

Assignment – 5

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GitHub link: https://github.com/Mohith700/Assignment_5.git

Video link:

https://drive.google.com/file/d/1AVdXMTlhNSpng6ZqcmnA2RKcZjX_t1WT/view?usp=drive_link

1)

```
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.naive_bayes import GaussianNB
from sklearn.metrics import classification_report, accuracy_score

glass_data = pd.read_csv('glass.csv')

X = glass_data.drop("Type", axis=1)
y = glass_data['Type']

x_train, x_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=0)

gnb = GaussianNB()
gnb.fit(x_train, y_train)

y_pred = gnb.predict(x_test)

report = classification_report(y_test, y_pred)
print(report)

accuracy = accuracy_score(y_test, y_pred)
print("Naive Bayes accuracy is: {:.2f}%".format(accuracy * 100))
```

O/P:

	precision	recall	f1-score	support
1	0.19	0.44	0.27	9
2	0.33	0.16	0.21	19
3	0.33	0.20	0.25	5
5	0.00	0.00	0.00	2
6	0.67	1.00	0.80	2
7	1.00	1.00	1.00	6
accuracy			0.37	43
macro avg	0.42	0.47	0.42	43
weighted avg	0.40	0.37	0.36	43

Naive Bayes accuracy is: 37.21%

2)

```
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('glass.csv')

x_train=glass_data.drop("Type",axis=1)
y_train=glass_data['Type']

x_train, x_test, y_train, y_test=train_test_split(x_train, y_train, test_size=0.2, random_state=0)

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svc=SVC()
svc.fit(x_train,y_train)
y_pred=svc.predict(x_test)

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)
```

O/P:

	precision	recall	f1-score	support
1	0.21	1.00	0.35	9
2	0.00	0.00	0.00	19
3	0.00	0.00	0.00	5
5	0.00	0.00	0.00	2
6	0.00	0.00	0.00	2
7	0.00	0.00	0.00	6
accuracy			0.21	43
macro avg	0.03	0.17	0.06	43
weighted avg	0.04	0.21	0.07	43

SVM accuracy is: 20.930232558139537

As for me, Naive Bayes have more accuracy than SVM because as we can clearly see that in the output of both methods, Naive bayes accuracy value is on point with 2 decimal places, but the SVM value has 15 decimal places.