K-Means Clustering

General Steps for K-Means Algorithm

1. **Decide 'n' Clusters:** At first step the number of clusters are assigned to data using Elbow Method
2. **Initialize Centroids:** Here random points in data are considered centroids. They're equal to the number of clusters
3. **Assign Clusters:** In it clusters are created based on the Euclidean distance of points from the centroids
4. **Move Centroids:** Here after clustering we calculate centroids for each cluster by taking a mean of all features respectively
5. **Check for Finish:** Check if the centroids calculated are the same as the previous ones. If not then go back to step 3 and repeat 3,4,5 steps until centroids become constant. After they become constant, clustering process ends

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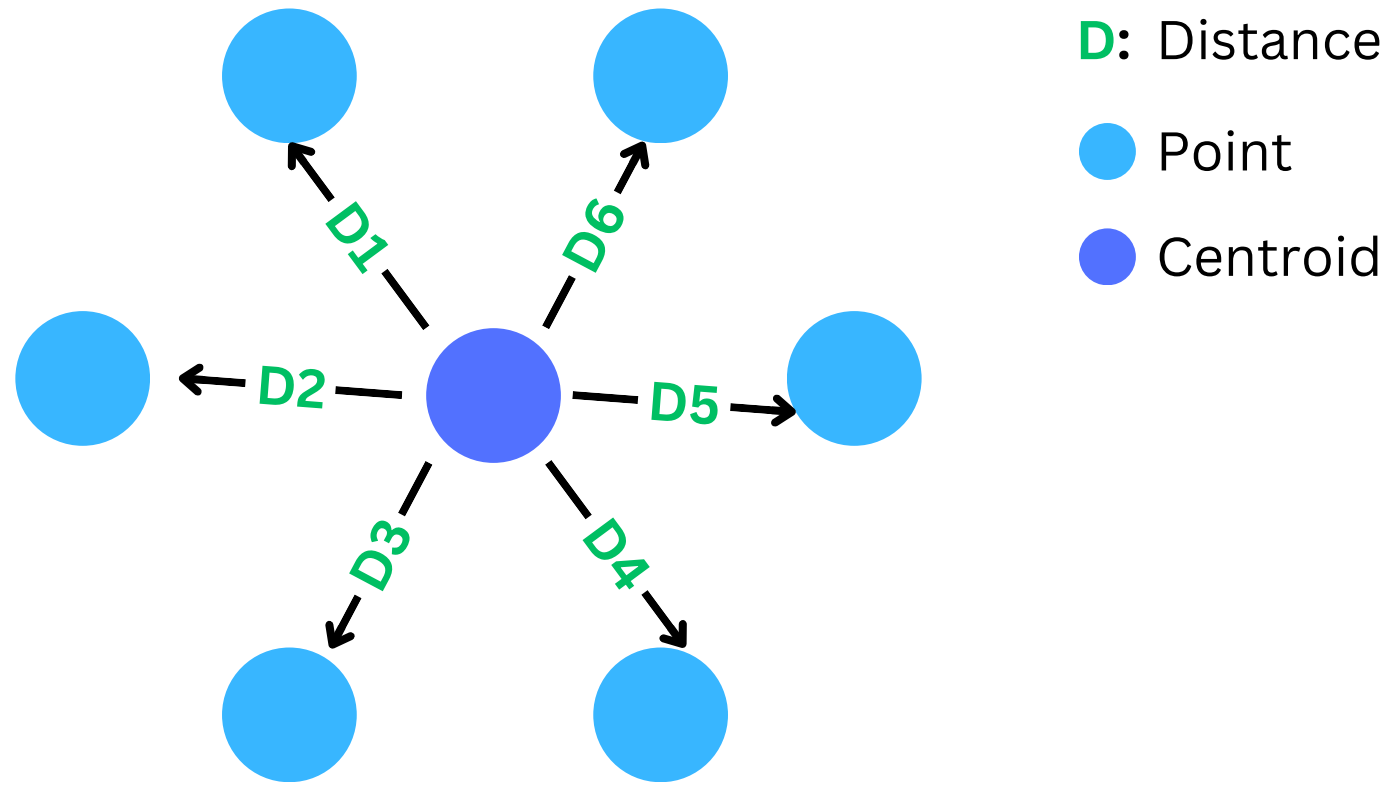
Arsalan Ali
@arslanchaos

WCSS (Inertia) of a Cluster

Within Cluster Sum of Squared Distances

K-Means Clustering



WCSS = D1 + D2 + ... + D5

$$\text{WCSS} = \sum_{i=0}^{n} \min(||x_i - \mu_i^2||)$$

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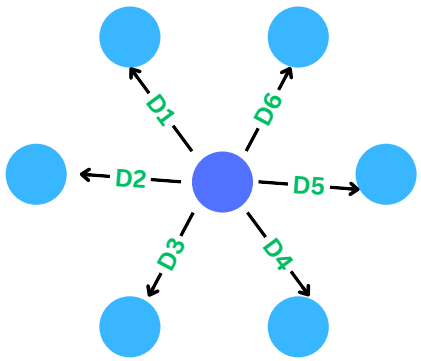
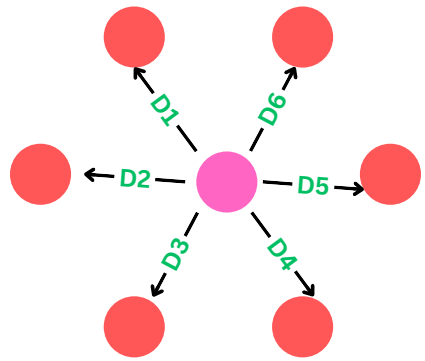
@arslanchaos

