Abstract

Title: Student Performance Analysis: A Data Analytics Project using Python, Pandas, Matplotlib, and Scikit-learn

https://github.com/Praveen-jumma/StudentPerformanceAnalysis.git

Abstract: In today's educational landscape, understanding student performance and identifying factors influencing academic success is crucial for designing effective interventions and improving educational outcomes. This project aims to analyze student performance data using Python's data analysis libraries such as Pandas, visualization tools like Matplotlib, and machine learning techniques from Scikit-learn.

The dataset used in this project comprises various attributes such as student demographics, socio-economic factors, attendance records, and academic scores across multiple subjects. Through exploratory data analysis (EDA) techniques implemented with Pandas, we uncover patterns, trends, and correlations within the dataset. Visualizations generated using Matplotlib provide insights into student performance distribution, attendance patterns, and the impact of socio-economic factors on academic achievement.

Furthermore, we utilize machine learning algorithms from Scikit-learn to develop predictive models for student performance. By employing techniques such as regression, classification, and clustering, we aim to predict academic scores, identify at-risk students, and segment students based on performance patterns. These models enable educators and policymakers to proactively intervene and provide targeted support to students in need.

The project demonstrates the power of Python's data analytics ecosystem in analyzing and interpreting student performance data, ultimately contributing to evidence-based decision-making in education. Through the integration of data analysis, visualization, and machine learning techniques, this project offers a comprehensive approach to understanding and improving student outcomes.

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