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Assignment No - 1

Use Case: Predicting Student Performance in Exams

Data

Data Sources:

The data for predicting student performance can be collected from various sources such as:

- School or college databases (student grades, attendance records, assignment scores).
- Online learning platforms (engagement metrics, quiz scores).
- Socioeconomic factors from government education reports.

Data Issues:

- **Missing Values:** Some student records might have missing exam scores, attendance details, or incomplete demographic information.
- **Inconsistent Data:** Differences in grading systems across schools may lead to inconsistencies.
- **Bias in Data:** If the dataset includes students only from a particular region or socio-economic background, the model might be biased.
- **Outliers:** Extremely high or low grades that might not represent typical performance.

Types of Data:

- **Numerical Data:** Exam scores, number of study hours, attendance percentage.
- **Categorical Data:** Gender, school type (public/private), parental education level.
- **Text Data:** Student feedback, motivation levels (if collected through surveys).

Problem Statement

Educational institutions aim to improve student performance by identifying key factors that affect their academic success. The goal of this project is to build a predictive model that can analyze student data and predict exam performance. By understanding these factors, educators can provide personalized learning strategies, early interventions, and improve overall academic outcomes.

The project involves:

1. **Data Collection & Preprocessing:** Gathering and cleaning student-related data.

2. **Exploratory Data Analysis (EDA):** Identifying patterns and correlations in student performance.
3. **Model Building:** Applying machine learning algorithms (e.g., Linear Regression, Decision Trees, Random Forest) to predict student scores.
4. **Evaluation & Insights:** Using metrics such as R-squared and RMSE to evaluate model accuracy and derive insights.
5. **Implementation:** Deploying the model for real-time student performance tracking and recommendations.

Conclusion: By analyzing student performance data, schools can identify struggling students early, adjust teaching strategies, and improve learning outcomes efficiently.

THANKYOU