National University of Modern Languages

Artificial Intelligence - Lab

Lab # 11

BSSE - 5 - Morning

Submitted By:

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Submitted To:

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TASK: Implement support vector machine for the same classification problem
1. Attach the screenshot of the code and output
The data set contains 3 classes of 50 instances each, where each class refers to a type of iris plant.

Attribute Information:

1. sepal length in cm
2. 2. sepal width in cm
3. 3. petal length in cm
4. 4. petal width in cm
5. 5. class:
    - Iris Setosa
    - Iris Versicolour
    - Iris Virginica

	A	B	C	D	E
1	sepal_length	sepal_width	petal_length	petal_width	species
2	5.1	3.5	1.4	0.2	setosa
3	5.7	2.8	4.1	1.3	versicolor
4	6.3	3.3	6	2.5	virginica

Code:

```
print("Muhammad Umair - 12093")

import numpy as np

import pandas as pd

from matplotlib import pyplot as plt

from sklearn.model_selection import train_test_split

from sklearn.preprocessing import StandardScaler

from sklearn import svm


data = pd.read_csv(r'E:\NUML\Semester Data\Semester 5\AI\AI Lab\Python Files\iris_data.csv')

print(data.head())

x=data.drop('species','columns')

#print(x.head())

y=data['species']

#print(Y.head())


x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.20)
```

```
scaler = StandardScaler()
scaler.fit(x_train)
x_train=scaler.transform(x_train)
x_test=scaler.transform(x_test)
#print(x_train)
#print(x_test)

from sklearn.svm import SVC
classifier = SVC(kernel='linear', random_state=0)
classifier.fit(x_train, y_train)
y_pred = classifier.predict(x_test)
print(y_pred)

from sklearn.metrics import confusion_matrix, classification_report,accuracy_score
print(classification_report(y_test,y_pred))
print(confusion_matrix(y_test,y_pred))
print("Accuracy:",accuracy_score(y_test, y_pred))
```

Output:

```
Semester Data/Semester 5/AI/AI Lab/Python Files/Lab11_Task01.py"
Muhammad Umair - 12093
   sepal_length  sepal_width  petal_length  petal_width species
0           5.1          3.5           1.4          0.2  setosa
1           4.9          3.0           1.4          0.2  setosa
2           4.7          3.2           1.3          0.2  setosa
3           4.6          3.1           1.5          0.2  setosa
4           5.0          3.6           1.4          0.2  setosa
['virginica' 'setosa' 'virginica' 'versicolor' 'setosa' 'versicolor'
 'virginica' 'versicolor' 'versicolor' 'setosa' 'versicolor' 'virginica'
 'setosa' 'setosa' 'setosa' 'setosa' 'virginica' 'virginica' 'setosa'
 'virginica' 'versicolor' 'versicolor' 'versicolor' 'virginica'
 'virginica' 'setosa' 'virginica' 'setosa' 'virginica' 'versicolor']
              precision    recall  f1-score   support

      setosa       1.00      1.00      1.00        10
  versicolor       0.89      1.00      0.94         8
   virginica       1.00      0.92      0.96        12

    accuracy                           0.97        30
   macro avg       0.96      0.97      0.97        30
weighted avg       0.97      0.97      0.97        30

[[10  0  0]
 [ 0  8  0]
 [ 0  1 11]]
Accuracy: 0.9666666666666667
PS E:\NUML\Semester Data\Semester 5\AI\AI Lab\Python Files>
```