Title of the Project

Student Score Prediction and Performance Analysis

Machine Learning Project Using Python

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WHY WE HAVE SELECTED THIS TOPIC

- **Educational Impact:** The Student Score Prediction project aligns with our commitment to supporting students by providing predictive insights into their academic performance.

- **Data-Driven Decision-Making:** Selecting this topic reflects our recognition of the power of data analytics in education. Predicting student Score allows Teachers and Educational organization to make informed decisions to enhance teaching strategies.

- **Strategic Planning for Institutions:** Educational institutions can use predictive analytics for strategic planning, resource allocation, and continuous improvement, enhancing the overall quality of education.

PROBLEM STATEMENT

1. The primary objective of higher education institutions is to impart quality education to their students. To achieve the highest level of quality in the education system, knowledge must be discovered to predict student enrollment in specific courses, identify issues with traditional classroom teaching models, detect unfair means used in online examinations, detect abnormal values in student result sheets, and predict student performance. This knowledge is hidden within educational datasets and can be extracted through data mining techniques.

2. This project focuses on evaluating students' capabilities in various subjects. By performing this task, knowledge is extracted that describes students' performance in the end-semester examination. This helps in identifying dropouts and students who require special attention, enabling teachers to provide appropriate advising and counseling.

3. This project understands how the student's performance (test scores) is affected by other variables such as Gender, Ethnicity, Parental level of education, and Lunch and Test preparation course.

MOTIVATION BEHIND THIS TOPIC

- The motivation behind the Student Score Prediction project is to create a proactive educational environment, leveraging data-driven insights to empower educators, support students, and optimize resources for a more effective and personalized learning experience.
- Mainly we are focusing on clear transparency between Parents, Students and Educators about the Desired Marks.

METHODOLOGY

- **Importing the Required Library**

a) import numpy as np
b) import pandas as pd
c) import matplotlib.pyplot as plt
d) import seaborn as sns
e) from sklearna.linear_model import LinearRegression, Ridge, Lasso
f) from sklearn.model_selection import train_test_split

- **Importing the Dataset**

- **Checking the Accuracy of the Model -** Evaluated with

  MAE - Mean Absolute Error

  MSE - Mean Squared Error

  RMSE - Root Mean Squared Error

  R-squared.

- **Regression Analysis**

  Linear Regression , Ridge , Lasso

TOOLS AND TECHNOLOGIES USED

Tools:

1. **JupyterLab and Jupyter Notebook:** Interactive computing environments for code development, execution, and documentation.
2. **Microsoft Excel:** It's used for observing overall dataset structure and storing it in Excel Sheet .

Technologies:

1. **Python:** Programming Language

   A versatile programming language used for various applications, including web development, data analysis, and machine learning.

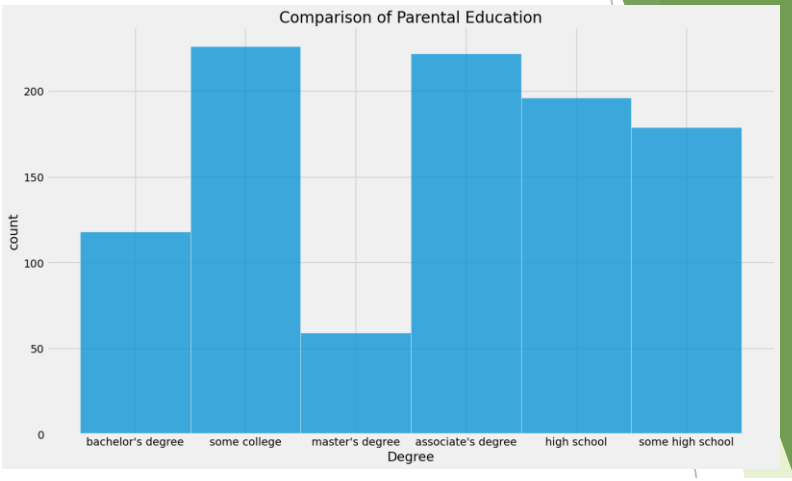
2. **NumPy, Pandas, Matplotlib, scikit-learn (sklearn):** Libraries
   1. NumPy: A library for numerical computing with support for large, multi-dimensional arrays.
   2. Pandas: A library for data manipulation and analysis with data structures like DataFrames.
   3. Matplotlib and Seaborn: Libraries for data visualization, offering a range of plotting options.
   4. scikit-learn: A machine learning library providing tools for data analysis and modeling.

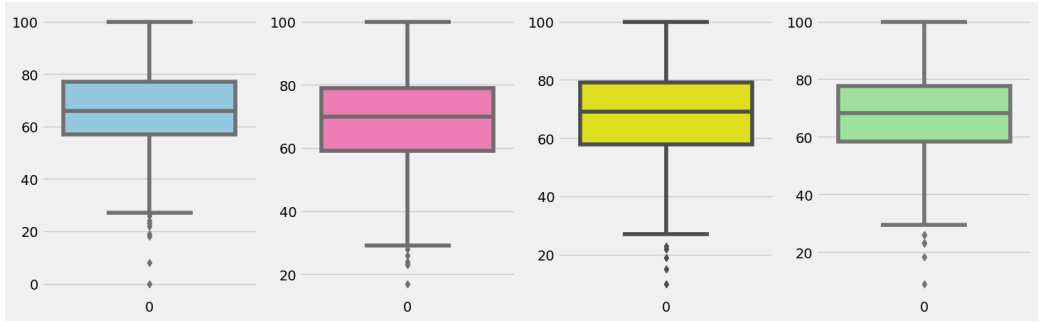
3. **Linear Regression Model:** A linear regression model describes the relationship between a dependent variable, y, and one or more independent variables, X. The dependent variable is also called the response variable. Independent variables are also called explanatory or predictor variables.

