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Branch : CSE (DS)

Project Title :

Analysis and Prediction of "Mall_Customers.csv" of phonix small to find out how many customers are visited to a particular shop. On the basis of this prediction of annual income vs spending scores.

Disclamer

In this prticular dataset we assume annual income as centroid and spending score from the range 1 to 100 called as datanodes of the cluster

Problem statement

The american finance market as per the GDP of 2011 'phonix_trillums' are as the first range out of five.

The owner wants to be exact particular shop or products search in different kind of clusters in a entire mall.

As a datascience engineer predict the feturestic financial market for upcomming GDP rate based on number of clusters. the client wants atleast to five clusters [shops]

Conclusion :

According to the Model basics prediction using Machine Learning KMeans clustering we foud that cluster which consist Red color is the highest color which attach more then 50 computers.

References :

The model building algorithm develop for all kinds of clusteration values.The yelllow spots represents centroids which max is 3

```
#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
X

from pandas.core.common import random_state
## <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
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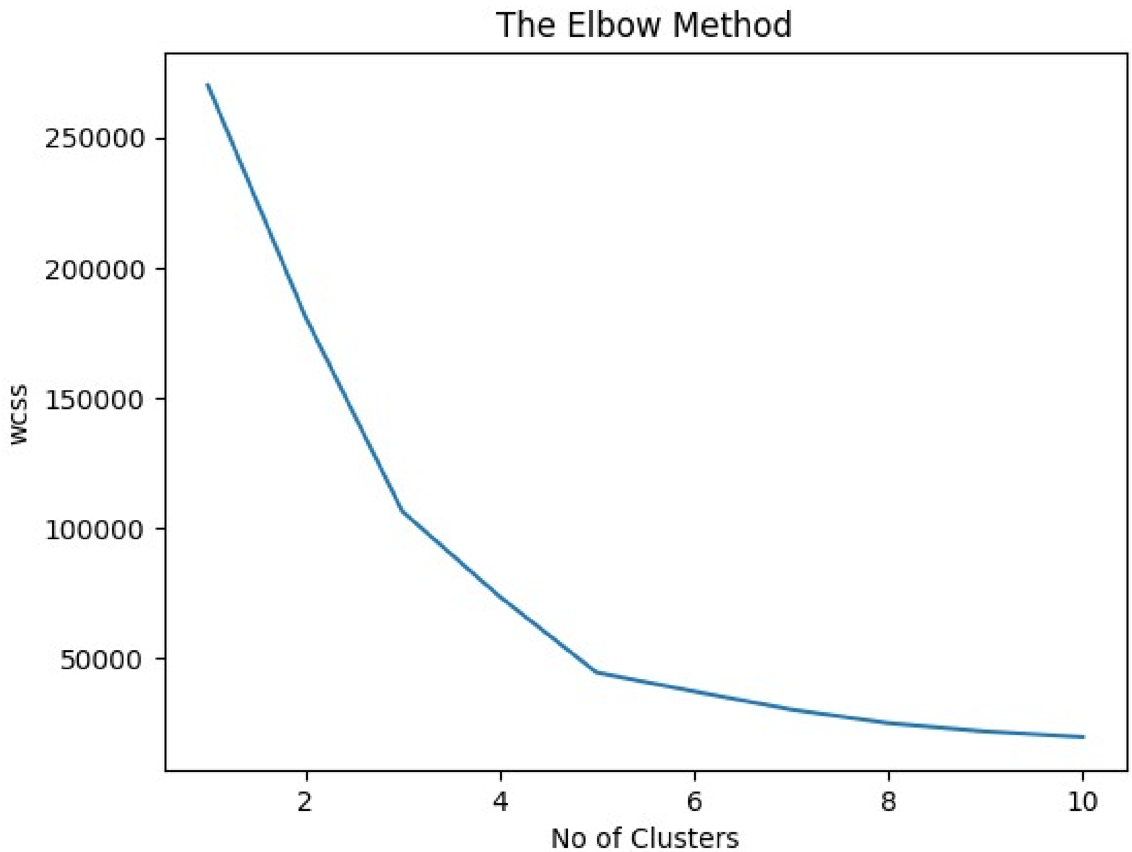


```
for i in range(1,11):
  kmeans=KMeans(n_clusters = 3,init="k-means++",random_state=42)
  y_kmeans = kmeans.fit_predict(X)
```

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# 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()
```