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PRACTICAL 7

Aim :- Performing Regression to predict value for target variable using KNN Regression

Problem Statement :- Predicting Housing Prices

The goal is to create an accurate predictive model that estimates house prices based on key features such as the size of the house, no of bedrooms, distance to city center, age of property.

Theory :- Regression

- It is a ML algorithm based on supervised learning.
- Regression models a target prediction value based on independent variables used to find out relationship between variables & forecasting.
- It predicts the continuous output variables based on independent input variable. like prediction of house prices.
- KNN Regression is used to in different fields including finance, economics & psychology to understand behaviour of a specific variable like cost of a product.

✱ Evaluation Metrics for Linear Regression

- They are used to determine strength of a regression model. It is an assumption on how well the model is producing the observed outputs.

1) Mean Square Error (MSE)

- It calculates the average of the squared difference of actual & predicted values of data points.

$$MSE = \frac{1}{n}\sum_{i=1}^{n}(y_i - \hat{y}_i)^2$$

where n is no. of data points
y_i is actual value
$\hat{y}_i$ is predicted value.

2) R-Squared Value

- It indicates how much variation the developed model can explain or capture.
- It is always in the range of 0 to 1. The better the model matches the data, greater the R-squared number.