Dynamic Machine Learning Report

Automated ML Analysis Report  
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# About the Dataset

1000 observations, 8 columns. Numerical Columns: ['math score', 'reading score', 'writing score']. Categorical Columns: ['gender', 'race/ethnicity', 'parental level of education', 'lunch', 'test preparation course'].

# Exploratory Data Analysis

Feature 'math score': Range 0.00 to 100.00. Mean 66.09. Std 15.16.

Feature 'reading score': Range 17.00 to 100.00. Mean 69.17. Std 14.60.

Feature 'writing score': Range 10.00 to 100.00. Mean 68.05. Std 15.20.

Feature 'gender': categorical distribution analyzed.

Feature 'race/ethnicity': categorical distribution analyzed.

Feature 'parental level of education': categorical distribution analyzed.

Feature 'lunch': categorical distribution analyzed.

Feature 'test preparation course': categorical distribution analyzed.

# Model Building and Evaluation

Task: Regression  
Model: Random Forest  
Performance Score: 0.9168, RMSE: 4.4793

# Explainable AI Results

SHAP and LIME analyses provided critical global and local model explanations.

# Conclusion and Future Recommendations

Future improvements include hyperparameter optimization and fairness evaluations.