nrcm-kmeans-1

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PROJECT TITLE: Analysis and predection of"Mallcustomers. cv" of american mall markets called as phonix Mall to find out how many customers are visited to a particular a shop on the basis of these predection of anual income vas spending score

DISCLIMER:In this particular dataset we assume annual income as a centroide and spending score from the range 1 to 100 calld as datanodes of the clusters

PROBLEM STATEMENT The American finance market as per the GDPof 2011 "phone_trillums" Mall as in the first ~ range out of five. The owner of the Mall 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 futuristic finanical market for upcoming GDP rate based on number of clusters The client want atleast five top clusters(shops).

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

[16]:
```
#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
```

[24]:
```
from numpy.random.mtrand import randomZ
## <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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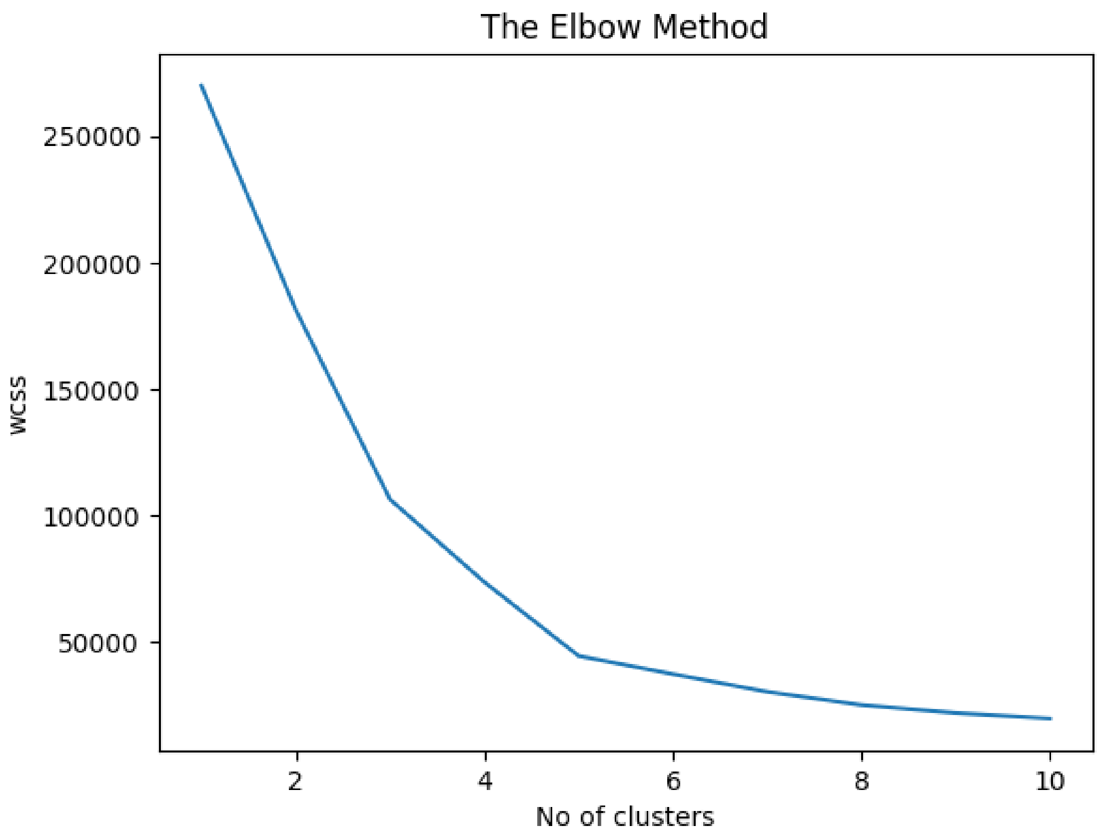

[25]:
```python
for i in range(1,11):
    kmeans=KMeans(n_clusters = 3,init="k-means++",random_state = 42)
    y_kmeans=kmeans.fit_predict(X)
```

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[26]:

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

CONCLUSION: According to the model basics predections using machine learning alogorithm kmeans clustering we found that clusters were which consist red color is a highest cluster which attach more than 50 datanodes.

REFERENCES: The model buliding algorithm develop for all kinds of clusteration values. The yellow spots represents centroids which is max TO max 3