Assignment_5

August 21, 2024

[1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

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

[2]:

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	Pedigree	Age	Outcome
0	6	148	72	35	0	33.6	0.627	50	1
1	1	85	66	29	0	26.6	0.351	31	0
2	8	183	64	0	0	23.3	0.672	32	1
3	1	89	66	23	94	28.1	0.167	21	0
4	0	137	40	35	168	43.1	2.288	33	1

[3]:
```
df.isnull().sum()
```

[3]:
```
Pregnancies      0
Glucose          0
BloodPressure    0
SkinThickness    0
Insulin          0
BMI              0
Pedigree         0
Age              0
Outcome          0
dtype: int64
```

[4]:
```
x = df.drop('Outcome', axis=1)
y = df['Outcome']
```

[5]:
```
from sklearn.preprocessing import MinMaxScaler
scaler=MinMaxScaler()
x=scaler.fit_transform(x)
x
```

[5]:
```
array([[0.35294118, 0.74371859, 0.59016393, …, 0.50074516, 0.23441503,
        0.48333333],
       [0.05882353, 0.42713568, 0.54098361, …, 0.39642325, 0.11656704,
        0.16666667],
       [0.47058824, 0.91959799, 0.52459016, …, 0.34724292, 0.25362938,
        0.18333333],
       …,
       [0.29411765, 0.6080402 , 0.59016393, …, 0.390462  , 0.07130658,
        0.15      ],
       [0.05882353, 0.63316583, 0.49180328, …, 0.4485842 , 0.11571307,
        0.43333333],
       [0.05882353, 0.46733668, 0.57377049, …, 0.45305514, 0.10119556,
        0.03333333]])
```

[6]:
```
from sklearn.model_selection import train_test_split
x_train, X_test, y_train, y_test = train_test_split(x, y, test_size=0.
↪2,random_state=42)
from sklearn.neighbors import KNeighborsClassifier
clf = KNeighborsClassifier(n_neighbors=3)
clf
```

[6]:
```
KNeighborsClassifier(n_neighbors=3)
```

[8]:
```
KNN=clf.fit(x_train,y_train)
prediction=KNN.predict(X_test)
prediction
```

[8]:
```
array([0, 0, 0, 1, 1, 0, 0, 1, 1, 0, 0, 1, 0, 1, 0, 0, 0, 0, 1, 0, 1, 0,
       0, 0, 1, 1, 0, 0, 0, 0, 1, 1, 1, 1, 1, 1, 1, 0, 0, 1, 0, 1, 1, 0,
       0, 0, 1, 0, 0, 1, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 1,
       0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0, 1, 0, 0, 0, 0, 1, 0, 0,
       0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 1, 0, 1,
       0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 1, 1, 1, 1, 1,
       0, 1, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0])
```

[9]:
```
from sklearn import metrics
print(metrics.classification_report(y_test, prediction))
print(metrics.confusion_matrix(y_test, prediction))
cm=metrics.confusion_matrix(y_test, prediction)
sns.heatmap(cm,annot=True)
```

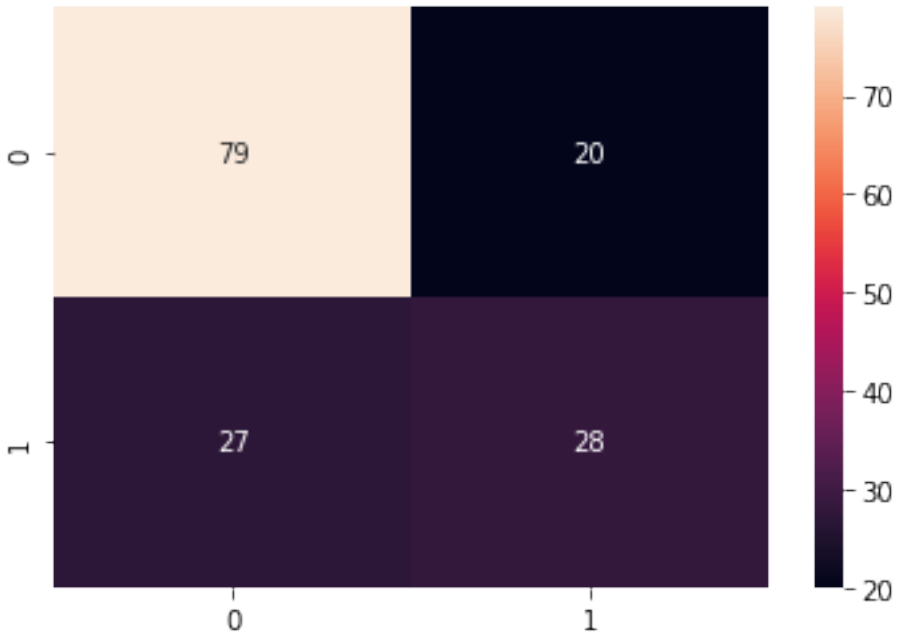
```
              precision    recall  f1-score   support
```

```
              0       0.75      0.80      0.77        99
              1       0.58      0.51      0.54        55

    accuracy                           0.69       154
   macro avg       0.66      0.65      0.66       154
weighted avg       0.69      0.69      0.69       154

[[79 20]
 [27 28]]
```

[9]: <AxesSubplot:>



[10]:
```
print("accuracy:",metrics.accuracy_score(y_test,prediction))
```

```
accuracy: 0.6948051948051948
```