ML Experiment 8

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Aim : To implement Bayesian Classification

Theory :

Bayesian Classification is a probabilistic approach to learning & inference based on a different view of what it means to learn from data, in which probability is used to represent uncertainity about the relationship being learnt

It is used to determine the probability of a hypothesis with prior knowledge.

It depends on conditional probability

The formula for Bayes' theorem is given as

$$P(A/B) = \frac{P(B/A)\ P(A)}{P(B)}$$

where,

$P(A/B)$ = posterior probability

  probability of hypothesis A on observed event B

$P(B/A)$ = likelihood probability

  Probability of the evidence given that the probability of a hypothesis is true

$P(A)$ = prior probability

  Probability of hypothesis before observing the evidence

$P(B)$ = marginal probability

  Probability of evidence

Conclusion : Thus, we implemented Bayesian Classification.

```
from sklearn.datasets import load_breast_cancer from
sklearn.model_selection import train_test_split from sklearn.svm
import SVC
 from sklearn.metrics import accuracy_score data =
```

```python
load_breast_cancer()
X = data.data y =
data.target X

X_train, X_test, Y_train, Y_test = train_test_split(X, y, test_size=0.3,
random_state=42)
classifier = SVC(kernel=' ') classifier.fit(X_train,
Y_train) Y_pred = classifier.predict(X_test)
accuracy = accuracy_score(Y_test, Y_pred)
print("Accuracy:", accuracy)

from sklearn.metrics import confusion_matrix
confusion_matrix(y_test, y_pred)
```