Unsupervised Learning – Clustering

**Learning Objectives of the session:**

* Introduction to Unsupervised learning
* Clustering and distance calculation
* Types of clustering
* K-means clustering
* Elbow method
* More distance measures
* Applications of clustering
* Silhouette’s coefficient
* Advantages and disadvantages of clustering
* Visual analysis and Dynamic Clustering
* Hands on exercise on K-means clustering
* Case study

**Structure of the Session**

|  |  |  |
| --- | --- | --- |
| **Time Distribution of 2 hours** | **Topic** | **Detail** |
| 30 mins | * Introduction to USL * Clustering and distance calculation * Types of clustering | * Introduction to Unsupervised learning * What is clustering? * Clustering distances * Types of clustering |
| 15 mins | * K Means clustering * Elbow method | * K Means clustering * Elbow method * Scaling – Z score |
| 15 mins | * More distance measures * Applications of clustering | * Mahalanobis distance * Jaccard distance * Industry applications of clustering |
| 30 mins | * Visual analysis * Dynamic clustering * Adv and disadv of K Means clustering | * Advantages and disadvantages of K Means clustering * Silhouette’s coefficient * Visual analysis * Dynamic clustering |
| 15 mins | * Hands-on exercise for K Means clustering | * Technical support data set |
| 10 mins | * Case study | * Depression dataset |
| 5 mins | * Doubt clarification | * Clarify any open questions from the students (if any) |