**DS\_Assignment\_07**

**Predicting Business Sales**

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#!/usr/bin/env python

# coding: utf-8

import pandas as pd

import numpy as np

df = pd.read\_csv("Advertising.csv")

df.head()

df=df.drop("Unnamed: 0",axis = 1)

df\_num = df.drop("sales",axis = 1)

from sklearn.preprocessing import MinMaxScaler

mn = MinMaxScaler()

df\_sc = mn.fit\_transform(df\_num)

df\_sc\_df = pd.DataFrame(df\_sc,columns = df\_num.columns,index=df.index)

df\_sc\_df.head()

df.head()

x = df\_sc\_df

y = df["sales"]

from sklearn.model\_selection import train\_test\_split

X\_train, X\_test, y\_train, y\_test = train\_test\_split(x, y, test\_size=0.3, random\_state= 88)

print("Shape of Training set input:",X\_train.shape)

print("Shape of Testing set input:",X\_test.shape)

print("Total VALUES in Training set output:",y\_train.size)

print("Total VALUES in Testing set output:",y\_test.size)

from sklearn.linear\_model import Lasso

ls = Lasso(alpha=0.05)

ls.fit(X\_train, y\_train)

y\_pred = ls.predict(X\_test)

import numpy as np

ytest=np.array(y\_test)

df\_actual=pd.DataFrame(ytest,columns=['Actual\_Output'])

df\_predicted=pd.DataFrame(y\_pred,columns=['Predicted\_Output'])

df\_output=pd.concat([df\_actual,df\_predicted],axis=1)

df\_output.head()

from sklearn.metrics import r2\_score, mean\_squared\_error

print("Training Accuracy:",r2\_score(y\_train, ls.predict(X\_train)))

print("Testing Accuracy:",r2\_score(y\_test, y\_pred))

ls.coef\_

X\_test.head(1)

predy0=12.82183076\*0.782550+ 9.3922063\*0.173387

print("Estimated output:",predy0)

print("Actual output:",ytest[0])

y\_test.head(1)

from sklearn.linear\_model import Ridge

y\_pred = ls.predict(X\_test)

r = Ridge(alpha=1.70)

r.fit(X\_train, y\_train)

import numpy as np

ytest=np.array(y\_test)

df\_actual=pd.DataFrame(ytest,columns=['Actual\_Output'])

df\_predicted=pd.DataFrame(y\_pred,columns=['Predicted\_Output'])

df\_output=pd.concat([df\_actual,df\_predicted],axis=1)

df\_output.head()

from sklearn.metrics import r2\_score, mean\_squared\_error

print("Training Accuracy:",r2\_score(y\_train, r.predict(X\_train)))

print("Testing Accuracy:",r2\_score(y\_test, y\_pred))

r.coef\_