

HW6 Report

This report describes the analysis of the dataset from the CSV file 'Position_Salaries.csv'. It generates various graphs to examine and analyze data, and provides insights into the dataset.

Data Loading:

The script starts by importing necessary libraries, such as NumPy, Matplotlib, and Pandas. It loads a dataset from a CSV file called 'Position_Salaries.csv' using Pandas.

Data Preparation:

The script extracts the independent variable (x) and the dependent variable (y) from the dataset. It uses `train_test_split` to split the data into training and testing sets (although the testing set is not used in the subsequent code).

Linear Regression:

It uses the `LinearRegression` model from Scikit-Learn to fit a linear regression model to the data. It makes predictions (`y_pred`) using this model. It prints a comparison of predicted values and actual values.

Polynomial Regression:

It fits a polynomial regression model with a degree of 4 to the data. It uses Matplotlib to create scatter plots of the original data points and the polynomial regression curve.

Support Vector Regression (SVR):

It applies Support Vector Regression to the data. It scales the data using `StandardScaler` and fits the SVR model. It creates scatter plots to visualize the SVR results.

Decision Tree Regression:

It uses a `DecisionTreeRegressor` to fit a decision tree regression model to the data. It predicts the salary for a specific position level (6.5) and plots the decision tree regression curve.

Random Forest Regression:

It employs a `RandomForestRegressor` with 10 estimators to fit a random forest regression model to the data. It predicts the salary for a specific position level (6.5) and plots the random forest regression curve.

The code demonstrates different regression techniques and visualizes the results for the given dataset and for comparing the performance of various regression models on the same data.

Discuss possible problems you plan to investigate for future studies

Classification(SupervisedLearning) • Text Mining
• Clustering(UnsupervisedLearning) • NeuralNetworkandDeepLearning