

## **Assignment 3 ML:**

### **Best Clustering Result Choice method:**

After generating the 30 membership vectors each from each initialization, we concluded the best membership vector to be the one that has the minimum within cluster distance from the 30 vectors.

The within cluster distance for each membership vector were calculated as such:- Firstly, for each k value (0-9), the images belonging to this cluster, aka the images with value in the membership vector = k are put in a matrix XCluster matrix together, then the distances between each image of this cluster and the other images of this cluster (found in XCluster matrix as well) are calculated and summed up to be the distance in cluster k. Then the total within cluster distance is the summation of such distances for all the k values.