Application 3

Supervised Machine Learning

Iris Dataset with Decision Tree

- In this application we remove one entry from each label of iris dataset and train with the remaining entries.
- And we apply predictions based on Decision tree with that removed entries

Consider below characteristics of Machine Learning Application :

Classifier :	**Decision Tree**
DataSet :	**Iris Dataset**
Features :	**Sepal Width, Sepal Length, Petal Width, Petal Length**
Labels :	**Versicolor, Setosa , Virginica**
Training Dataset :	**147 Entries**
Testing Dataset :	**3 Entries**

```python
1  import numpy as np
2  from sklearn import tree
3  from sklearn.datasets import load_iris
4
5  iris = load_iris()
6
7  print("Feature names of iris data set")
8  print(iris.feature_names)
9
10 print("Target names of iris data set")
11 print(iris.target_names)
12
13 # Indices of removed elements
14 test_index = [1,51,101]
15
16 # Training data with removed elements
17 train_target = np.delete(iris.target,test_index)
18 train_data = np.delete(iris.data,test_index,axis=0)
19
20 # Testing data for testing on trainning data
21 test_target = iris.target[test_index]
22 test_data = iris.data[test_index]
23
24 # form decision tree classifier
25 classifier = tree.DecisionTreeClassifier()
26
27 # Apply training data to form tree
28 classifier.fit(train_data,train_target)
29
30 print("Values that we removed for testing")
31 print(test_target)
32
33 print("Result of testing")
34 print(classifier.predict(test_data))
35
```

Output of above application

```
iris — -bash — 51×20
(base) MacBook-Pro-de-MARVELLOUS:iris marvellous$ p
ython3 iris1.py
Feature names of iris data set
['sepal length (cm)', 'sepal width (cm)', 'petal le
ngth (cm)', 'petal width (cm)']
Target names of iris data set
['setosa' 'versicolor' 'virginica']
Values that we removed for testing
[0 1 2]
Result of testing
[0 1 2]
(base) MacBook-Pro-de-MARVELLOUS:iris marvellous$
```