

Practical – 5

Aim: Write a program to implement Linear Regression

- Code:

```
from os import XATTR_SIZE_MAX
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
import seaborn as sns

data_set = pd.read_csv('/content/drive/MyDrive/temp/practical_4_2.csv')
print(data_set)

X = data_set[['Match_Duration', 'Loot_Collected', 'Enemies_Defeated']]
y = data_set['Player_Score']

print(X, y)

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

model = LinearRegression()

model.fit(X_train, y_train)

y_pred = model.predict(X_test)

plt.figure(figsize=(10, 6))
sns.scatterplot(x=y_train, y=model.predict(X_train), color='blue', label='Training Data')
plt.xlabel('Actual Player Score')
plt.ylabel('Predicted Player Score')
plt.title('Training Data: Actual vs Predicted Player Score')
plt.legend()
plt.show()

plt.figure(figsize=(10, 6))
sns.scatterplot(x=y_test, y=y_pred, color='orange', label='Test Data Predictions')
plt.xlabel('Actual Player Score')
plt.ylabel('Predicted Player Score')
plt.title('Test Data: Actual vs Predicted Player Score')
plt.legend()
plt.show()
```

• Output:

```

Player_Score  Match_Duration  Loot_Collected  Enemies_Deferred
0      79.967142      4.404851      0.683368      6
1      73.617357      10.213946      5.097842      10
2      78.476885      2.121969      1.616006      3
3      87.230299      1.274597      0.538544      17
4      72.658466      1.381719      2.487649      19
..      ...      ...      ...
85     67.803925      6.324675      3.405740      6
86     72.393613      3.927831      2.612654      7
87     66.728510      2.152900      3.038517      8
88     66.937696      1.583439      3.139229      4
89     81.515035      4.283136      3.290001      13

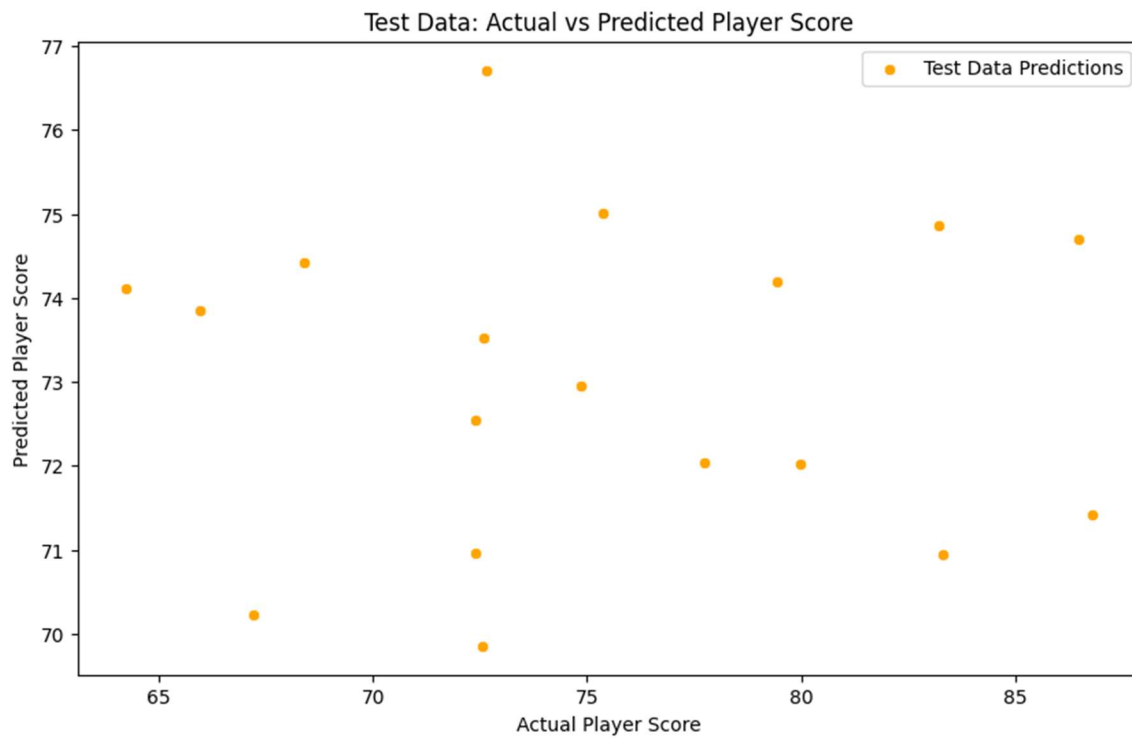
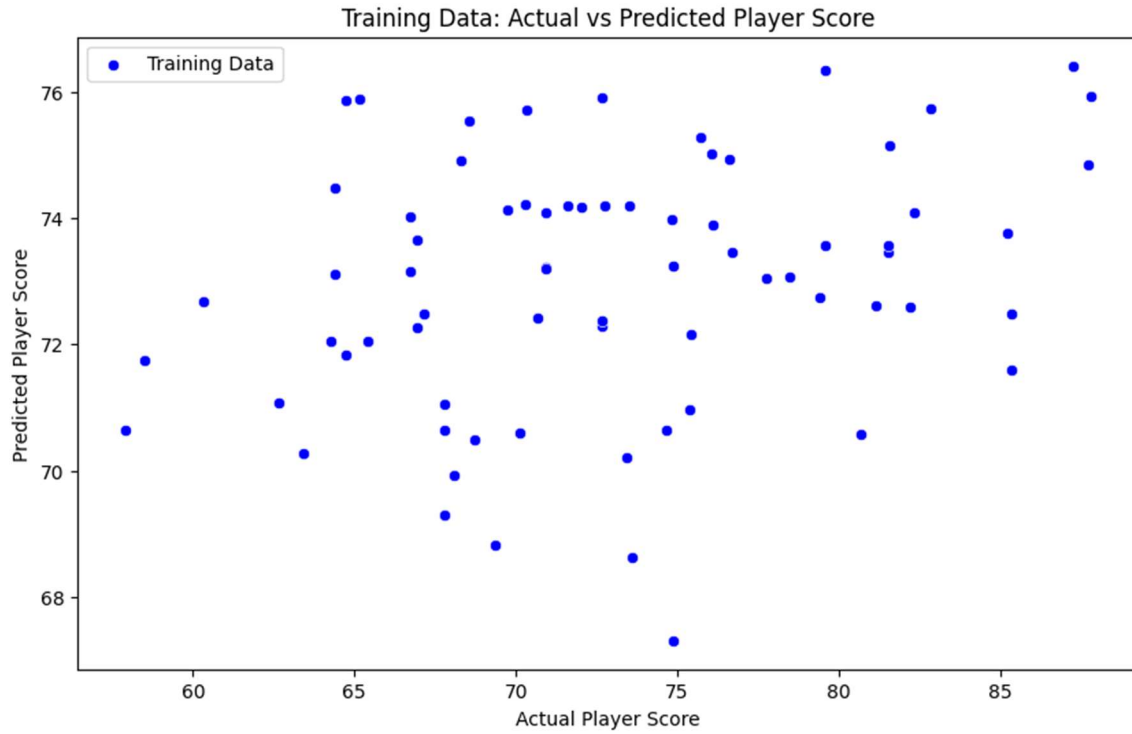
[90 rows x 4 columns]
      Match_Duration  Loot_Collected  Enemies_Deferred
0      4.404851      0.683368      6
1      10.213946      5.097842      10
2      2.121969      1.616006      3
3      1.274597      0.538544      17
4      1.381719      2.487649      19
..      ...      ...      ...
85     6.324675      3.405740      6
86     3.927831      2.612654      7
87     2.152900      3.038517      8
88     1.583439      3.139229      4
89     4.283136      3.290001      13

[90 rows x 3 columns] 0      79.967142
1      73.617357
2      78.476885
3      87.230299
4      72.658466
..      ...
85     67.803925
86     72.393613
87     66.728510
88     66.937696
89     81.515035
Name: Player_Score, Length: 90, dtype: float64
      Match_Duration  Loot_Collected  Enemies_Deferred
49      0.979649      2.372197      4
62      2.184819      3.677855      16
73      4.020653      4.785003      6
69      4.964663      2.740482      1
76      3.218878      1.587142      5
..      ...      ...      ...

      ..      ...      ...
20      3.781600      3.850789      5
60      2.281110      3.697653      15
71      1.131796      4.743816      3
14      2.551397      4.170496      19
51      2.758609      2.912067      6

[72 rows x 3 columns]      Match_Duration  Loot_Collected  Enemies_Deferred
40      3.277502      2.093433      2
22      1.488371      2.354820      3
55      7.419740      2.206020      14
70      4.178316      3.652544      19
0      4.404851      0.683368      6
26      9.053845      2.408849      12
39      1.472061      2.246721      6
65      5.376187      3.764587      19
10      2.949181      1.283679      16
44      5.531924      3.083828      1
81      3.095118      3.081662      6
35      0.441570      2.045299      6
56      4.542469      3.003845      1
86      3.927831      2.612654      7
12      4.643785      0.813951      18
4      1.381719      2.487649      19
18      6.685058      3.930105      9
28      1.579374      5.163369      8
62      68.551461
73      72.658630
69      74.646010
76      60.305256
..      ...
20      66.937696
60      75.698012
71      85.230299
14      64.750822
51      70.915826
Name: Player_Score, Length: 72, dtype: float64 40      77.724062
22      72.579213
55      86.781200
70      86.476885
0      79.967142
26      72.570002
39      64.241135
65      65.971522
10      75.365823
..      ...

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Faculty Signature: _____

Date: _____