Assignment

Energy Efficiency

Description: Multi-Linear and Polynomial Regression on the Energy Efficiency Dataset
In this assignment, you will perform multi-linear and polynomial regression on the Energy Efficiency dataset to predict the heating load (y1) of buildings. Follow the instructions below:

1. Load the Energy Efficiency dataset using the pandas library.
    - Dataset Name: Energy Dataset
2. Apply necessary preprocessing steps on the dataset, such as handling missing values, scaling features, or encoding categorical variables if required.

3. Separate the features (X) and the target variable (y: heating load) from the dataset .
4. Split the dataset into training and testing sets using an 80:20 ratio.

5. Perform multi-linear regression:
    - Fit a multi-linear regression model to the training data using the LinearRegression class from the sklearn.linear_model module.
    - Predict the heating load for the testing data using the trained model.
    - Evaluate the performance of the model by calculating metrics such as mean squared error (MSE) and coefficient of determination (R^2).
    - Print the MSE and R^2 values to assess the model's accuracy.

6. Perform polynomial regression:
    - Use the PolynomialFeatures class from the sklearn.preprocessing module to transform the features into polynomial features.
    - Fit a polynomial regression model to the training data using the LinearRegression class.
    - Predict the heating load for the testing data using the trained polynomial regression model.
    - Evaluate the performance of the model by calculating MSE and R^2.
    - Print the MSE and R^2 values.

7. Compare the performance of the multi-linear regression and polynomial regression models based on the MSE and R^2 values.

    Energy Data sent
    Link-https://docs.google.com/spreadsheets/d/1jXngyixNhyj7C6yj5olExZQeWWwzSUja/edit?usp=sharing&ouid=111885139572109362769&rtpof=true&sd=true

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