Marketing Segmentation

Defining the Concept and Its Importance

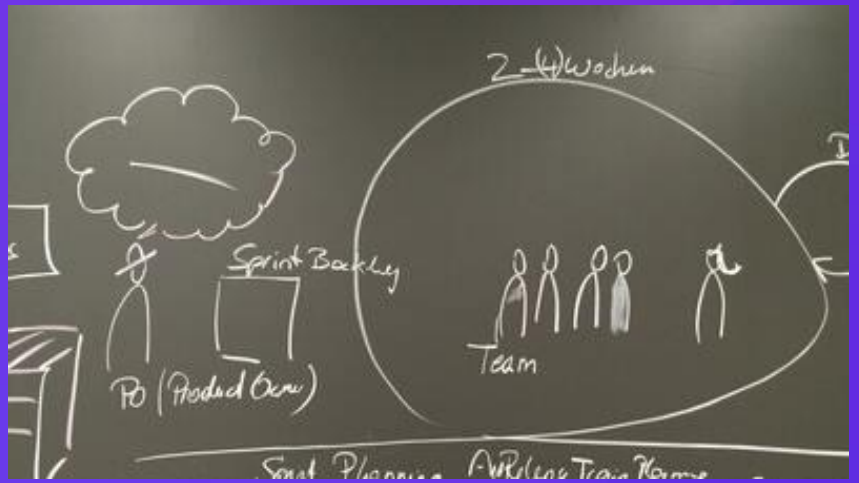
Objective: Define marketing segmentation and its importance in targeting and positioning.

Key Points: Explanation of marketing segmentation, its role in effective marketing, and the benefits of precise targeting and positioning.

Overview of RFM Analysis

Understanding Recency, Frequency, Monetary

- **Objective**: Introduce RFM analysis and its components.
- **Key Points**: Definition of RFM, its role in customer segmentation based on transaction history, and examples of RFM segmentation.



Deep Dive into K-means Clustering

Applying Unsupervised Learning in Segmentation

Introduction to K-means clustering, its process, and how it's used in customer segmentation based on various attributes.

$$J = \sum_{i=1}^{k} \sum_{x \in S_i} ||x - \mu_i||^2$$

- J is the objective function to minimize.
- k is the number of clusters.
- S_i represents the set of data points in the i^{th} cluster.
- x is a data point in cluster S_i.
- μ_i is the centroid of the i^{th} cluster.
- $||x - \mu_i||^2$ is the squared Euclidean distance between a data point x and the centroid μ_i.

4 Algorithm Steps

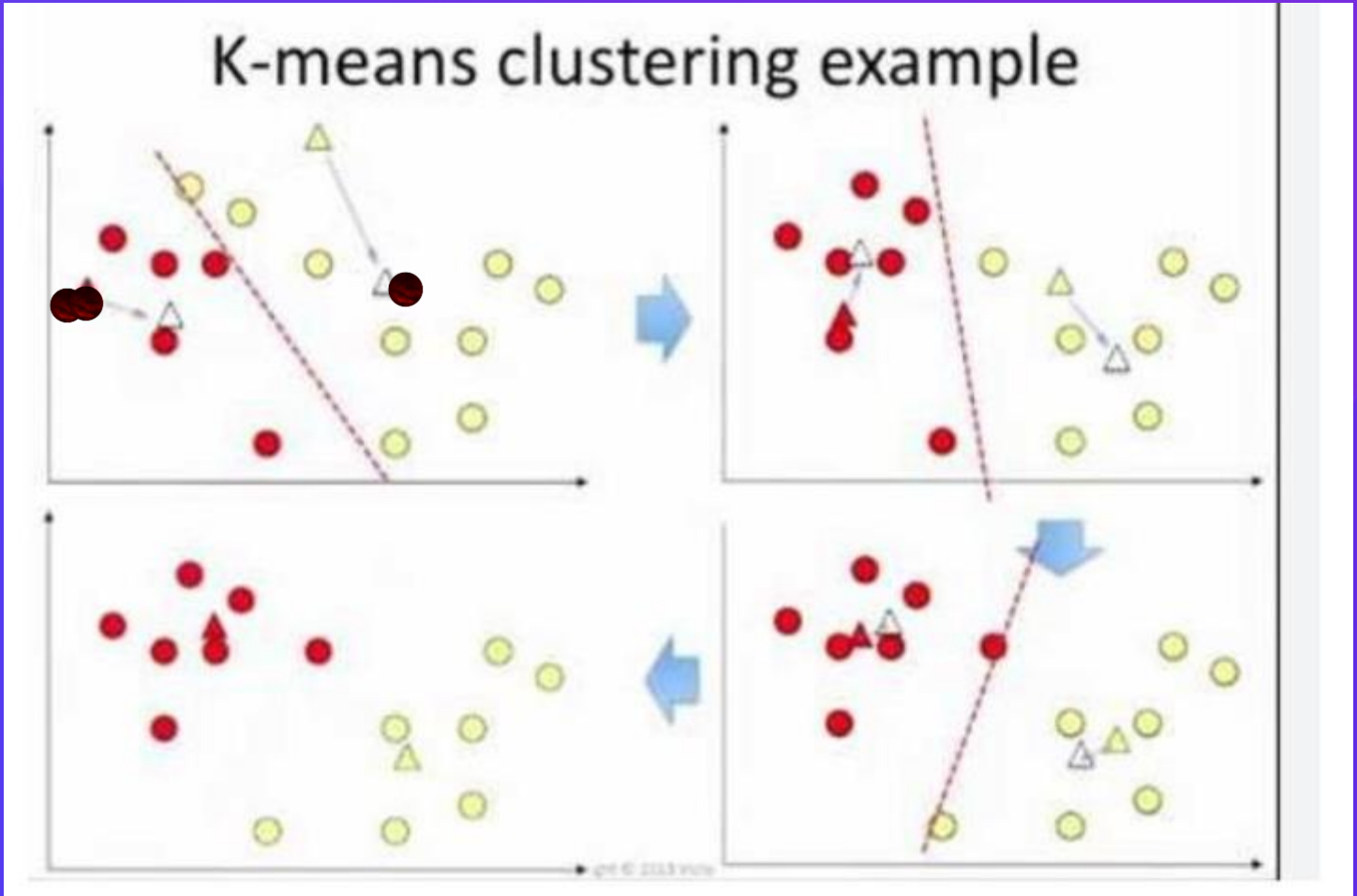
1. Initialization:
Select (k) initial centroids randomly. The common practice is to randomly choose (k) data points from the dataset as the initial centroids.

2. Assignment Step:
Assign each data point to the nearest centroid. The nearest centroid is the one with the minimum squared Euclidean distance.
This step partitions the input data into (k) clusters based on the nearest mean.

3. Update Step:
Update the centroid of each cluster to be the mean of the data points assigned to it. The updated centroid, (\mu_i), is calculated as:
Here, (|S_i|) denotes the number of data points in cluster (i).

4. Convergence:

Repeat the assignment and update steps until the centroids no longer change significantly or the change in the value of the objective function between iterations is below a certain threshold. This indicates convergence.


K-means clustering example

Project Demo

This project performs customer segmentation on transaction data from a UK retailer to identify high-value customers.
Recency, frequency, and Monetary Value (RFM) are calculated for each customer. Customers are segmented using RFM scores and further clustered using k-means based on purchasing patterns. The analysis provides insights into customer behavior and value, which can inform marketing strategy and personalization. Key techniques used include RFM segmentation and k-means clustering on transaction data to derive actionable customer insights.

Data Set

https://nas.io/artificialintelligence/tbon