LAB - 09

K mean clustering

07/05/2025

Q. For the given data, compute 2 cluster using K mean algorithm for clustering where initial cluster centers are (1.0, 1.0) and (5.0, 7.0)

Ans No. of cluster, $k = 2$.

centroid C1 = (1.0, 1.0)

centroid C2 = (5.0, 7.0)

Record Number	close to C1	close to C2	Assign to cluster
R1 (1.0, 1.0)	0.0	7.21	cluster1
R2 (1.5, 2.0)	1.12	6.12	cluster1
R3 (3.0, 4.0)	3.61	3.61	cluster1
R4 (5.0, 7.0)	7.21	0.0	cluster2
R5 (3.5, 5.0)	4.12	2.5	cluster2
R6 (4.5, 5.0)	5.31	2.06	cluster2
R7 (3.5, 4.5)	4.30	2.92	cluster2

cluster 1 = { R1, R2, R3 }

cluster 2 = { R4, R5, R6, R7 }.

New centroids

$$C1 = \left(\frac{1.0 + 1.5 + 3.0}{3}, \frac{1.0 + 2.0 + 4.0}{3}\right)$$

$$= (1.83, 2.33)$$

$$C2 = (4.12, 5.37)$$

Ques. 07

Draw the elbow plot. What was the optimal k value obtained.

Optimal value of k = 3