nrcm-kmeans-1

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0.0.4 College : Narasimha Reddy Engineering College UGC Autonomous

0.1 Project Title:

Analysis and Prediction of "Mall_Customers.csv" of Americian mall market called as phonix mall to find out how many customers are visited to a particular shop. On the basis of this prediction of annual income verses spending scores

0.2 Disclaimer:

0.2.1 In this particular dataset e assume Annual income as centroid spending score from the range 1-100 called as datanodes of the cluster

0.3 Porblem Statement:

0.3.1 The American market as per the GDP of 2011 'phonix_trillums' mall in a first range out of 5.The owner wants to be exact which particular shop or products search in differnt kind of clusters a entire mall

0.3.2 As a datascience predict the futurist finaincial market GDP rate based on no.of clusters

0.3.3 The client wants atleast top 5 clusters[shops].

[27]:
```
#import the numpy, matlot, pandas libery's
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

[29]:
```
#Read the dataset take variable name called "dataset" only.
dataset = pd.read_csv("Mall_Customers.csv")
# without printing this data add in separet variable as input variable Caqpital␣
 ↪X only. loc index by select the all row ,
#and give the required colum index like[3,4].for this particular dataset.
x = dataset.iloc[:,[3,4]].values
```

[30]:

```
## <THE ELBOW METHOD>
#from sklearn used "sklearn.cluster" attribute and import KMeans
#Take a distance from from centroid to cluster point with WrapsColumnExpression.
# Assume you have 10 cluster and iterate the for up to range 10 with iterater␣
↪kmeans++.
# Fit the model if value comes too samlla in range.
#For clustering in wcss ,inertia is adding / appending is required.(kmeans.
↪inertia_)#defalut usecase.
#Plot the poarticular graph along with the wcss and your range which you taken␣
↪as input variable.
#Add title "The Elbow Method".
#Lable x variable as "No of Customers".
#Lable y variable as "WCSS".
#Plot the graph using plt.show().
from sklearn.cluster import KMeans
wcss = []
for i in range(1, 11):
    kmeans = KMeans(n_clusters=i, init='k-means++', random_state=42)
    kmeans.fit(x)
    wcss.append(kmeans.inertia_)

plt.plot(range(1, 11), wcss)
plt.title("The Elbow Method")
plt.xlabel("No of Clusters")
plt.ylabel("WCSS")
plt.show()
```

```
/usr/local/lib/python3.10/dist-packages/sklearn/cluster/_kmeans.py:870:
FutureWarning: The default value of `n_init` will change from 10 to 'auto' in
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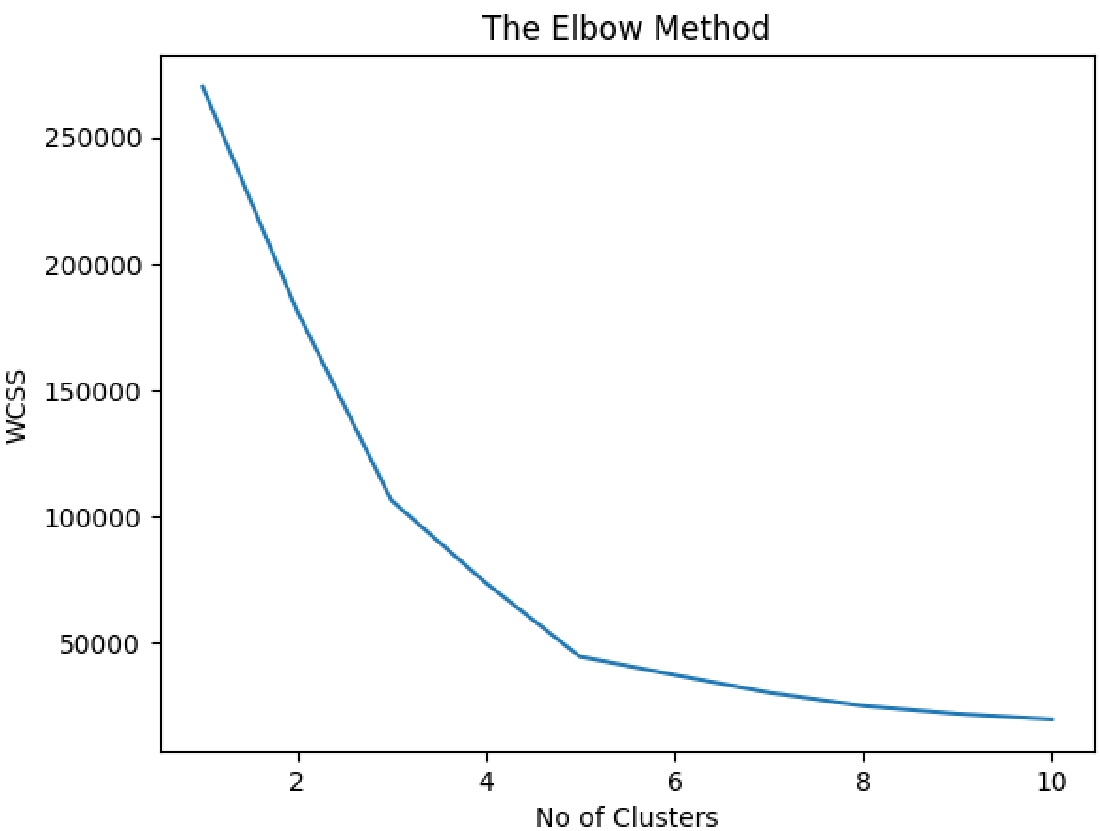

