nrcm-kmeans

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#PROJECT TITLE: Analysis and prediction of "small_customer" of american mall market called as phonix mall .To find out how many customer are visited to a particular shop.On the basic of this prediction of annual income versus spending scores

#Desclaimer: In this particular data sets we assume annual income as a centroid and spending score from the range 1-100 called as data node od the cluster.

#Problem statement: The American finance market as per DGP of 2011 'phonix_trillums mall' As in the first range out of 5.The owner wants to be exact which particular shop or product search in different kinds of clusters in entire mall

As a data science engineer predict the furturistic financial market for upcomming gdp rate based on no of clusters

the client wants atleast top 5 cluster (shops).

[1]:
```
#import the numpy, matlot, pandas libery's
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

[2]:
```
#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
```

[7]:
```
## <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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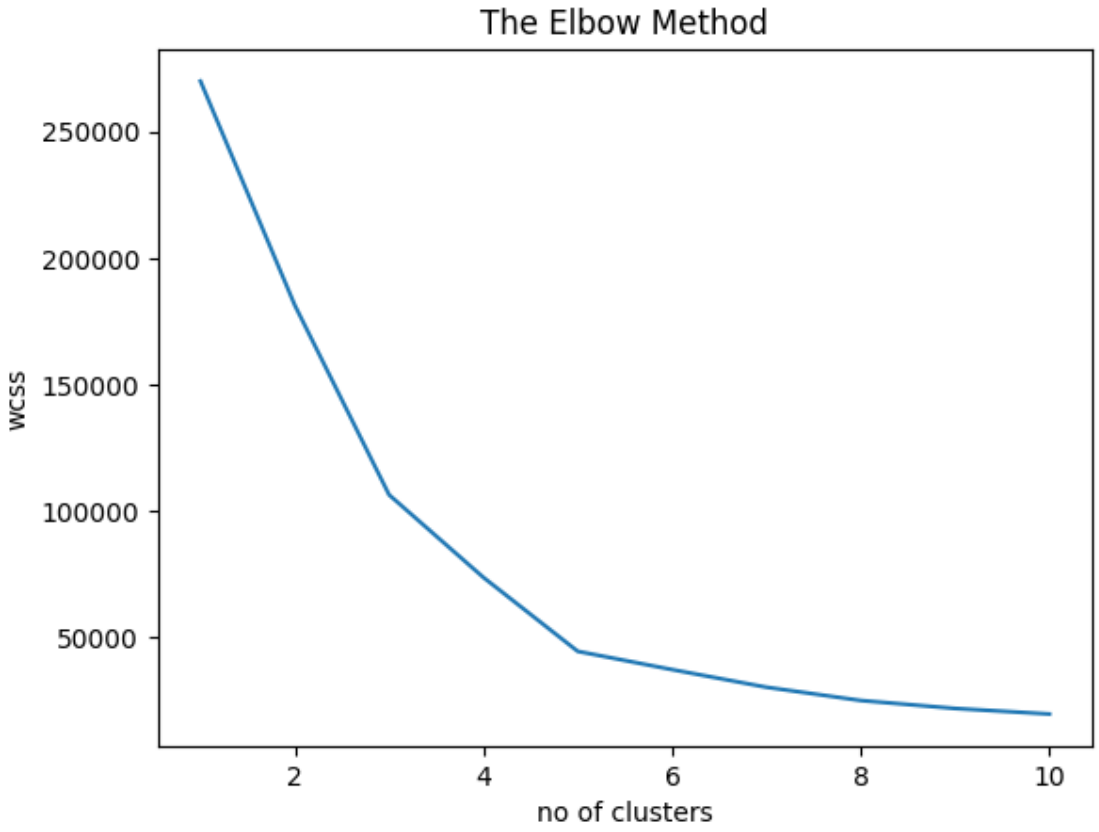

[9]:
```
for i in range(1,11):
  kmeans = KMeans(n_clusters=3,init="k-means++",random_state=42)
  y_kmeans=kmeans.fit_predict(X)
```

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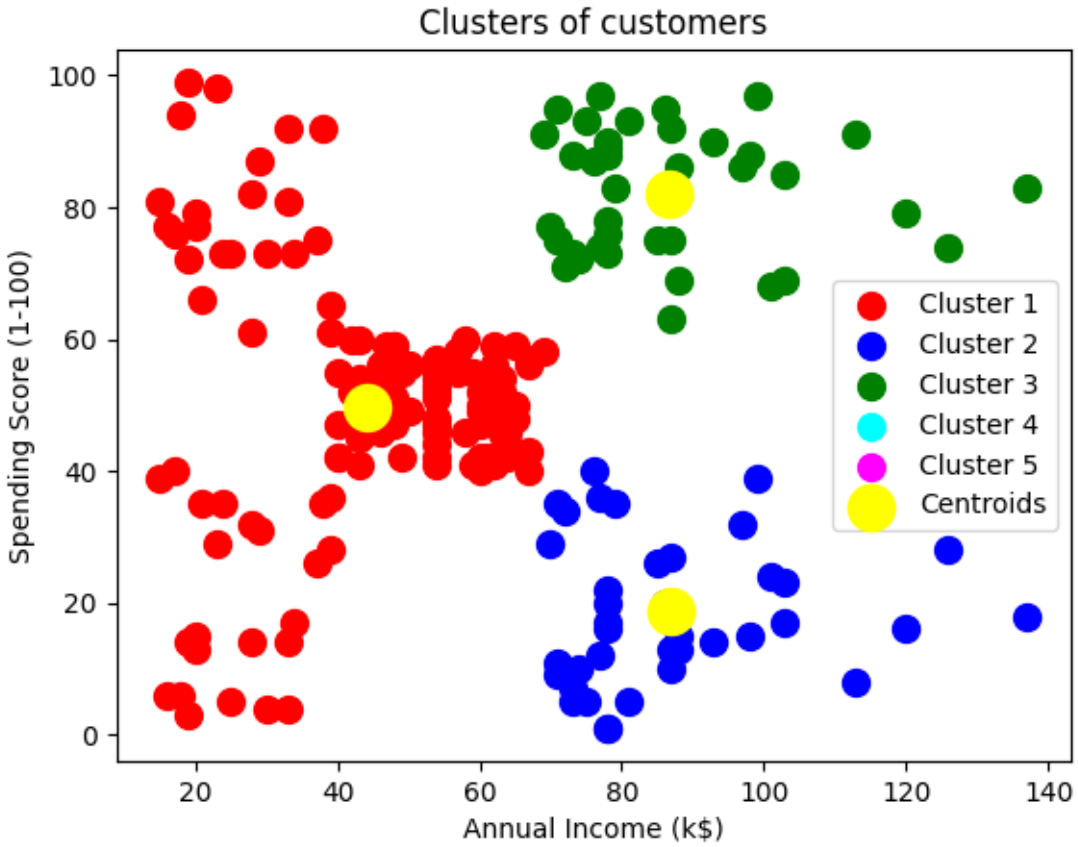
[12]:

```
# 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 = 'cyan',␣
 ↪label = 'Cluster 4')
plt.scatter(X[y_kmeans == 4, 0], X[y_kmeans == 4, 1], s = 100, c = 'magenta',␣
 ↪label = 'Cluster 5')
```

```
#Write Code for rest.SS

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()
```



[ ]:

#Conclusion: According to the model basics prediction using machine learning alogrithm KMeans clustring we found that cluster-1 which consist red color is a highest cluster which attach more than data nodes.

#References The model building algorithm develop for all kinds of clustration values.The yellow spots represents centroids which is max to max only 3

[ ]: