

Application 11

Supervised Machine Learning

Linear Regression

There is one data set which contains information about Head and Brain.

Gender	Age Range	Head Size(cm ³)	Brain Weight(grams)
1	1	4512	1530
1	1	3738	1297
1	1	4261	1335
1	1	3777	1282
1	1	4177	1590
1	1	3585	1300
1	1	3785	1400
1	1	3559	1255
1	1	3613	1355
1	1	3982	1375
1	1	3443	1340

Above data set contains information about Head and brain size depends on gender and age.

Consider below characteristics of Machine Learning Application :

Classifier : Linear Regression
DataSet : Head Brain Dataset
Features : Gender, Age, Head size, Brain weight
Labels : -
Training Dataset : 237

Consider below application which uses Linear Regression algorithm from skit learn library to train above data set.

```
1 import pandas as pd
2 from sklearn.linear_model import LinearRegression
3 from sklearn.metrics import mean_squared_error
4
5 def MarvellousHeadBrainPredictor():
6
7     # Load data
8     data = pd.read_csv('MarvellousHeadBrain.csv')
9
10    print("Size if data set",data.shape)
11
12    X = data['Head Size(cm^3)'].values
13    Y = data['Brain Weight(grams)'].values
14
15    X = X.reshape((-1,1))
16
17    n = len(X)
18
19    reg = LinearRegression()
20
21    reg = reg.fit(X,Y)
22
23    y_pred = reg.predict(X)
24
25    r2 = reg.score(X,Y)
26
27    print(r2)
28
29 def main():
30     print("---- Marvellous Infosystems by Piyush Khairnar-----")
31
32     print("Suervised Machine Learning")
33
34     print("Linear Regreesion on Head and BBrain size data set")
35
36     MarvellousHeadBrainPredictor()
37
38 if __name__ == "__main__":
39     main()
40
```

Output of above application

```
HeadBrain_Linear_Regression -- -bash -- 51x20
(base) MacBook-Pro-de-MARVELLOUS:HeadBrain_Linear_Re
gression marvellous$ python3 MarvellousHeadBrainRe
gression.py
---- Marvellous Infosystems by Piyush Khairnar ----
Suervised Machine Learning
Linear Regreesion on Head and BBrain size data set
Size if data set (237, 4)
0.639311719957
(base) MacBook-Pro-de-MARVELLOUS:HeadBrain_Linear_R
egression marvellous$ █
```

