Shail K Patel

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Portfolio | LinkedIn | Github

EDUCATION

LJ University **July 2023 - August 2027**
Degree: B.Eng in Artificial Intelligence and Machine Learning

PROJECTS

PredictGrad – Academic Risk Detection with ML
Forecasted Semester 3 marks and identified students at academic risk using predicted percentile drops.
Built subject-wise regression models (Voting Regressor: Ridge + Lasso + ElasticNet) using Semester 1–2 data.
Developed a classification pipeline (Stacking: CatBoost, BalancedBagging, ExtraTrees) to flag risk when percentile dropped ≥10 points
Achieved test MAE of 5.16–7.10 (subject-wise) and F1-score of 0.51 for risk detection.
Deployed as a Streamlit app with SHAP-based explanations and a risk dashboard.
Tech: Python, Scikit-learn, CatBoost, LightGBM, SHAP, Streamlit, Matplotlib, Pandas

Beyond The Marks – Learning Impact & Bias Detection Tool
Built a statistical + ML pipeline to analyze student performance and detect grading bias using SHAP/Shapley values.
Quantified teacher effectiveness through impact on attendance and mark distribution.
Engineered indicators like average marks and attendance trends to assess learning outcomes.
Applied explainable AI to measure influence of student factors (e.g., attendance, gender, religion) on marks.
Flagged bias where sensitive attributes had Shapley impact > 0.30.
Used one-hot encoding to isolate categorical effects; computed correlations across subjects and attendance.
Tech: Python, Pandas, NumPy, SHAP, Scikit-learn, Pyplot, Streamlit.

The Profit Oracle – Business Analytics & Forecasting Tool
Developed a Streamlit-based tool using Python and ML to analyze business financials and forecast revenue trends.
Automated insights on rolling returns (daily/weekly/monthly), repeat customers, and city-wise customer behavior.
Compared average manufacturing cost vs. sales price by product category; analyzed profit and sales by location.
Integrated regression models and correlation matrices to reveal key relationships between price, cost, age, and sales.
Tech: Python, Pandas, NumPy, Scikit-learn, Streamlit, Matplotlib, Streamlit.

Attend2Achieve – Subject-wise Attendance & Performance Analyzer
Developed a tool to analyze correlations between subject-wise attendance and marks (theory + practical).
Explains why performance patterns emerge using skewness, standard deviation, IQR, and mean-median gaps.
Suggests actionable improvements based on data-driven analysis per subject.
Includes visual aids like histograms, correlation heatmaps, and distribution plots for marks and attendance.
Concludes with an overall academic insight dashboard across all subjects.
Tech: Python, Pandas, NumPy, Matplotlib, Seaborn, Streamlit.

CERTIFICATIONS, SKILLS & INTERESTS

- **Certifications:** Stanford: Supervised Machine Learning: Regression and Classification, IBM: Python for Data Science, AI & Development, IBM: Databases and SQL for Data Science with Python.
- **Technologies:** Python; Scikit-learn; TensorFlow; Streamlit; PostGreSQL; MySQL.
- **Skills :** Supervised Machine Learning; Deep Learning; Neural Networks; SQL; Data Analysis; Statistical Analysis.