

Department of Computer Engineering Machine Learning Lab Manual

Practical 6: Develop a Gradient descent of linear regression using sample dataset.

Code:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.datasets import load_iris
iris = load_iris()
X = iris.data[:, :1]
y = iris.data[:, 1:2]
m = 0
c = 0
n = float(len(X))
learning_rate = 0.01
epochs = 500
for i in range(epochs):
  y_pred = m * X + c
  D_m = (-2/n) * np.sum(X * (y - y_pred))
  D_c = (-2/n) * np.sum(y - y_pred)
  m = m - learning\_rate * D\_m
  c = c - learning_rate * D_c
  if i % 100 == 0:
     print(f''Epoch \{i\}: m = \{m\}, c = \{c\}'')
print(f"Final m = \{m\}, c = \{c\}")
```

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```
plt.scatter(X, y, color='red')
plt.plot(X, m * X + c, color='blue')
plt.xlabel('X as Petal Length')
plt.ylabel('y as Petal Width')
plt.title("Linear Regression with Gradient Descent")
plt.show()
```

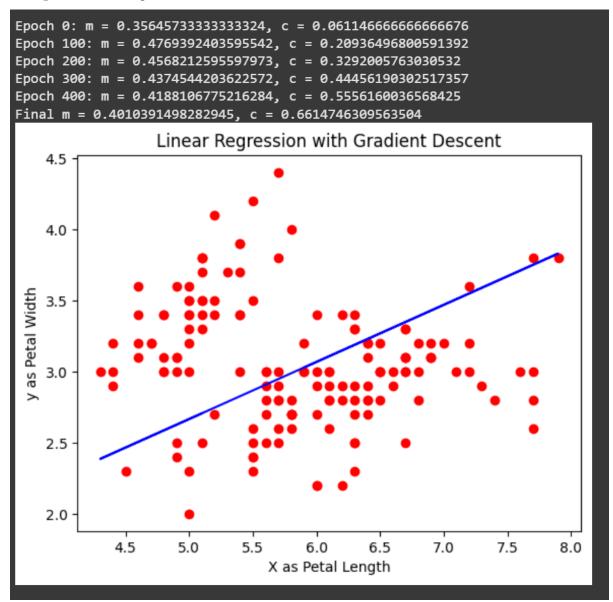
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Output: Linear Regression with Gradient Descent



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