Practical No. 9

Aim: To implement the K-Nearest Neighbour classification algorithm using python & evaluate its performance on a real-world dataset.

Input : 1) Dataset (Iris)
2) features
3) Target : class of flower

Output : 1) Accuracy
2) classification report : 1) Precision
2) Recal
3) F1-score
4) Support.

Theory :-
K-Nearest Neighbour is one of the simplest & most intuitive supervised learning algorithm used for classification & regression problems. It is non-parametric & key lazy learning algorithm that does not make any assumptions about the underlying data distribution & does not explicitly train a model. Instead, it memorized the training data & make predictions based ~~on its~~ on it.

How it works:

1) Store the data set : KNN simple stores the data

2. Choose a value of K : The number on nearest neighbours to be considered.

3. Distance calculation: A when a new data point to b classified, the algorithm calculates the tance betwee This point & every point in traning dataset

4. find K nearest Neighbours: It identifies the K neare points.

Mathematical formula - Euclidean Distance:

$$d(p,d) = \sqrt{\sum_{i=1}^{n} (p_i - d_i)^2}$$

where:

p & q are two data points
n is the number of features

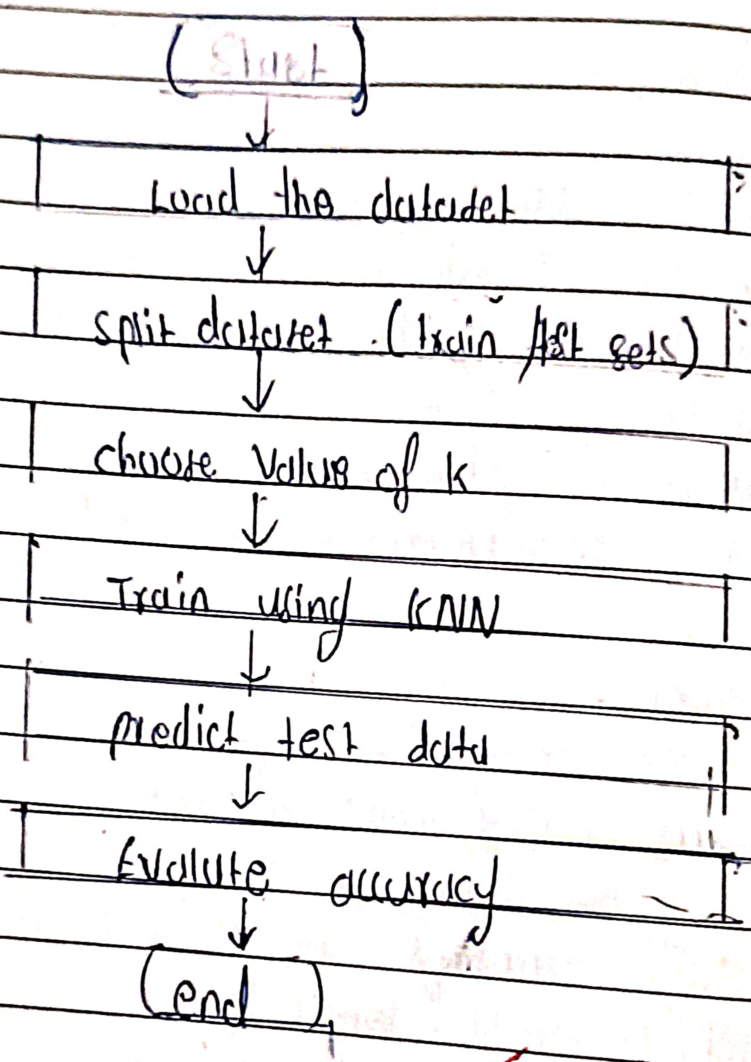
Algorithms:

[Step 1) : Start
[Step 2] : Load & understand the dataset
(Step 3] : Split the datafet into training & testing
[step 4) : choose the value of k
[step 5] : Identify the nearist k points
[step 6] : Eavalute the prediction accuracy.

conclusion:

In this practical, we Implemental & k-nearset neighboue classification algorithm using the Iris dataset. The algorithm classified the flowees with high accuracy. we obseved that the performance of KNN is highly dependent on the value of k & the distance materic used.

Flowchart :


Start
Load the dataset
split dataset (Train /test sets)
choose Value of k
Train using KNN
predict test data
Evalute accuracy
end