Machine Learning Lab

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Batch- 2

Experiment- 5

Implementation of Simple Linear Regression using Python (Without using Library)

Syntax:

```
def simple_linear_regression(x, y):
    mean_x = sum(x) / len(x)
    mean_y = sum(y) / len(y)
    deviation_x = [xi - mean_x for xi in x]
    deviation_y = [yi - mean_y for yi in y]
    slope = sum([xi*yi for xi, yi in zip(deviation_x, deviation_y)]) / sum([xi**2 for xi in deviation_x])
    intercept = mean_y - slope * mean_x
    y_pred = [slope*xi + intercept for xi in x]
    return slope, intercept, y_pred
x = [1, 2, 3, 4, 5]
y = [2, 4, 5, 4, 5]


slope, intercept, y_pred = simple_linear_regression(x, y)


print("Slope:", slope)
print("Intercept:", intercept)
print("Predicted Y values:", y_pred)
```

Output:

```
Slope: 0.6
Intercept: 2.2
Predicted Y values: [2.8000000000000003, 3.4000000000000004, 4.0, 4.6, 5.2]
```