[31]:
```
for i in range(1, 11):
    kmeans = KMeans(n_clusters=3, init="k-means++", random_state=42)
    y_kmeans = kmeans.fit_predict(x)
```

```
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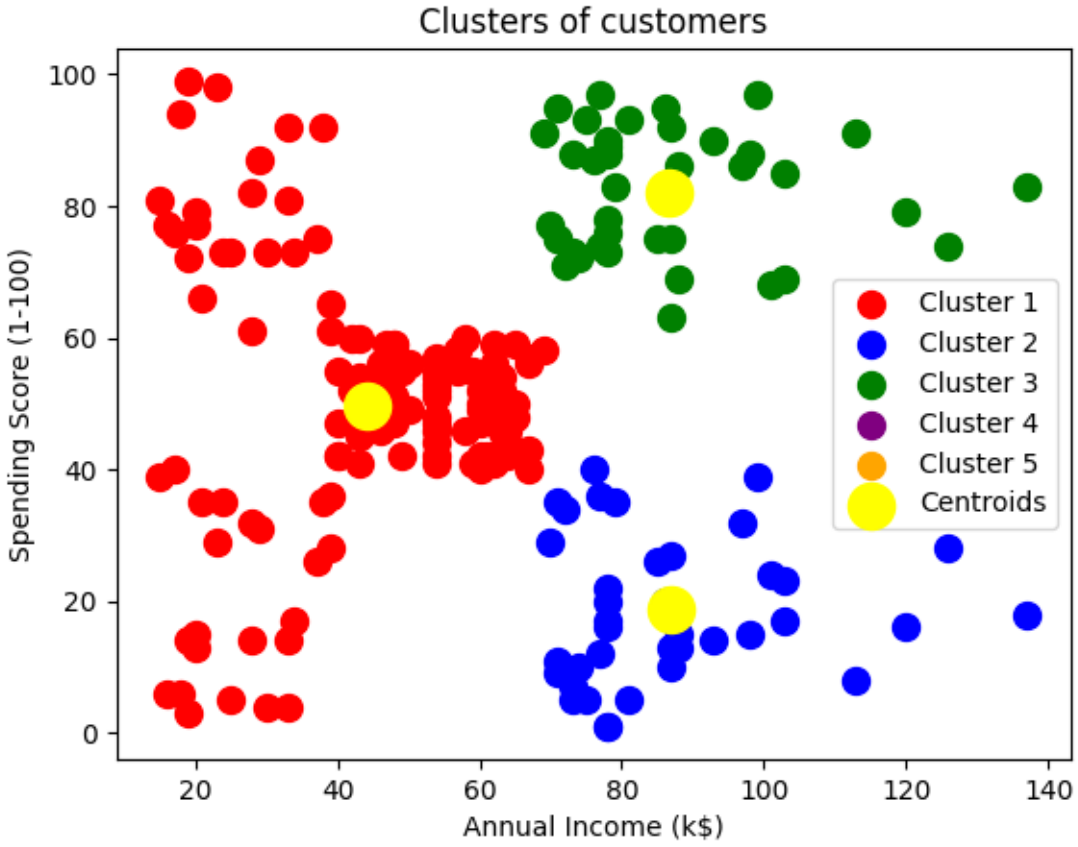
[32]:
```
# Take any no of cluster and run you take 5.
```

```
plt.scatter(x[y_kmeans == 0, 0], x[y_kmeans == 0, 1], s=100, c='red',␣
 ↪label='Cluster 1')
plt.scatter(x[y_kmeans == 1, 0], x[y_kmeans == 1, 1], s=100, c='blue',␣
 ↪label='Cluster 2')
plt.scatter(x[y_kmeans == 2, 0], x[y_kmeans == 2, 1], s=100, c='green',␣
 ↪label='Cluster 3')
plt.scatter(x[y_kmeans == 3, 0], x[y_kmeans == 3, 1], s=100, c='purple',␣
 ↪label='Cluster 4')
plt.scatter(x[y_kmeans == 4, 0], x[y_kmeans == 4, 1], s=100, c='orange',␣
 ↪label='Cluster 5')

plt.scatter(kmeans.cluster_centers_[:, 0], kmeans.cluster_centers_[:, 1],␣
 ↪s=300, c='yellow', label='Centroids')
plt.title('Clusters of customers')
plt.xlabel('Annual Income (k$)')
plt.ylabel('Spending Score (1-100)')
plt.legend()
plt.show()
```



0.4 Conclusion:

0.4.1 According to the model basic prediction using machine learning algorithm KMeans clustering we found that cluster 1 which consists red color is the highest cluster which attach more than 50 data nodes.

0.5 References:

0.5.1 The model buliding alogrithm devlop for all kinds of clusteration values.The yellow spots represent centroids which is max to max 3

[ ]: