

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.

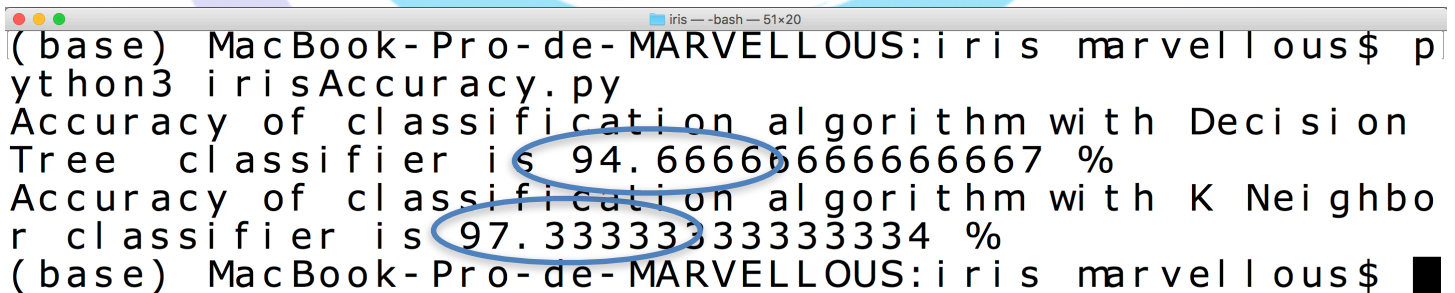
Consider below characteristics of Machine Learning Application :

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



```
(base) MacBook-Pro-de-MARVELLOUS:iris marvellous$ python3 irisAccuracy.py
Accuracy of classification algorithm with Decision Tree classifier is 94.66666666666667 %
Accuracy of classification algorithm with K Neighbor 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.