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**Section : CSE-29**

## **Assignment 6**

### **K-means Clustering**

#### **1. Introduction**

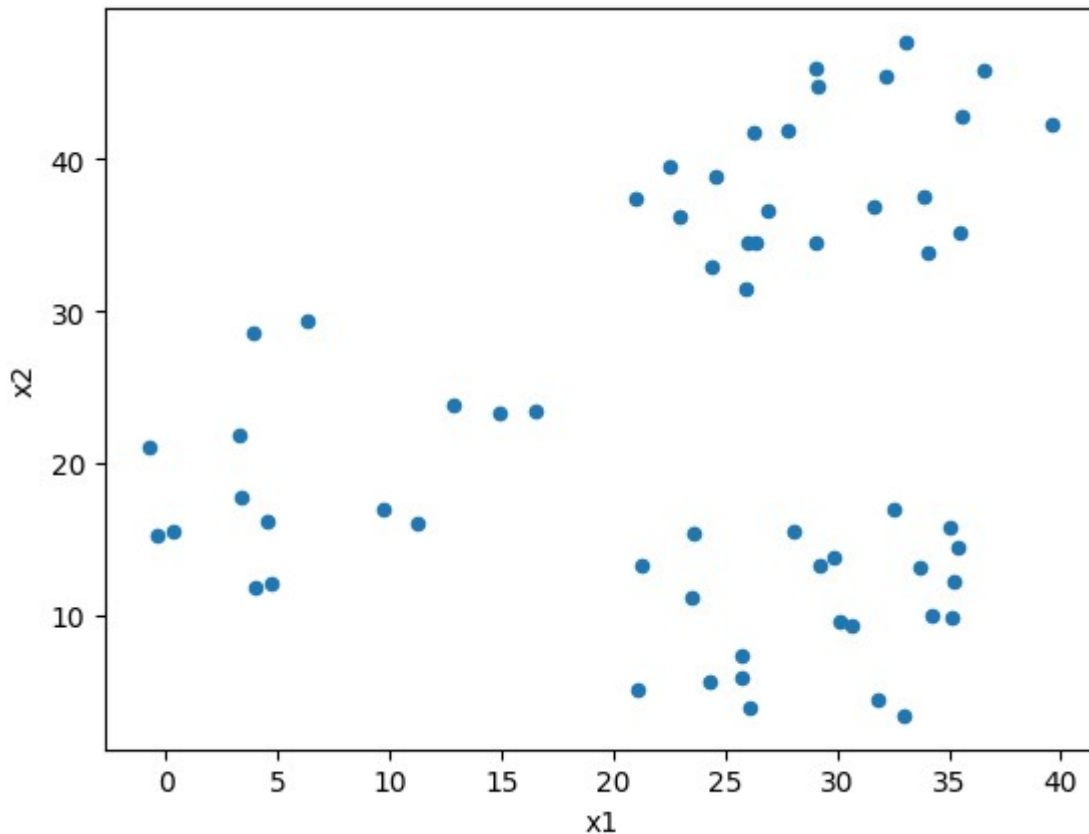
K-Means is one of the best-known algorithms in the area of clustering unsupervised learning. It partitions data into k different clusters. In essence, an iterative refinement of cluster assignment is done such that the variance within the cluster is minimized. The report contains the design of a report on K-Means implemented in Python and NumPy as well as essential aspects and techniques for visualization.