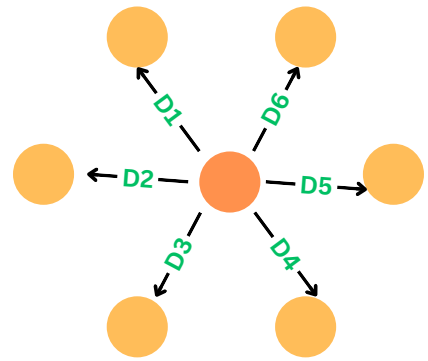
WCSS (Inertia) of all Clusters

Within Cluster Sum of Squared Distances

K-Means Clustering







Total WCSS = WCSS1 + WCSS2 + WCSS3

$$\text{Total WCSS} = \sum_{i=1}^{k} \text{WCSS}_i$$

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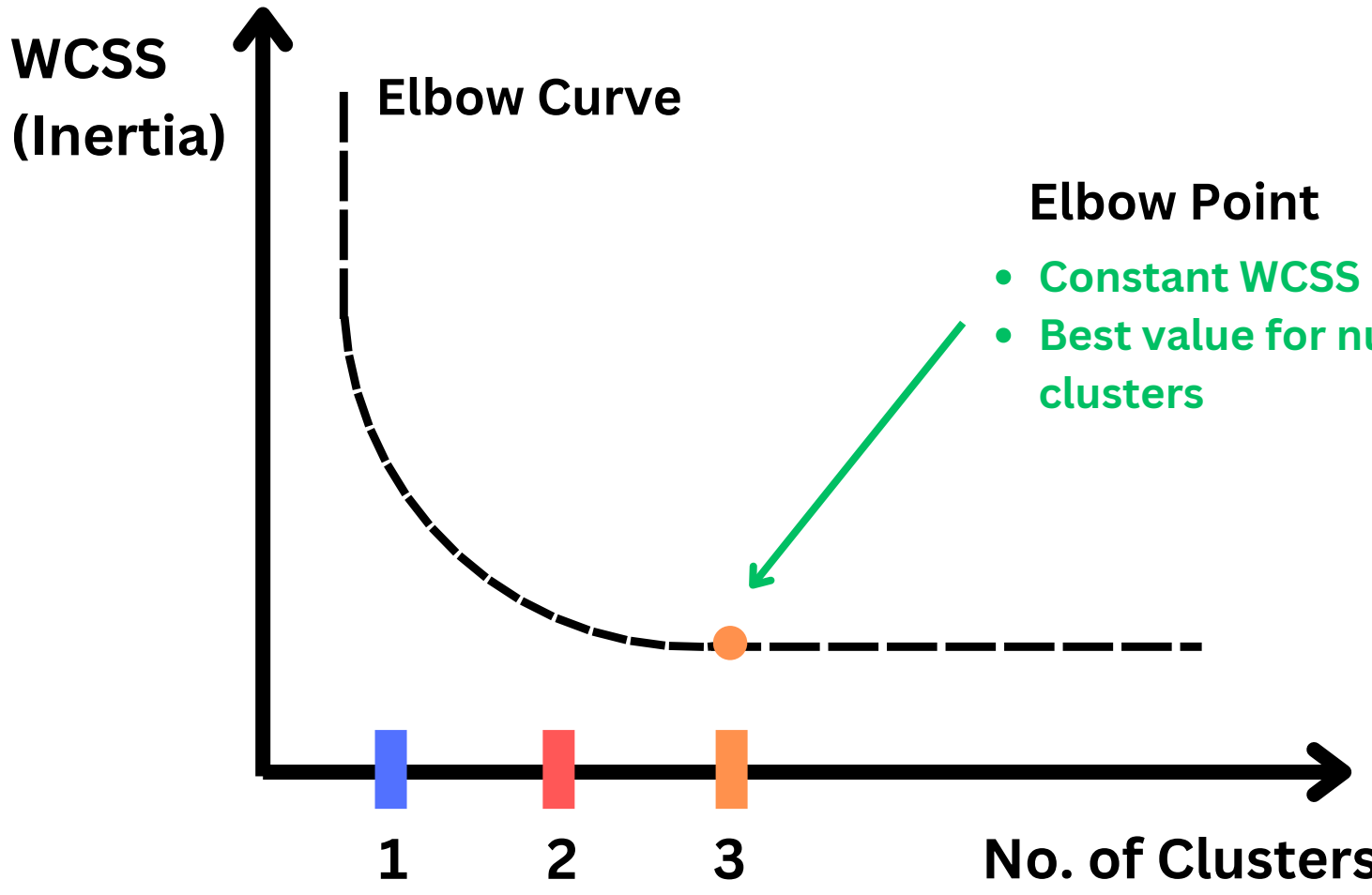
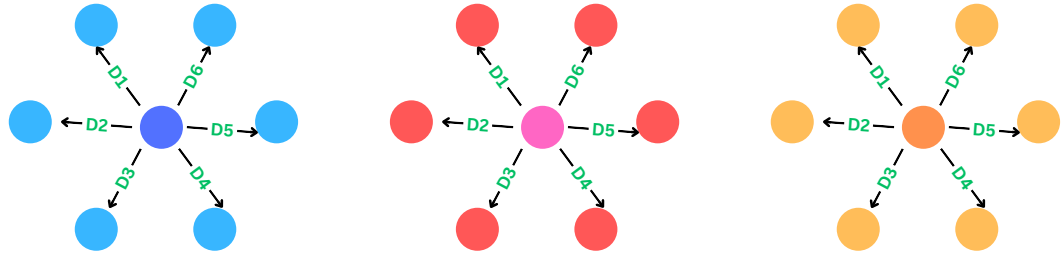
@arslanchaos

Elbow Method

Choosing Number of Clusters

K-Means Clustering





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Arsalan Ali
@arslanchaos