15-12-21

Aim:

Program to implement linear and multiple regression techniques using any standard dataset available in the public domain and evaluate its performance.

Program:

```
import pandas
df = pandas.read_csv("cars.csv")
X =  df[['Weight', 'Volume']]
y = df[['CO2']]
from sklearn import  linear_model

regr = linear_model.LinearRegression()
regr.fit(X,y)
predictedCO2 = regr.predict([[2300, 1300]])
print(predictedCO2)
```

Output

```
C:\Users\mca\PycharmProjects\15-12-21
[[107.2087328]]
```

find accuracy

```
import  pandas
df = pandas.read_csv("cars.csv")
x = df[['Weight', 'Volume']]
y = df['CO2']
#splitting
from sklearn.model_selection import train_test_split
x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.70,
random_state=2)
# feature scaling
from sklearn.preprocessing import StandardScaler
sc = StandardScaler()
x_train = sc.fit_transform(x_train)
x_test = sc.transform(x_test)
print(x_train)
print(x_test)
from sklearn import linear_model
regr = linear_model.LinearRegression()
regr.fit(x ,y)
predictedCO2 = regr.predict([[2300, 1300]])
print(predictedCO2)
from sklearn.metrics import accuracy_score
ac=accuracy_score(y_test,y_test)
print(ac)
```

2)Multiple regression using boston datasets

Program

```
import matplotlib.pyplot as plt
import numpy as np
from sklearn import datasets,linear_model,metrics


#load boston dataset
boston = datasets.load_boston(return_X_y=False)

#defining features matrix(x) and response vector(y)

X = boston.data
y = boston.target

#splitting X AND Y into training and testing sets

from sklearn.model_selection import train_test_split
X_train,X_test,y_train,y_test =
train_test_split(X,y,test_size=0.4,random_state=1)

# create linear regression object
reg = linear_model.LinearRegression()

reg.fit(X_train,y_train)

print('Coefficient:',reg.coef_)
print('Variance score:{}'.format(reg.score(X_test, y_test)))
```

output

```
C:\Users\MCA\PycharmProjects\15-12-21\venv\Scripts\python.exe C:/Users/MCA/PycharmProjects/15-12-21/venv/mr.py
Coefficient: [-8.95714048e-02  6.73132853e-02  5.04649248e-02  2.18579583e+00
 -1.72053975e+01  3.63606995e+00  2.05579939e-03 -1.36602886e+00
  2.89576718e-01 -1.22700072e-02 -8.34881849e-01  9.40360790e-03
 -5.04008320e-01]
Variance score:0.7209056672661767
```