AIML_LAB_8

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Lab Expt 8: Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using the standard Heart Disease Data Set. You can use Java/Python ML library classes/API

[12]:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.naive_bayes import GaussianNB
from sklearn.metrics import accuracy_score
from sklearn.model_selection import train_test_split
import warnings
warnings.filterwarnings('ignore')
```

[13]:

```
data_df=pd.read_csv("./Heart_Disease_Prediction.csv")
print(data_df.head())
print("Shape->",data_df.shape)
```

```
   Age  Sex  Chest pain type   BP  Cholesterol  FBS over 120  EKG results  \
0   70    1                4  130          322             0            2
1   67    0                3  115          564             0            2
2   57    1                2  124          261             0            0
3   64    1                4  128          263             0            0
4   74    0                2  120          269             0            2

   Max HR  Exercise angina  ST depression  Slope of ST  \
0     109                0            2.4            2
1     160                0            1.6            2
2     141                0            0.3            1
3     105                1            0.2            2
4     121                1            0.2            1

   Number of vessels fluro  Thallium  Heart Disease
0                        3         3              1
1                        0         7              0
2                        0         7              1
```

```
3                         1         7              0
4                         1         3              0
Shape-> (270, 14)
```

[14]:

```
# checking for null values
data_df.isnull().sum()
```

[14]:

```
Age                        0
Sex                        0
Chest pain type            0
BP                         0
Cholesterol                0
FBS over 120               0
EKG results                0
Max HR                     0
Exercise angina            0
ST depression              0
Slope of ST                0
Number of vessels fluro    0
Thallium                   0
Heart Disease              0
dtype: int64
```

[15]:

```
nb = GaussianNB()
# parameters
x = data_df.iloc[:, 0:-1]
# label
y = data_df.iloc[:, -1]
x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.
 ↪2,random_state=420)
nb.fit(x_train, y_train)
y_pred = nb.predict(x_test)
print("Accuracy->",accuracy_score(y_test, y_pred))
```

```
Accuracy-> 0.9074074074074074
```

[16]:

```
input = [[70, 1, 4, 130, 322, 0, 2, 109, 0, 2.4, 2, 3, 3]]
column_value = x_test.columns
input_df = pd.DataFrame(input, columns=column_value)
if nb.predict(input_df)[0]:
    print("High possibility of Heart Disease")
else:
    print("Low possibility of Heart Disease")
```

```
High possibility of Heart Disease
```