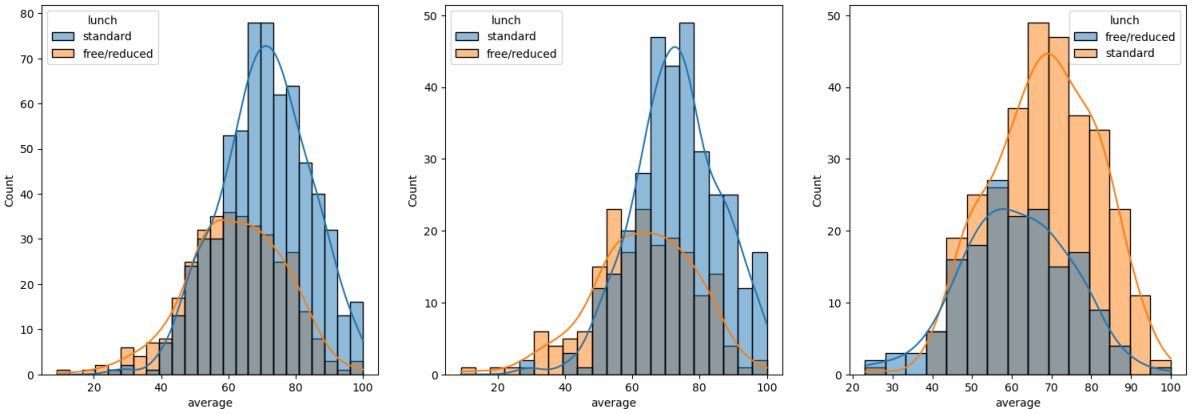
FUTURE SCOPE OF THIS PROJECT

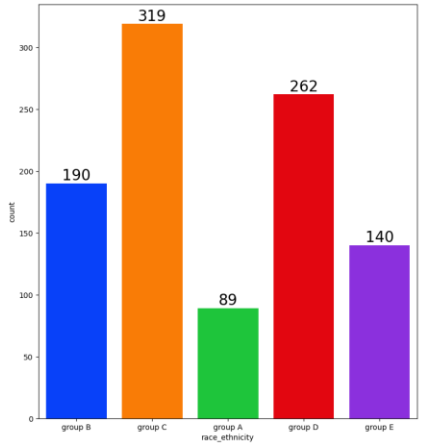
- The future scope of the Student Score Prediction topic involves not only refining predictive models but also transforming education through individualized learning paths, early intervention systems, and collaborative efforts between students, educators, and parents.
- The Student Score Prediction project not only provides a valuable tool for predicting student performance but also opens avenues for improving educational strategies and support systems. This project stands as a testament to the potential of data science in advancing educational outcomes and student success.

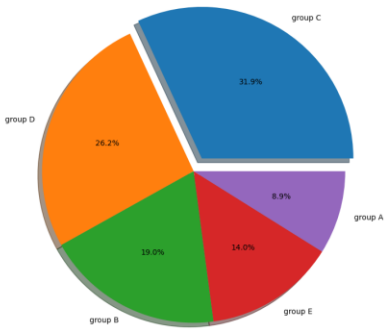
DIAGRAMS EXPORTED WHILE PERFORMING EDA TASK

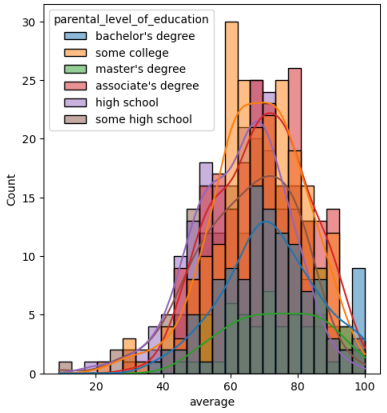


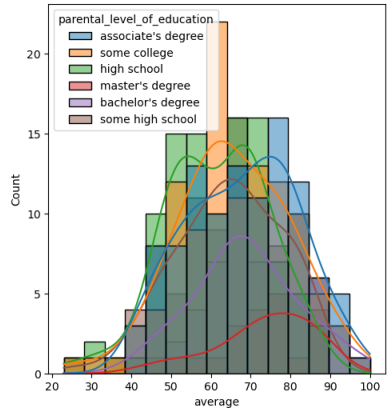


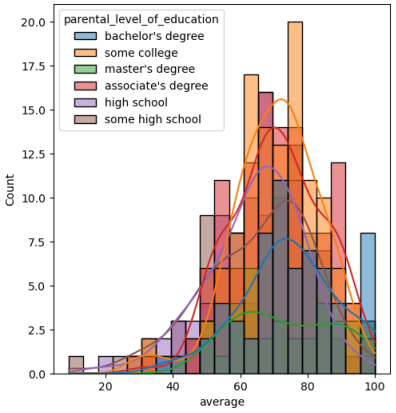












THANK YOU