**ASSINGMENT 5**

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**Question 1 : Implement Naïve Bayes method using scikit-learn library Use dataset available with name glass Use train\_test\_split to create training and testing part Evaluate the model on test part using score and classification\_report(y\_true, y\_pred)**

import pandas as pd

from sklearn.svm import SVC

from sklearn.naive\_bayes import GaussianNB

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

import time

import warnings

warnings.filterwarnings("ignore")

from sklearn import metrics

data = pd.read\_csv('/Users/manasavathumilli/Downloads/NNDL\_Code and Data/glass.csv')

print(data.shape)

X\_train, X\_test = train\_test\_split(data, test\_size=0.2, random\_state=int(time.time()))

features = ["RI", "Na", "Mg", "Al", "Si", "K", "Ca", "Ba", "Fe"]

gauss = GaussianNB()

gauss.fit(X\_train[features].values,X\_train["Type"])

y\_pred = gauss.predict(X\_test[features])

print("Naïve Bayes\nTotal number of points: {}\nMislabeled points : {}\nAccuracy {:05.2f}%\n\n"

.format(

X\_test.shape[0],

(X\_test["Type"] != y\_pred).sum(),

100 \* (1 - (X\_test["Type"] != y\_pred).sum() / X\_test.shape[0])

))

print(metrics.classification\_report(X\_test["Type"], y\_pred))

**Description:** In here it implement naïve bayes method using scikit learn library I have developed dataset with available name glass and used teain\_test\_split to create a training and testing part and evaluated the model on test part using score.

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**Question 2 : Implement linear SVM method using scikit library Use the same dataset above Use train\_test\_split to create training and testing part Evaluate the model on test part using score and classificationn\_report(y\_true, y\_pred) Which algorithm you got better accuracy? Can you justify why?**

import pandas as pd

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

from sklearn.svm import SVC

from sklearn.metrics import classification\_report, accuracy\_score

glass\_data = pd.read\_csv('/Users/manasavathumilli/Downloads/NNDL\_Code and Data/glass.csv')

x\_train = glass\_data.drop("Type", axis=1)

y\_train = glass\_data['Type']

# splitting train and test data using train\_test\_split

x\_train, x\_test, y\_train, y\_test = train\_test\_split(x\_train, y\_train, test\_size=0.2, random\_state=0)

# Train the model using the training sets

svc = SVC()

svc.fit(x\_train, y\_train)

y\_pred = svc.predict(x\_test)

# Classification report

qual\_report = classification\_report(y\_test, y\_pred, zero\_division = 0)

print(qual\_report)

print("SVM accuracy is: ", accuracy\_score(y\_test, y\_pred)\*100)

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**Description:** In here to implement linear svm method using sickit I have Used the same dataset and Use train\_test\_split to create training and testing part Evaluate the model on test part using score.

**Justification:** The accuracy of the Gaussian algorithm is higher. Since our accuracy after training with gaussian is higher than that of svm.

Video Link: <https://drive.google.com/file/d/1PSfLlfHgT7B8uZRxb3bpo42aJ6ByvnNZ/view?usp=sharing>

Source code: <http://localhost:8888/notebooks/Documents/Neural/NNDL_ICP_5.ipynb>

GitHub Link: <https://github.com/Manasav17/NNDL_ICP_5>