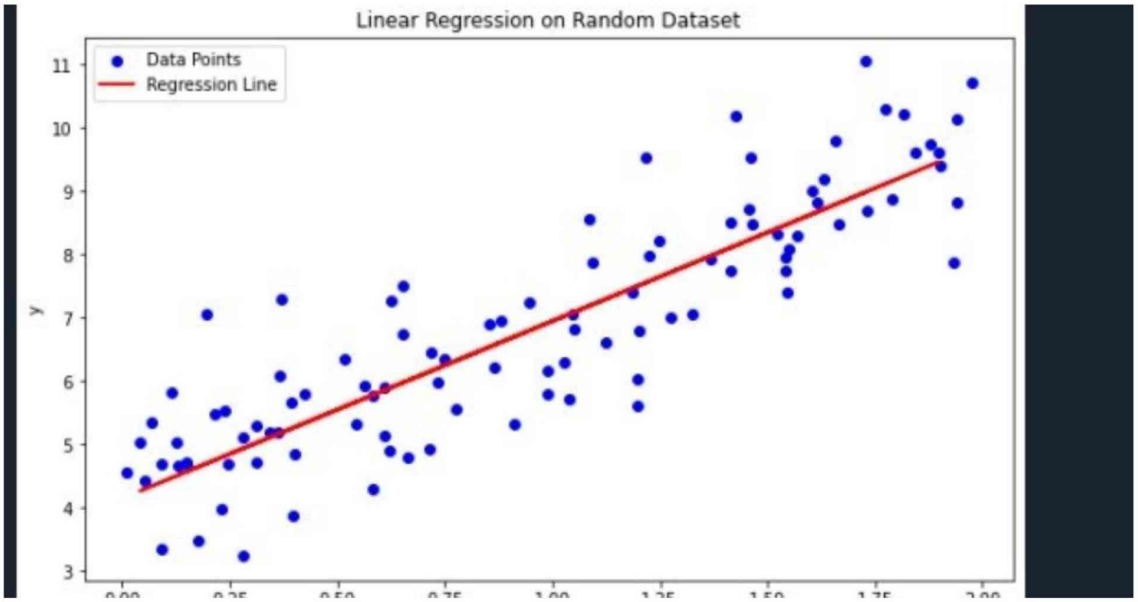
Linear regression

```
import numpy as np
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error, r2_score


np.random.seed(42)  # For reproducibility
X = 2 * np.random.rand(100, 1)  # 100 samples, 1 feature
y = 4 + 3 * X + np.random.randn(100, 1)  # Linear relation with noise


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


model = LinearRegression()
model.fit(X_train, y_train)


y_pred = model.predict(X_test)


mse = mean_squared_error(y_test, y_pred)
r2 = r2_score(y_test, y_pred)

print("Model Coefficients:", model.coef_)
print("Model Intercept:", model.intercept_)
print("Mean Squared Error:", mse)
print("R^2 Score:", r2)
```

Linear regression

```
plt.figure(figsize=(10, 6))
plt.scatter(X, y, color='blue', label='Data Points')
plt.plot(X_test, y_pred, color='red', linewidth=2, label='Regression Line')
plt.title('Linear Regression on Random Dataset')
plt.xlabel('X')
plt.ylabel('y')
plt.legend()
plt.show()
```



github link:
https://github.com/sanjay7-07/linear-regression-.git