LAB ASSIGNMENT-8

Title: Apply different feature selection approaches for the classification/regression task. Compare the performance of different feature selection approach.

Objective: The objective of this lab assignment is to explore various feature selection techniques for classification and regression tasks

Dataset: Use the **UCI Iris dataset** for the classification task and the **Boston Housing dataset** for the regression task.

Tasks:

1) Load the Iris dataset and the Boston Housing dataset.
2) Preprocess the data: handle missing values, encode categorical variables (if any), and normalize/standardize features.
3) Split each dataset into features (X) and target variable (y).
4) For each dataset and each feature selection approach (minimum 3), follow these steps:
    a. Apply the feature selection technique to select a subset of features.
    b. Split the data into training and testing sets (e.g., 70% training, 30% testing).
    c. Train a classification model (e.g., Logistic Regression, Random Forest) for the Iris dataset and a regression model (e.g., Linear Regression, Decision Tree) for the Boston Housing dataset using the selected features.
    d. Evaluate the model's performance on the testing set using appropriate metrics (e.g., accuracy, mean squared error).
5) Compare and analyze the performance of each approach in terms of model performance and the number of selected features.
6) Summarize your findings and insights in a report, including a comparison table or visualization.

Submission:
Prepare a PDF file that covers all the tasks mentioned above. Include code snippets, visualizations, and tables to support your analysis. Clearly explain the steps you took, the results you obtained, and your interpretation of the findings.