GAWAIN BRITO 4MT17CS039

PAGE NO :	19
DATE	:18/12/20
EXP.NO. :	6

6 Write a program to implement k-nearest neighbour algorithm to classify the iris dataset. Print both correct and wrong predictions. Java/Python ML library classes can be used for this problem

```
→ from sklearn.datasets import load_iris
from sklearn.neighbours import KNeighboursClassifier
from sklearn.metrics import classification_report
import numpy as np
from sklearn.model_selection import train_test_split
from sklearn.metrics import confusion_matrix
from sklearn.metrics import accuracy_score
iris_dataset =load_iris()

print("\n IRIS FEATURES \ TARGET NAMES:\n",
            iris_dataset, target_names)
for i in range (len(iris_dataset.
                    target_names)):
    print("\n [{0}]: [{1}]".format
            (i, iris_dataset.target_names[i]))
#print ("\n IRIS DATA:\n", iris_dataset
                    ["data"])
```

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GALWIN BRITO 4MT17CS039

PAGE NO : 20
DATE : 18/12/20
EXP.NO. : 6

```
x-train, x-test, y-train, y-test = train
 _test_split (iris_dataset ["data"],
 iris_dataset ["target"], random_state=0)

classifier = KNeighborsClassifier(n_neighbors
                =8, p=3, metric ="euclidean")
classifier.fit(x-train, y-train)
y-pred = classifier.predict(x_test)
cm = confusion_matrix(y-test, y-pred)
print("Confusion matrix is as follows
     \n", cm)
print("Accuracy metrics")
print(classification_report(y-test, y-
                                  pred))
print("correct prediction", accuracy_
                      score(y-test, y-pred))
print("wrong prediction", (1-accuracy
                  _score(y-test, y-pred)))
```

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OUTPUT:

IRIS FEATURES \ TARGET NAMES:

['setosa' 'versicolor' 'virginica']

[0]: [setosa]
[1]: [versicolor]
[2]: [virginica]

KNeighbors classifier (algorithm = 'auto', leaf-size = 30, metric = 'euclidean', metric_params = None, n-jobs = None, n-neighbours = 8 p=3, weights = 'uniform')

confusion matrix is as follows:

```
[[13  0  0]
 [0  15  1]
 [0   0  9]]
```

Accuracy metrices

	prediction	recall	f1-score	support
0	1.00	1.00	1.00	13
1	1.00	0.94	0.97	6
2	0.90	1.00	0.95	9

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GARWIN BRITO 4MT17CS039

```
accuracy                          0.97     38
Macro avg        0.97     0.98    0.97     38
weighted avg     0.98     0.97    0.97     38
```

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