National University of Modern Languages

Artificial Intelligence - Lab

Lab # 13

BSSE - 5 - Morning

Submitted By:

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Submitted To:

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TASK

Use sepal_length and sepal_width as features from the iris_dataset and apply K-mean clustering. Attach the code and graph.

Code:

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


import pandas as pd
import matplotlib.pyplot as plt


data = pd.read_csv(r'E:\NUML\Semester Data\Semester 5\AI\AI Lab\Python Files\iris_data_2a.csv')
data1 = data.drop(['petal_length','petal_width','species'],'columns')
print(data1.head())


from sklearn.cluster import KMeans
kmean = KMeans(n_clusters=3)
kmean.fit(data1)
print(kmean.labels_)
centers = kmean.cluster_centers_
print(centers)
data1['classes'] = kmean.labels_


print(data1.head())
df0 = data1[data1['classes']==0]
df1 = data1[data1['classes']==1]
df2 = data1[data1['classes']==2]


plt.scatter(df0['sepal_length'], df0['sepal_width'],color = 'red')
plt.scatter(df1['sepal_length'], df1['sepal_width'],color = 'blue')
plt.scatter(df2['sepal_length'], df2['sepal_width'],color = 'lightblue')
plt.scatter(centers[:,0],centers[:,1], marker='*', color ='purple', linewidths=10)
```

```
plt.xlabel('sepal_length')
plt.ylabel('sepal_width')
plt.title("IRIS")
plt.show()
```

Output:

```
PS E:\NUML\Semester Data\Semester 5\AI\AI Lab\Python Files> & C:/Users/muham/AppDa
ester 5/AI/AI Lab/Python Files/Lab13_Task01.py"
Muhammad Umair - 12093
   sepal_length  sepal_width
0           5.1          3.5
1           4.9          3.0
2           4.7          3.2
3           4.6          3.1
4           5.0          3.6
[0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 2 1 2 1 2 1 2 2 2 2 2 2 1 2 2 2 2 2 2 2 2 2 2 2
 1 1 1 1 2 2 2 2 2 2 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 1 2 1 1 1 1 2 1 1 1 1 1 1 1
 1 1 2 2 1 1 1 1 2 1 2 1 2 1 1 2 2 1 1 1 1 1 2 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1
 1 2]
[[5.006      3.418     ]
 [6.81276596 3.07446809]
 [5.77358491 2.69245283]]
   sepal_length  sepal_width  classes
0           5.1          3.5        0
1           4.9          3.0        0
2           4.7          3.2        0
3           4.6          3.1        0
4           5.0          3.6        0
PS E:\NUML\Semester Data\Semester 5\AI\AI Lab\Python Files>
```

Figure 1 Terminal Output

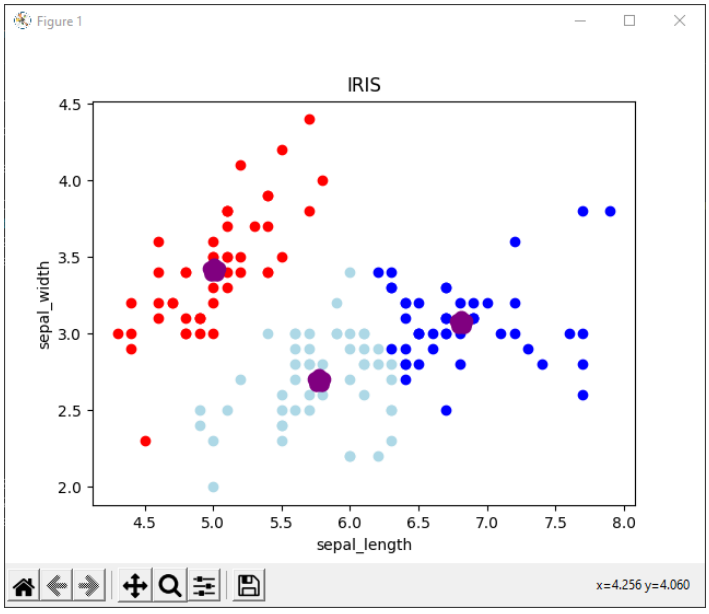

Figure 2 Graph