Simple Linear Algorithms

July 13, 2023

```python
[12]: # Import Libreries
```

```python
[13]: import pandas as pd
      import numpy as np
      import matplotlib.pyplot as plt
```

```python
[14]: # Load the Dataset
```

```python
[15]: df = pd.read_csv("D:\dataset\placement.csv")
```

```python
[16]: df
```

```
[16]:      cgpa  package
      0    6.89     3.26
      1    5.12     1.98
      2    7.82     3.25
      3    7.42     3.67
      4    6.94     3.57
      ..    ...      ...
      195  6.93     2.46
      196  5.89     2.57
      197  7.21     3.24
      198  7.63     3.96
      199  6.22     2.33

      [200 rows x 2 columns]
```
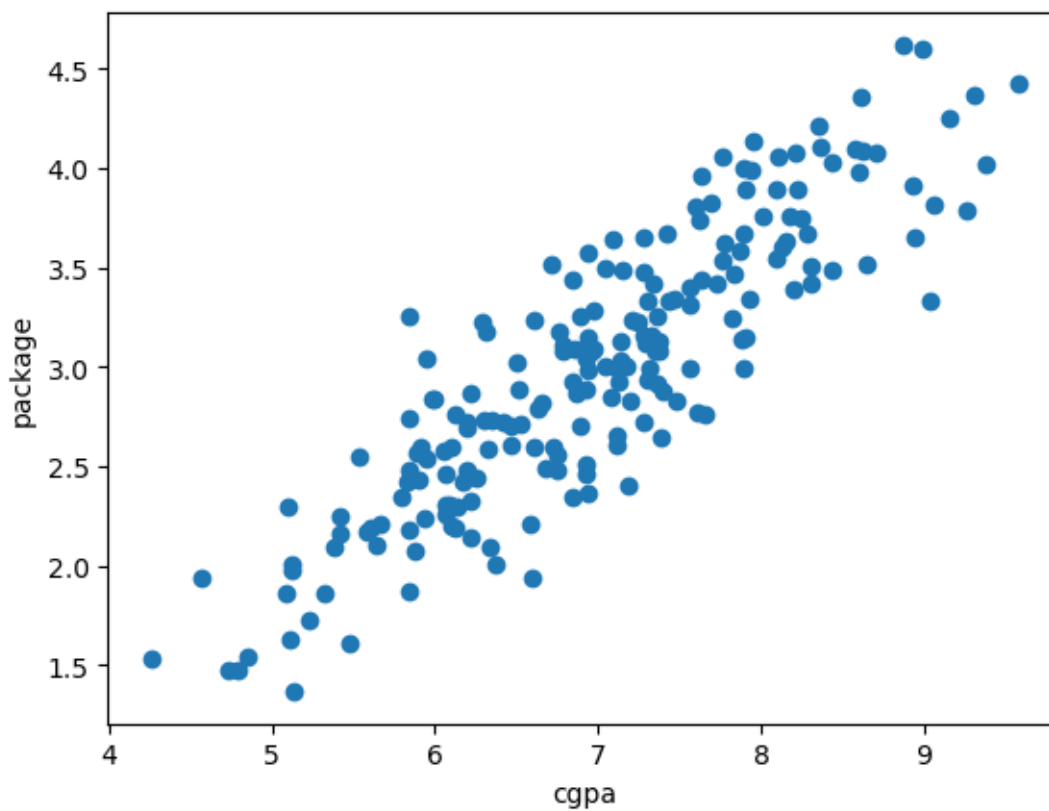
```python
[17]: # Plot The Scatter Plot
```

```python
[18]: plt.scatter(df['cgpa'],df['package'])
      plt.xlabel('cgpa')
      plt.ylabel('package')
```

```
[18]: Text(0, 0.5, 'package')
```

```
[19]: X = df.iloc[:,0:1]
      y = df.iloc[:,-1]
```

```
[20]: X
```

```
[20]:      cgpa
      0    6.89
      1    5.12
      2    7.82
      3    7.42
      4    6.94
      ..    ...
      195  6.93
      196  5.89
      197  7.21
      198  7.63
      199  6.22

      [200 rows x 1 columns]
```

```
[21]: y
```

```
[21]: 0       3.26
      1       1.98
      2       3.25
      3       3.67
      4       3.57
              ⋮
      195     2.46
      196     2.57
      197     3.24
      198     3.96
      199     2.33
      Name: package, Length: 200, dtype: float64
```

```
[22]: # Spliting the Dataset train and test
```

```
[23]: from sklearn.model_selection import train_test_split
      X_train,X_test,y_train,y_test = train_test_split(X,y,test_size = 0.
       ↪2,random_state = 2)
```

```
[24]: X_train
```

```
[24]:       cgpa
      137   7.14
      163   8.93
      111   5.42
      123   5.10
      109   7.77
      ..     ⋮
      43    7.66
      22    6.14
      72    7.78
      15    7.25
      168   8.65

      [160 rows x 1 columns]
```

```
[28]: y_test
```

```
[28]: 112     4.10
      29      3.49
      182     2.08
      199     2.33
      193     1.94
      85      1.48
      10      1.86
      54      3.09
      115     4.21
```

```
35      2.87
12      3.65
92      4.00
13      2.89
126     2.60
174     2.99
2       3.25
44      1.86
3       3.67
113     2.37
14      3.42
23      2.48
25      3.65
6       2.60
134     2.83
165     4.08
173     2.56
45      3.58
65      3.81
48      4.09
122     2.01
178     3.63
64      2.92
9       3.51
57      1.94
78      2.21
71      3.34
128     3.34
176     3.23
131     2.01
53      2.61
Name: package, dtype: float64
```

