**Project Documentation: Student Performance Prediction**

**======================================================**

Objective:

----------

To predict final student grades based on prior academic indicators using a regression model. The aim is to assist institutions in identifying students at academic risk and plan early interventions.

Dataset Summary:

----------------

File: student\_performance.csv

Columns:

- student\_id : Unique identifier for each student

- hours\_studied : Total hours dedicated to self-study

- attendance\_rate : Attendance percentage (0–100%)

- assignment\_score : Average assignment score (0–100)

- previous\_grade : Grade from the previous semester

- final\_grade : Actual final grade (target for prediction)

Tools & Libraries:

------------------

- Python

- pandas

- scikit-learn

Model Used:

-----------

- Algorithm: Linear Regression

- Features: hours\_studied, attendance\_rate, assignment\_score, previous\_grade

- Target: final\_grade

- Evaluation Metric: Mean Squared Error (MSE)

Results:

--------

The model predicts student grades based on input features with reasonable accuracy.

Coefficients indicate the impact of each feature, helping educators prioritize efforts.

Example Output:

---------------

Mean Squared Error: ~4.25

Feature Coefficients:

- hours\_studied: 1.25

- attendance\_rate: 0.65

- assignment\_score: 0.85

- previous\_grade: 0.95

Conclusion:

-----------

This simple yet effective model can be scaled with larger datasets and integrated with real-time student analytics platforms. It highlights the usefulness of data in educational planning and student performance improvement strategies.

Author:

-------

Addanki Krishnakanth

Email: krishnakanthaddanki@gmail.com