nrcm-kmeans-1

August 28, 2023

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#Project Title

#Analysis and prediction of "Mall_customers" of american mall market called PHONIX MALL.To find out how many customers are visted to a particular shop.On the basics of prediction of Annual income vs Spending Score

##Disclaimers #In this particular dataset we assume annual income as centroid and spending score frome the range 1-100 called as datanodes of cluster.

###Problem Statement #The American finance market as per the GDP of 2011"phonix_trillums"mall as in first range out 5.The owner of the mall wants to be exact which particular shop or products search in different types of clusters in entire mall.

#As a data science Engineer predict the futuristic financial for the upcoming gdp rate based on No.of Cluster.The client wants atleast 5 top clusters(shop).

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

[ ]:
```
#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
```

[ ]:
```
## <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.
```

```python
#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:
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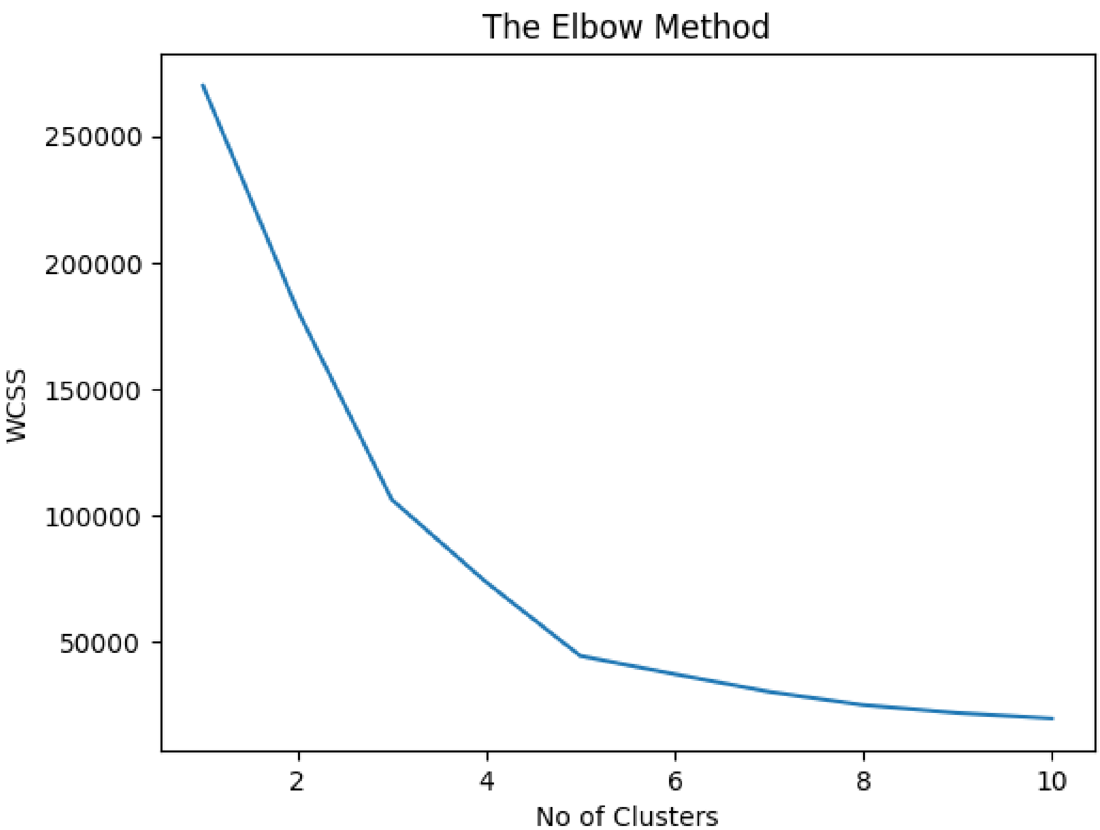

[ ]:
```
for i in range(1,11):
  kmeans=KMeans(n_clusters = 3,init="k-means++",random_state=42)
  y_kmeans=kmeans.fit_predict(X)
# Take any no of cluster and run you take 5.
plt.scatter(X[y_kmeans == 0, 0], X[y_kmeans == 0, 1], s = 100, c = 'red', label␣
 ↪= 'Cluster 1')
```

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

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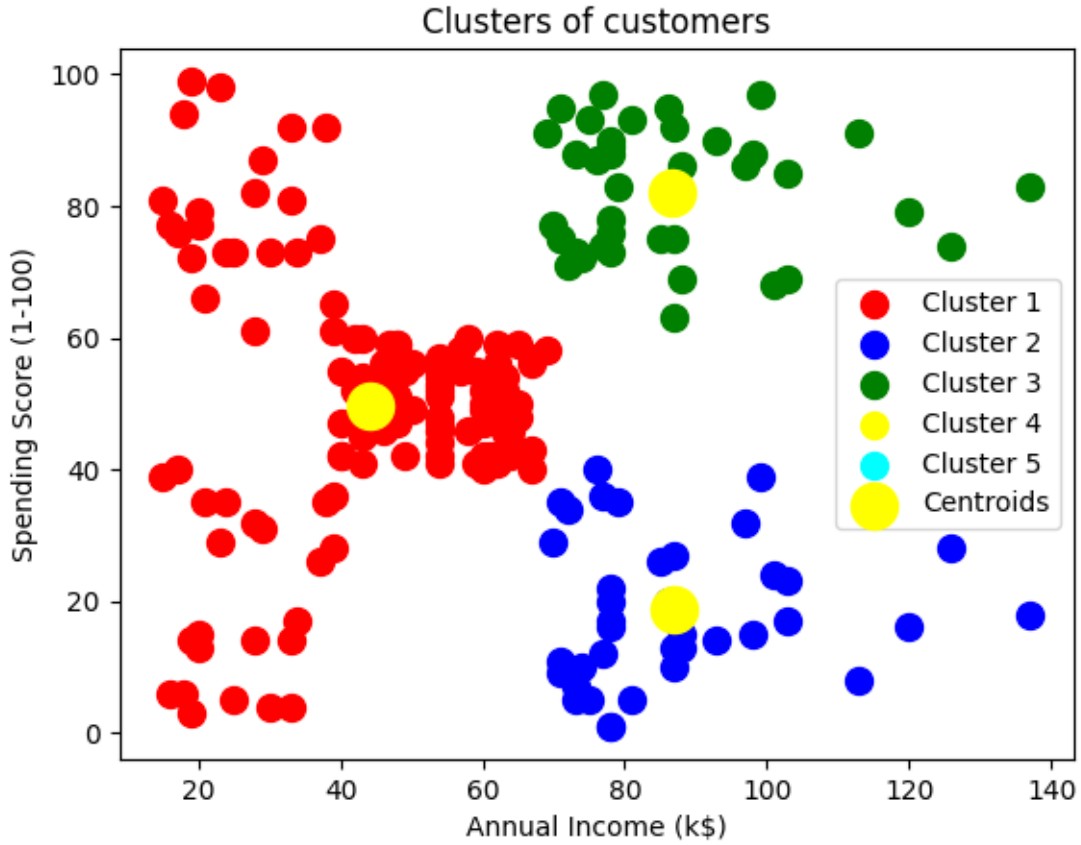

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####REFFERENCES:- #The model building algorithm devdelop for all kinds of clusteration values.The yellow spot represents the “CENTROID” which is max of 3.

###Conclusion #According to the model basics prediction using machine learning algorithm KMeans clustering we found that cluster 1 is in red colour is highest cluster which attach more than 50 data nodes

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