMC, DC, ISI, BUI, FWI),** creating lag/interaction features and boosting cross-validated performance (**Accuracy 93% / R^2 0.88 vs 0.62 baseline).**
- Tuned ensemble pipeline (**XGBoost + Random Forest**) with **stratified K-fold** and permutation importance, **reducing MAE 27%** and lifting **minority fire-event recall to 0.91.**
- Deployed Flask API (**less than 120 ms inference**) with serialized scaler/model and interpretability (**feature importance), cutting false alarms nearly 18%** and enabling actionable early risk alerts.

Experience

Database Analyst Intern   Oct 2025 – Dec. 2025

University Management System | *SQL, SQLite, Python, SQLAlchemy*
- **Designed** and **managed** a **relational database** for academic workflows using SQL and **SQLAlchemy**.
- Implemented secure **CRUD operations, joins**, and role-based data access for students, faculty, courses, exams, and grades.
- Ensured **data integrity, normalization, and transactional consistency** across multiple academic modules.

Technical Skills

Languages: Python, Java, SQL
Developer Tools: Tableau, Google Colab, VSCode, Git, GitHub
Database: SQLite, RDBMS
Technologies/Frameworks: Flask, Numpy, Pandas, Scikit-learn, Matplotlib, Seaborn, TensorFlow, OpenCV, SQLAlchemy(ORM)
Soft Skills: Communication, Teamwork, Problem Solving

Certifications

- **Applied Machine Learning in Python** by University of Michigan (**Coursera**)
- **Introduction to Machine Learning** (**NPTEL**)