Fuzzy C means clustering Algorithm

Introduction:

Fuzzy clustering is known as soft clustering technique. It means the each datapoint has the probability to belong each cluster. By nature, the C means algorithm is almost similar to K-means algorithm. In our project, we have been implemented Fuzzy C means clustering algorithm on demo dataset.

Procedure:

The algorithm works by assigning membership to each data point to each cluster center on the basis of distance between the cluster and the data point. More the data is near to the cluster center more is its membership towards the particular cluster center. Clearly, summation of membership of each data point should be equal to one. After each iteration membership and cluster centers are updated in according to membership and cluster center formula.

- Demo Dataset, # of cluster 3, # of average iteration 9 to be converged (actually never converged, to satisfy the error condition)
- Randomly select c=3 cluster center
- Determine Fuzzy membership u_{ij}
- Compute Fuzzy centers

Results:

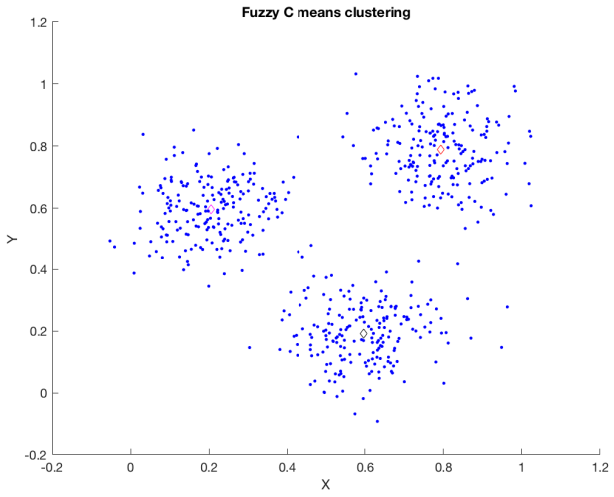

Figure 1: Fuzzy C means clustering of demo dataset. The datapoints belongs to three cluster. Each cluster centroid is presented by three different diamond color. It takes on average approximate 8 iteration to satisfy the acceptable error condition (in theory, it is never going to be converged)