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import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.linear_model import LinearRegression
from sklearn.model_selection import train_test_split
from sklearn.metrics import mean_absolute_error, mean_squared_error
student = pd.read_csv('student_scores.csv')
X=student.iloc[:,0].values.reshape(-1,1)
y=student.iloc[:,1].values
# Split the dataset into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2)
# Initialize the Linear Regression model
model = LinearRegression()
# Train the model on the training data
model.fit(X_train, y_train)
# Predict the target values for the test data
y_pred = model.predict(X_test)
# Evaluate the model
# Mean Absolute Error
mae = mean_absolute_error(y_test, y_pred)
# Mean Squared Error
mse = mean_squared_error(y_test, y_pred)
# Root Mean Squared Error
rmse = np.sqrt(mse)
print(f"Mean Absolute Error: {mae}")
print(f"Mean Squared Error: {mse}")
print(f"Root Mean Squared Error: {rmse}")
# Plot the results
plt.scatter(X, y, color='blue', label='Data points')
plt.plot(X, model.predict(X), color='red', label='Regression Line')
plt.title('Simple Linear Regression')
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plt.xlabel('Hours Studied')

plt.ylabel('Dependent Variable (Scores)')

plt.legend()

plt.show()

# Plt the actual and predicted values using bar chart
X_axis = np.arange(len(y_test))

plt.bar(X_axis-0.2, y_test, 0.6, label='Actual')

plt.bar(X_axis+0.2, y_pred, 0.6, label='Predicted')

plt.xlabel("Test Records")

plt.ylabel("Marks")

plt.title("Student Score prediction")

plt.legend()

plt.show()

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output

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C:\Users\mlm\PycharmProjects\pythonProject\venv\Scripts\python.exe
C:\Users\mlm\PycharmProjects\pythonProject\venv\linear_regresion.py

Mean Absolute Error: 5.20013529602771

Mean Squared Error: 31.284284402577875

Root Mean Squared Error: 5.593235593337534

Process finished with exit code 0

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