Customer Segmentation Using K-Means Clustering

Introduction to Customer Segmentation

Customer segmentation is the process of dividing customers into groups based on their shared characteristics. By categorizing customers into meaningful segments, businesses can target their marketing campaigns more effectively, improve customer service, and develop new products and services that cater to specific customer needs.

Customer segmentation allows companies to understand their customer base better, personalize their offerings, and optimize their business strategies.

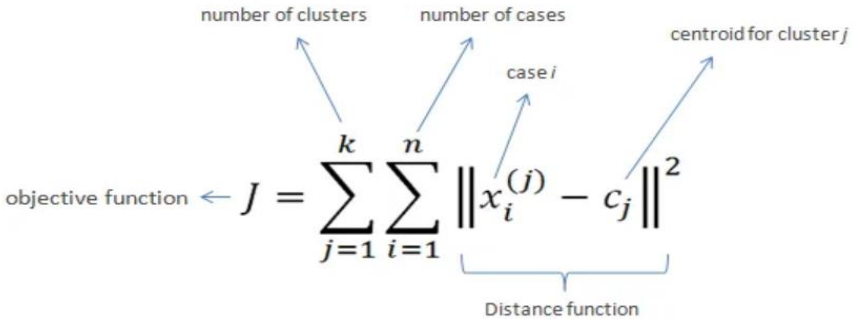
Understanding K-Means Clustering

K-means clustering is a popular machine learning algorithm that can be used to segment customers based on their similarities. The algorithm aims to find k clusters in the data, where each cluster represents a group of customers that are similar to each other. K-means clustering relies on the concept of centroids, which are the center points of each cluster, and uses distance metrics to assign customers to the appropriate clusters.

K-MEANS CLUSTERING

1. **Define Clusters**
   Specify the number k of cluster to assign.
2. **Initialize Centroids**
   Randomly initialize k centroids.
3. **Repeat**
   Expectation (4) & Maximization (5)
   Until the Centroid positions do not change
4. **Expectation**
   Assign each point to its closest centroid
5. **Maximization**
   Compute the new centroid (mean) of each cluster

Equation



K-means Formula