Application 5

Supervised Machine Learning

Accuracy Calculation with Decision Tree & K Nearest Neighbour

- In this application we train iris data set with Decision Tree algorithm and K Nearest Neighbour algorithm.
- We divide iris data set into two equal parts as training data and test data.
- We apply training on training data and predict the result on test data.
- We calculate accuracy of both the algorithms by applying of test data.

Consider below characteristics of Machine Learning Application :

Classifier :	**Decision Tree & K Nearest Neighbour**
DataSet :	**Iris Dataset**
Features :	**Sepal Width, Sepal Length, Petal Width, Petal Length**
Labels :	**Versicolor, Setosa , Virginica**
Training Dataset :	**75 Entries**
Testing Dataset :	**75 Entries**

```
1  from sklearn import tree
2  from sklearn.datasets import load_iris
3  from sklearn.metrics import accuracy_score
4  from sklearn.neighbors import KNeighborsClassifier
5  from sklearn.model_selection import train_test_split
6
7  def MarvellousCalculateAccuracyDecisionTree():
8      iris = load_iris()
9
10     data = iris.data
11     target = iris.target
12
13     data_train, data_test, target_train, target_test = train_test_split(data,target,test_size=0.5)
14
15     classifier = tree.DecisionTreeClassifier()
16
17     classifier.fit(data_train,target_train)
18
19     predictions = classifier.predict(data_test)
20
21     Accuracy = accuracy_score(target_test,predictions)
22
23     return Accuracy
24
```

```
25
26 def MarvellousCalculateAccuracyKNeighbor():
27     iris = load_iris()
28
29     data = iris.data
30     target = iris.target
31
32     data_train, data_test, target_train, target_test = train_test_split(data,target,test_size=0.5)
33
34     classifier = KNeighborsClassifier()
35
36     classifier.fit(data_train,target_train)
37
38     predictions = classifier.predict(data_test)
39
40     Accuracy = accuracy_score(target_test,predictions)
41
42     return Accuracy
43
44 def main():
45     Accuracy = MarvellousCalculateAccuracyDecisionTree()
46     print("Accuracy of classification algorithm with Decision Tree  classifier is",Accuracy*100,"%")
47
48     Accuracy = MarvellousCalculateAccuracyKNeighbor()
49     print("Accuracy of classification algorithm with K Neighbor classifier is",Accuracy*100,"%")
50
51 if __name__ == "__main__":
52     main()
53
```

Output of above application

```
iris — -bash — 51×20
(base) MacBook-Pro-de-MARVELLOUS:iris marvellous$ p
ython3 irisAccuracy.py
Accuracy of classification algorithm with Decision
Tree  classifier is 94.66666666666667 %
Accuracy of classification algorithm with K Neighbo
r classifier is 97.33333333333334 %
(base) MacBook-Pro-de-MARVELLOUS:iris marvellous$
```

Accuracy with Decision Tree algorithm is 94% and with KNN is 97%.

Note : Accuracy may vary.