[29]:
```python
# Use the linear Regression model
```

[31]:
```python
from sklearn.linear_model import LinearRegression
```

[32]:
```python
lr = LinearRegression()
```

[33]:
```python
lr.fit(X_train,y_train)
```

[33]:
```
LinearRegression()
```

[45]:
```python
X_test
```

[45]:
```
        cgpa
112     8.58
```

```
29     7.15
182    5.88
199    6.22
193    4.57
85     4.79
10     5.32
54     6.86
115    8.35
35     6.87
12     8.94
92     7.90
13     6.93
126    5.91
174    7.32
2      7.82
44     5.09
3      7.42
113    6.94
14     7.73
23     6.19
25     7.28
6      6.73
134    7.20
165    8.21
173    6.75
45     7.87
65     7.60
48     8.63
122    5.12
178    8.15
64     7.36
9      8.31
57     6.60
78     6.59
71     7.47
128    7.93
176    6.29
131    6.37
53     6.47
```

[46]: # Package

[35]: y_test

[35]:
```
112    4.10
29     3.49
182    2.08
```

```
199     2.33
193     1.94
85      1.48
10      1.86
54      3.09
115     4.21
35      2.87
12      3.65
92      4.00
13      2.89
126     2.60
174     2.99
2       3.25
44      1.86
3       3.67
113     2.37
14      3.42
23      2.48
25      3.65
6       2.60
134     2.83
165     4.08
173     2.56
45      3.58
65      3.81
48      4.09
122     2.01
178     3.63
64      2.92
9       3.51
57      1.94
78      2.21
71      3.34
128     3.34
176     3.23
131     2.01
53      2.61
Name: package, dtype: float64
```
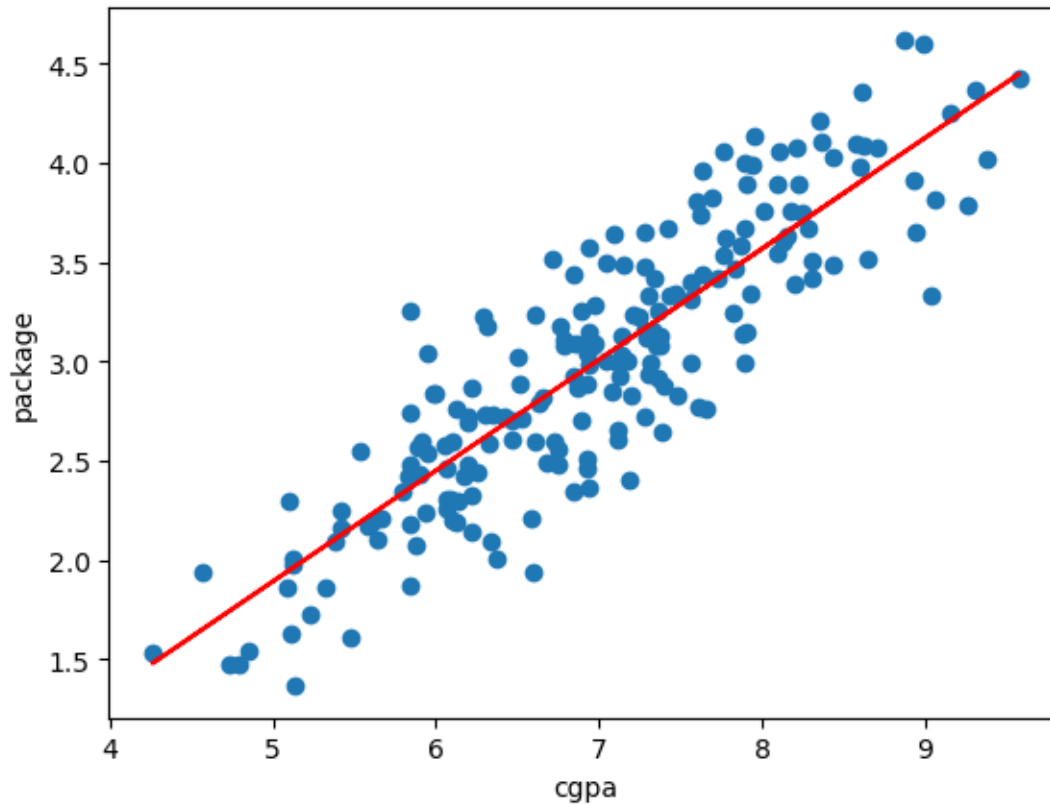
[48]: `lr.predict(X_test.iloc[2].values.reshape(1,1))`

C:\Users\ssart\anaconda3\lib\site-packages\sklearn\base.py:450: UserWarning: X
does not have valid feature names, but LinearRegression was fitted with feature
names
  warnings.warn(

[48]: array([2.38464568])

```
[49]: plt.scatter(df['cgpa'],df['package'])
      plt.plot(X_train,lr.predict(X_train),color ="red" )
      plt.xlabel('cgpa')
      plt.ylabel('package')
```

[49]: Text(0, 0.5, 'package')


```
[50]: m = lr.coef_
```

```
[52]: b = lr.intercept_
```

```
[53]: # y = mx + b   this formula help to find out Package
```

```
[54]:  m *8.58 + b
```

[54]: array([3.89111601])

[ ]: