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import numpy as np

import matplotlib.pyplot as plt

from sklearn.linear_model import LinearRegression

from sklearn.metrics import mean_squared_error, r2_score

from sklearn.model_selection import train_test_split

# Step 1: Create dataset

X = np.array([1, 2, 3, 4, 5, 6, 7, 8, 9]).reshape(-1, 1) # Hours studied

y = np.array([40, 50, 60, 65, 70, 75, 80, 88, 95]) # Scores

# Step 2: Split into training and testing data

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=0)

# Step 3: Train Linear Regression Model

model = LinearRegression()

model.fit(X_train, y_train)

# Step 4: Predict

y_pred = model.predict(X_test)

# Step 5: Evaluate performance

rmse = np.sqrt(mean_squared_error(y_test, y_pred))

r2 = r2_score(y_test, y_pred)

print(f" RMSE: {rmse:.2f}")

print(f" R-squared: {r2:.2f}")

# Step 6: Visualize the regression line

plt.scatter(X, y, color='blue', label='Actual data')

plt.plot(X, model.predict(X), color='red', label='Regression Line')

plt.xlabel("Hours Studied")

plt.ylabel("Score")

plt.title("Simple Linear Regression - Hours vs Score")

plt.legend()

plt.grid(True)

plt.show()
```