logisticregression

August 25, 2023

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#PRIJECT TITLE : To Predict the Heartattack disease for organization (WHO:World Health Organization) using machine learning algorithm rate of heart attack disease will increasing manner or decreasing manner

#Problem statement : The world health organisation estimated 12 millions death records.one of them half of the death results is fount in us. the research scholor point-out the most relevent risk factor of heart attack, as the data science engineer predict the overall risk using machine learn algorithm called as logistic regression

###Task1: Import the requried library which is required for prediction ###Task2: Import the dataset using our workspace. ###Task3: Use the appropriate of sklearn library to train,test and split the dataset ###Task4: fit your values with a range function using future scalling ###Task5: check your model accurecy and precetion using confusion matrix

#conclusion : Accrding to the model analysis the LogisticRegression algorithm work succefully with 0.6 accurecy. the accurecy shows that buliding the model is succefull.

[ ]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

[ ]:
```
data = pd.read_csv("framingham.csv")
data
```

[ ]:

	male	age	education	currentSmoker	cigsPerDay	BPMeds	\
0	1	39	4.0	0	0.0	0.0	
1	0	46	2.0	0	0.0	0.0	
2	1	48	1.0	1	20.0	0.0	
3	0	61	3.0	1	30.0	0.0	
4	0	46	3.0	1	23.0	0.0	
…	…	…	…	…	…	…	
4233	1	50	1.0	1	1.0	0.0	
4234	1	51	3.0	1	43.0	0.0	
4235	0	48	2.0	1	20.0	NaN	
4236	0	44	1.0	1	15.0	0.0	
4237	0	52	2.0	0	0.0	0.0	

```
      prevalentStroke  prevalentHyp  diabetes  totChol  sysBP  diaBP    BMI  \
0                   0             0         0    195.0  106.0   70.0  26.97
1                   0             0         0    250.0  121.0   81.0  28.73
2                   0             0         0    245.0  127.5   80.0  25.34
3                   0             1         0    225.0  150.0   95.0  28.58
4                   0             0         0    285.0  130.0   84.0  23.10
…                 …             …         …        …    …     …     …
4233                0             1         0    313.0  179.0   92.0  25.97
4234                0             0         0    207.0  126.5   80.0  19.71
4235                0             0         0    248.0  131.0   72.0  22.00
4236                0             0         0    210.0  126.5   87.0  19.16
4237                0             0         0    269.0  133.5   83.0  21.47

      heartRate  glucose  TenYearCHD
0          80.0     77.0           0
1          95.0     76.0           0
2          75.0     70.0           0
3          65.0    103.0           1
4          85.0     85.0           0
…           …       …             …
4233       66.0     86.0           1
4234       65.0     68.0           0
4235       84.0     86.0           0
4236       86.0      NaN           0
4237       80.0    107.0           0

[4238 rows x 16 columns]
```

[ ]:
```
from sklearn.model_selection import train_test_split
X=data[["age"]]
y=data["currentSmoker"]
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2,␣
↪random_state=42)
```

[ ]:
```
print(X_train)
```

```
      age
3252   40
3946   57
1261   47
2536   41
4089   64
…    …
3444   36
466    57
3092   60
```

```
3772   39
860    35

[3390 rows x 1 columns]
```

[ ]:
```
print(y_train)
```

```
3252    1
3946    0
1261    0
2536    1
4089    0
       ..
3444    1
466     1
3092    0
3772    1
860     0
Name: currentSmoker, Length: 3390, dtype: int64
```

[ ]:
```
print(X_test)
```

```
      age
3188   63
764    45
3264   51
1967   45
2185   45
…     …
3303   47
4056   44
4210   50
3971   64
2540   55

[848 rows x 1 columns]
```

[ ]:
```
print(y_test)
```

```
3188    0
764     0
3264    1
1967    1
2185    1
       ..
3303    0
4056    0
4210    0
```

```
3971    0
2540    1
Name: currentSmoker, Length: 848, dtype: int64
```

[ ]:
```
from sklearn.preprocessing import StandardScaler
sc = StandardScaler()
X_train = sc.fit_transform(X_train)
X_test = sc.transform(X_test)
```

[ ]:
```
print(X_train)
```

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[ ]:
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print(X_test)
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[ ]:
```
from sklearn.linear_model import LogisticRegression
classifier = LogisticRegression(random_state = 0)
classifier.fit(X_train, y_train)
```

[ ]:
```
LogisticRegression(random_state=0)
```

[ ]:
```
y_pred = classifier.predict(X_test)
```

[ ]:
```
from sklearn.metrics import confusion_matrix, accuracy_score
cm = confusion_matrix(y_test, y_pred)
print(cm)
accuracy_score(y_test, y_pred)
```

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[[263 183]
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[ ]:
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[ ]: