Bahria University,

Karachi Campus

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LAB EXPERIMENT NO.

05

LIST OF TASKS

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| TASK NO | OBJECTIVE |
| **01** | Using python implement Naïve Bayes with two different splitting ratios on Heart Attack Analysis & prediction dataset to predict the chances of heart failure in a person and performed the following steps:  • Data Pre-processing step  • Fitting Naive Bayes to the Training set  • Predicting the test result  • Test accuracy of the result(Creation of Confusion matrix)  • Visualizing the test set result.  • Compare the accuracies. |
| **02** | Design a workflow with the help of KNIME to predict whether a user buys a product by clicking the ad on the site based on their salary, age, and gender dataset provided in the lab (i.e. Social network ad dataset). |
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Submitted On:

20-03-2024

(Date: DD/MM/YYYY)

**Task No. 01**: Using python implement Naïve Bayes with two different splitting ratios on Heart

Attack Analysis & prediction dataset to predict the chances of heart failure in a

person and performed the following steps:

* Data Pre-processing step
* Fitting Naive Bayes to the Training set
* Predicting the test result
* Test accuracy of the result(Creation of Confusion matrix)
* Visualizing the test set result.
* Compare the accuracies.

**Solution:**

import numpy as np

import pandas as pd

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

from sklearn.naive\_bayes import GaussianNB

from sklearn.metrics import accuracy\_score, confusion\_matrix

import matplotlib.pyplot as plt

data = pd.read\_csv('/content/heart.csv')

# Data preprocessing steps here...

X = data.drop('output', axis=1)

y = data['output']

ratios = [0.7, 0.8] # Splitting ratios for training and testing sets

for ratio in ratios:

# Splitting data into training and testing sets

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size=1-ratio, random\_state=42)

nb\_classifier = GaussianNB()

nb\_classifier.fit(X\_train, y\_train)

y\_pred = nb\_classifier.predict(X\_test)

accuracy = accuracy\_score(y\_test, y\_pred)

confusion\_mat = confusion\_matrix(y\_test, y\_pred)

print(f"Accuracy for {ratio} split ratio: {accuracy}")



print(f"Confusion Matrix for {ratio} split ratio:\n{confusion\_mat}")

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import matplotlib.pyplot as plt

import seaborn as sns

# Visualizing the test set result

sns.heatmap(confusion\_mat, annot=True, fmt='d', cmap='Blues')

plt.xlabel('Predicted Label')

plt.ylabel('True Label')

#plt.title(f'Confusion Matrix for {ratio} Split Ratio')

plt.show()

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Description automatically generated**Output:**

**Task No. 02**: Design a workflow with the help of KNIME to predict whether a user buys a

product by clicking the ad on the site based on their salary, age, and gender

dataset provided in the lab (i.e. Social network ad dataset).

**A diagram of a computer program

Description automatically generatedSolution:**

A screenshot of a data

Description automatically generated**Output:**