

# linreg-advertising

January 28, 2023

```
[1]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import warnings
warnings.filterwarnings('ignore')
```

```
[2]: df=pd.read_csv('advertising.csv')
```

```
[3]: df
```

```
[3]:
```

	TV	Radio	Newspaper	Sales
0	230.1	37.8	69.2	22.1
1	44.5	39.3	45.1	10.4
2	17.2	45.9	69.3	12.0
3	151.5	41.3	58.5	16.5
4	180.8	10.8	58.4	17.9
..	...	...	...	...
195	38.2	3.7	13.8	7.6
196	94.2	4.9	8.1	14.0
197	177.0	9.3	6.4	14.8
198	283.6	42.0	66.2	25.5
199	232.1	8.6	8.7	18.4

[200 rows x 4 columns]

```
[4]: df.isna().sum()
```

```
[4]: TV          0
Radio         0
Newspaper     0
Sales         0
dtype: int64
```

```
[5]: df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 200 entries, 0 to 199
Data columns (total 4 columns):
```

#	Column	Non-Null Count	Dtype
0	TV	200 non-null	float64
1	Radio	200 non-null	float64
2	Newspaper	200 non-null	float64
3	Sales	200 non-null	float64

dtypes: float64(4)  
memory usage: 6.4 KB

```
[42]: x=df.iloc[:,[0,1,2]]
```

```
[43]: y=df.iloc[:,-1]
```

```
[44]: x
```

```
[44]:
```

	TV	Radio	Newspaper
0	230.1	37.8	69.2
1	44.5	39.3	45.1
2	17.2	45.9	69.3
3	151.5	41.3	58.5
4	180.8	10.8	58.4
..	...	...	...
195	38.2	3.7	13.8
196	94.2	4.9	8.1
197	177.0	9.3	6.4
198	283.6	42.0	66.2
199	232.1	8.6	8.7

[200 rows x 3 columns]

```
[45]: y
```

```
[45]:
```

0	22.1
1	10.4
2	12.0
3	16.5
4	17.9
...	
195	7.6
196	14.0
197	14.8
198	25.5
199	18.4

Name: Sales, Length: 200, dtype: float64

```
[46]: from sklearn.model_selection import train_test_split
```

```
[47]: xtrain,xtest,ytrain,ytest=train_test_split(x,y,test_size=0.2,random_state=1)
```

```
[48]: from sklearn.linear_model import LinearRegression
```

```
[49]: linreg=LinearRegression()
```

```
[50]: linreg.fit(xtrain,ytrain)
```

```
[50]: LinearRegression()
```

```
[74]: ypred=linreg.predict(xtest)
```

```
[75]: ypred
```

```
[75]: array([21.32727775, 18.06138419, 10.04630254, 21.0925422 , 20.78527508,  
          24.52786989, 16.84180311, 15.656542 , 10.13878037, 18.88248026,  
          15.80983753, 10.54583142, 18.93346094, 15.56643436, 17.86877073,  
          15.29349959, 13.75707845, 21.06397901, 10.05959685, 19.27534125,  
          11.15389873, 12.04216022, 8.63037961, 11.98644768, 12.61490963,  
          16.85722247, 9.73227033, 21.11417665, 18.15109551, 19.56290183,  
          22.11237483, 17.82764148, 16.54733981, 14.78435804, 21.41405363,  
          16.96663966, 17.22580207, 12.32418381, 21.07962358, 7.77386767])
```

```
[86]: linreg.coef_ # m value
```

```
[86]: array([ 0.05507865, 0.10308563, -0.00090115])
```

```
[87]: linreg.intercept_ #c value
```

```
[87]: 4.63762444239792
```

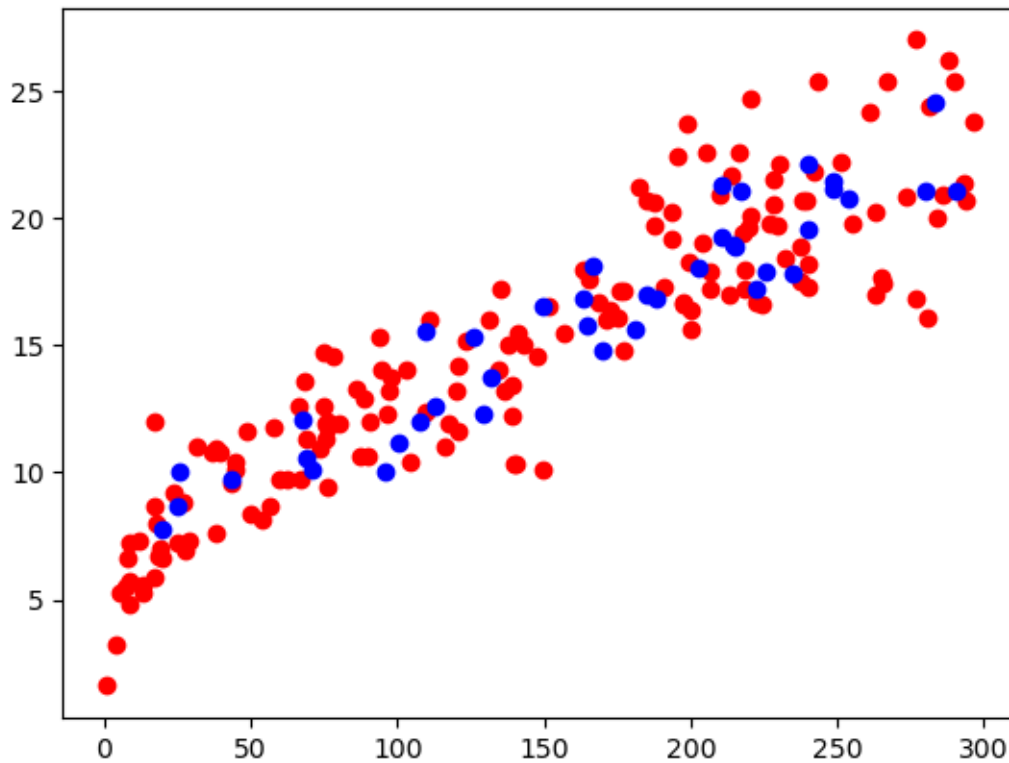
```
[91]: from sklearn.metrics import mean_absolute_error,mean_squared_error,r2_score  
mae=mean_absolute_error(ytest,ypred)  
mse=mean_squared_error(ytest,ypred)  
rmse=np.sqrt(mse)  
r2=r2_score(ytest,ypred)  
print(f'MAE:{mae}\nRMSE:{rmse}\naccuracy:{r2}')
```

```
MAE:1.2754390912939682
```

```
RMSE:1.5522028259516754
```

```
accuracy:0.8747226291661847
```

```
[85]: plt.scatter(xtrain['TV'],ytrain,color='red')  
plt.scatter(xtest['TV'],ypred,color='b')  
plt.show()
```



```
[92]: def modelprediction():
        tv=float(input('enter tv adverting rate : '))
        radio=float(input('enter radio adverting rate : '))
        newspaper=float(input('enter newspaper adverting rate : '))
        x=[[tv,radio,newspaper]]
        yp=linreg.predict(x)[0]
        print(f'for given information the sales prediction is {yp}')
```

```
[93]: modelprediction()
```

```
enter tv adverting rate : 17.8
enter radio adverting rate : 45.6
enter newspaper adverting rate : 69.3
for given information the sales prediction is 10.25627973972777
```

```
[ ]:
```