STUDENT MARKS ANALYSIS

Project submitted to the

APSSDC

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Abstract

In the modern educational landscape, understanding student performance through data-driven methods has become essential. This project, titled “Student Result Analysis Using K-Nearest Neighbors (KNN) and Visualization,” presents a machine learning-based approach to analyze and predict student results based on academic scores.

The system uses a dataset containing key attributes such as Math Score, Reading Score, and Writing Score. Through exploratory data analysis (EDA), correlation heatmaps, pair plots, and boxplots are used to uncover relationships between the subjects. The analysis reveals strong positive correlations, particularly between reading and writing scores, which informs the feature selection process.

A K-Nearest Neighbors (KNN) classifier is implemented to classify students as ‘Pass’ or ‘Fail’ based on their academic scores. The model is trained on scaled data to ensure uniformity across features, and then evaluated for its accuracy using a test set. Additionally, the system is interactive—users can input a new student’s scores, and the model predicts the outcome in real-time.

This project demonstrates the integration of machine learning and visualization for academic performance analysis. It can assist educators in identifying students at risk, making data-backed decisions, and enhancing the overall learning experience.