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import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error, r2_score

# Load the dataset
file_path = '/content/drive/MyDrive/room_temperature_dataset.csv' #
Update this path accordingly
df = pd.read_csv(file_path)
df.head()

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# Create the DataFrame
data = {
  'Room Size (sq ft)': [100, 200, 150, 300, 250, 120, 180, 220, 350, 270],
  'Number of Windows': [1, 2, 1, 3, 2, 1, 1, 2, 3, 2],
  'Temperature (°F)': [70, 72, 68, 75, 74, 69, 71, 73, 76, 74]
}

df = pd.DataFrame(data)
df.head()

{"summary":{"\n  \"name\": \"df\",\n  \"rows\": 10,\n  \"fields\": [\n    {\n      \"column\": \"Room Size (sq ft)\",\n      \"properties\": {\n        \"dtype\": \"number\",\n        \"std\": 80,\n        \"min\": 100,\n        \"max\": 350,\n        \"num_unique_values\": 10,\n        \"samples\": [\n          350,\n          200,\n          120\n        ],\n        \"semantic_type\": \"\",\n        \"description\": \"\"\n      },\n      {\n        \"column\": \"Number of Windows\",\n        \"properties\": {\n          \"dtype\": \"number\",\n          \"std\": 0,\n          \"min\": 1,\n          \"max\": 3,\n          \"num_unique_values\": 3,\n          \"samples\": [\n            1,\n            2,\n            3\n          ],\n          \"semantic_type\": \"\",\n          \"description\": \"\"\n        },\n        {\n          \"column\": \"Temperature (\\u00b0F)\",\n          \"properties\": {\n            \"dtype\": \"number\",\n            \"std\": 2,\n            \"min\": 68,\n            \"max\": 76,\n            \"num_unique_values\": 9,\n            \"samples\": [\n              73,\n              72,\n              69\n            ],\n            \"semantic_type\": \"\",\n            \"description\": \"\"\n          }\n        }\n      ]\n    },\n    {\n      \"column\": \"Room Size (sq ft)\",\n      \"properties\": {\n        \"dtype\": \"number\",\n        \"std\": 80,\n        \"min\": 100,\n        \"max\": 350,\n        \"num_unique_values\": 10,\n        \"samples\": [\n          350,\n          200,\n          120\n        ],\n        \"semantic_type\": \"\",\n        \"description\": \"\"\n      },\n      {\n        \"column\": \"Number of Windows\",\n        \"properties\": {\n          \"dtype\": \"number\",\n          \"std\": 0,\n          \"min\": 1,\n          \"max\": 3,\n          \"num_unique_values\": 3,\n          \"samples\": [\n            1,\n            2,\n            3\n          ],\n          \"semantic_type\": \"\",\n          \"description\": \"\"\n        },\n        {\n          \"column\": \"Temperature (\\u00b0F)\",\n          \"properties\": {\n            \"dtype\": \"number\",\n            \"std\": 2,\n            \"min\": 68,\n            \"max\": 76,\n            \"num_unique_values\": 9,\n            \"samples\": [\n              73,\n              72,\n              69\n            ],\n            \"semantic_type\": \"\",\n            \"description\": \"\"\n          }\n        }\n      ]\n    }\n  ],\n  \"type\": \"dataframe\", \"variable_name\": \"df\"}

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# Define independent variables (features) and dependent variable (target)

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X = df[['Room Size (sq ft)', 'Number of Windows']]
y = df['Temperature (\u00b0F)']

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# Split the dataset into training and testing sets

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X_train, X_test, y_train, y_test = train_test_split(X, y,
test_size=0.2, random_state=42)

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# Create the Linear Regression model

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model = LinearRegression()

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# Train the model

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model.fit(X_train, y_train)

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LinearRegression()

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# Make predictions on the testing set

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y_pred = model.predict(X_test)

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# Evaluate the model

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mse = mean_squared_error(y_test, y_pred)
r2 = r2_score(y_test, y_pred)
print("Mean Squared Error:", mse)
print("R-squared:", r2)

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Mean Squared Error: 0.26283487611331635

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R-squared: 0.9342912809716709

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# Coefficients

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print("Coefficients:", model.coef_)
print("Intercept:", model.intercept_)

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Coefficients: [0.01998951 1.37513116]

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Intercept: 65.54249737670514

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# Predicting the temperature for a new set of features

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new_data = pd.DataFrame({'Room Size (sq ft)': [250], 'Number of
Windows': [2]}) # Replace with actual values
predicted_temp = model.predict(new_data)
print("Predicted Temperature for new data:", predicted_temp[0])

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Predicted Temperature for new data: 73.29013641133264