K-Means Illustration in Python

July 24, 2024

0.1 K-Means Illustration In Python

Importing necessary Libraries

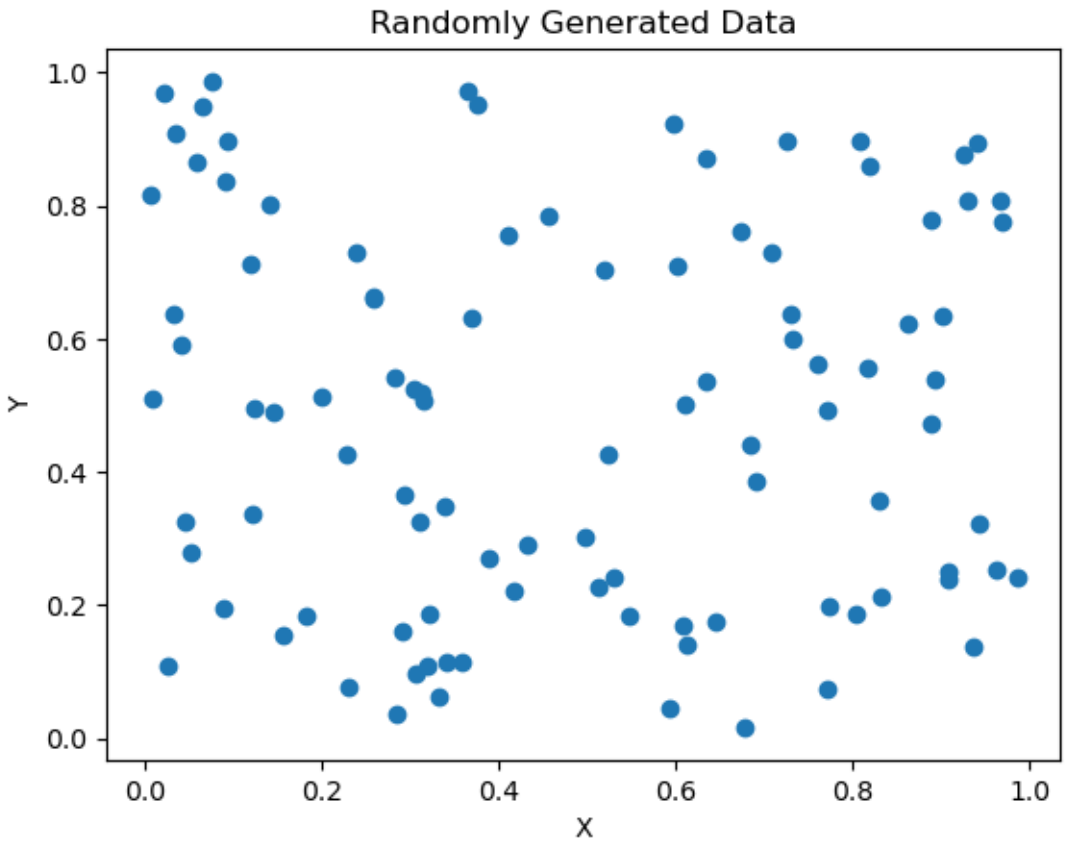
[3]:
```
import numpy as np
import matplotlib.pyplot as plt
import os
os.environ["OMP_NUM_THREADS"] = '1'
from sklearn.cluster import KMeans
```

Generating Random Data

[5]:
```
np.random.seed(42)
X = np.random.rand(100, 2)
```

Plotting The Data

[7]:
```
plt.scatter(X[:, 0], X[:, 1])
plt.title('Randomly Generated Data')
plt.xlabel('X')
plt.ylabel('Y')
plt.show()
```



Performing KMeans Clustering

[9]:
```
Kmeans = KMeans(n_clusters=5)
Kmeans.fit(X)
```

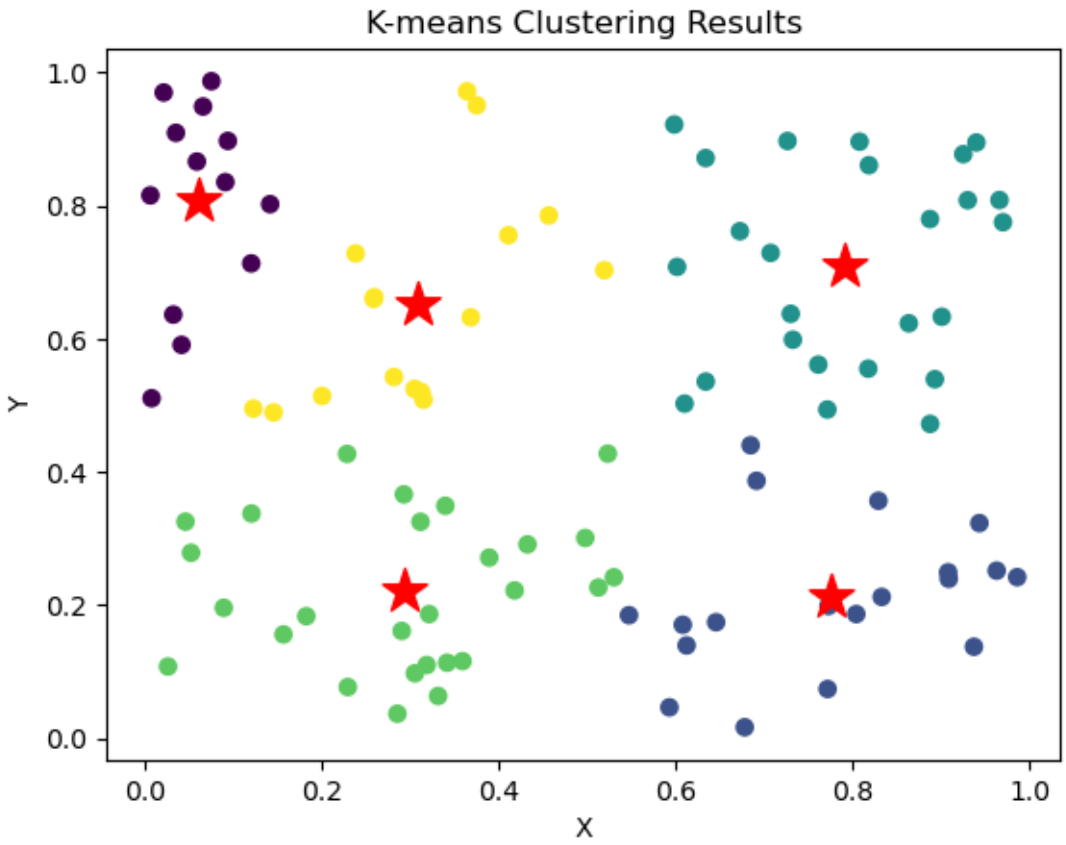
[9]:
```
KMeans(n_clusters=5)
```

Getting the cluster Labels and centroids

[11]:
```
labels = Kmeans.labels_
centroids = Kmeans.cluster_centers_
```

Plotting the clusterd data with centroids

[13]:
```
plt.scatter(X[:, 0], X[:, 1], c=labels)
plt.scatter(centroids[:, 0], centroids[:, 1], marker='*', s=300, c='r')
plt.title('K-means Clustering Results')
plt.xlabel('X')
plt.ylabel('Y')
plt.show()
```


K-means Clustering Results
1.0
0.8
0.6
0.4
0.2
0.0
Y
0.0
0.2
0.4
0.6
0.8
1.0
X

[ ]: