NAME: Aarush Talukdar Reg: RA2311047010014.

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Experiment 3 - Study of Classifiers with Respect to statistical Parameters

6/8/25

Aim: To study the performance of different classifiers using statistical parameters like accuracy, precision, recall & f1 score.

Pseudocode:

1) Import required libraries.
   - pandas, scikit-learn, metrics, train-test split.
2) Load the dataset (open-source). (iris dataset).
3) Split into features & labels.
4) Divide data into train and test sets.
5) For each classifier:
   - Instantiate.
   - Fit on training data.
   - Predict.
   - Calculate metrics.
6) Compare statistical results.

Observation:-

- Statistical parameters like accuracy, precision, recall, and F-1 score are displayed for each classifier.

Result:-

- Performance metrics for each classifier are tabulated & compared.
- Random forest classifier may outperform others on the chosen dataset.

7/8/25

Classifier	Accuracy	Precision	Recall	f-1
Random Forest	1	1	1	1
Decision Tree	1	1	1	1
Naive Bayes	0.977	0.9761	0.974	0.974

Random Forest & Decision Tree appear to have same perfect results.

It seems to have been overfitted but the simplicity of 'iris' dataset makes this occur.

```
jupyter-ra2311047010014@cintel:~/DLT$ python knn-week2.py

Random Forest Results:
Accuracy : 1.0
Precision: 1.0
Recall   : 1.0
F1 Score : 1.0

Decision Tree Results:
Accuracy : 1.0
Precision: 1.0
Recall   : 1.0
F1 Score : 1.0

Naive Bayes Results:
Accuracy : 0.9777777777777777
Precision: 0.9761904761904763
Recall   : 0.9743589743589745
F1 Score : 0.9743209876543210
```