#### **2. Objective**

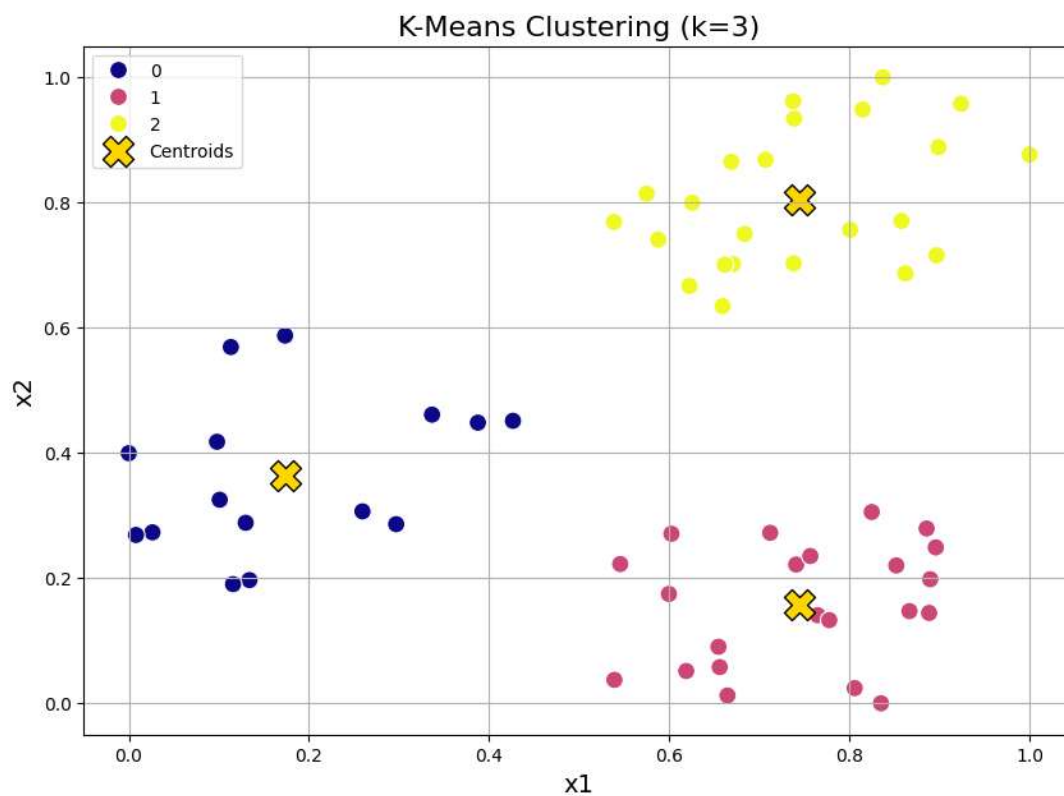
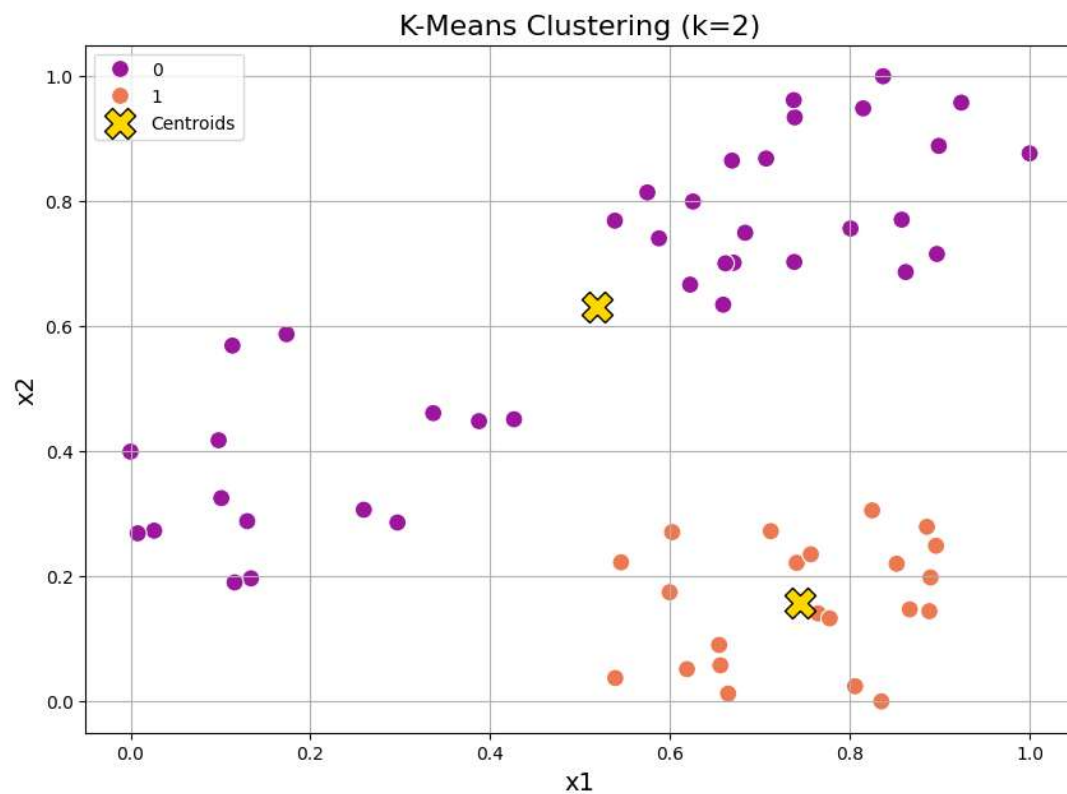
The objective of this project is to implement K-Means clustering on a two-dimensional dataset and visualize the results. The following steps have been included in the implementation:

- Random initialization of cluster centroids.
- Iterative assigning of data points to the nearest clusters.
- Recalculation of cluster centroids.
- Visualization of clustered data.

#### **3. Cluster Visualization**



## 4. Results



## 5. Conclusion

It basically shows an end-to-end K-Means clustering project from preprocessing through visualization. The algorithm divides data into meaningful clusters.