

K means Clustering Example

Q 1) solve the following using K Means Clustering with $K=2$

{2, 3,4,10,11,12,20,25,30}

Solution:

Step1: $M1= 2, M2=10$ > (Random centroid)

Assign the points to cluster based on minimum distance with centroid

$K1= \{2,3,4,\}$

$K2= \{10,11,12,20,25,30\}$

Step 2: New centroid points has to be calculated

$M1=? \quad M2=?$

$$M1= (2+3+4)/3= 3$$

$$M2= (10+11+12+20+25+30)/6=18$$

$K1= \{2,3,4,10\}$

$K2= \{11,12,20,25,30\}$

Step 3: Reassign the centroid

$$M1=4.75 \quad M2=19.6$$

$$K1 = \{2,3,4,10,11,12\}$$

$$K2 = \{20,25,30\}$$

Step 4: Reassign the centroid

$$M1 = 7, M2 = 25$$

$$K1 = \{2,3,4,10,11,12\}$$

$$K2 = \{20,25,30\}$$

Step 5: Reassign the centroid

$$M1 = 7, M2 = 25$$

Final clusters are $K1 = \{2,3,4,10,11,12\}$ &

$$K2 = \{20,25,30\}$$

Q2) Cluster the given set of values
 $\{2,3,6,8,9,12,15,18,22\}$ into three clusters.

Solution:

Step 1: $M1=2, M2=3, M3=6$

$$K1 = \{2\}$$

$$K2 = \{3\}$$

$K3=\{6,8,9,12,15,18,22\}$

Final mean values are $M1=2.5$, $M2=8.75$, $M3=18.33$

$K1=\{2,3\}$

$K2=\{6,8,9,12\}$

$K3=\{15,18,22\}$