

## ABSTRACT

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**Cluster analysis** or **clustering** is one of the main tasks of data mining along with Classification and Association Rule Mining. **Clustering** is the task of grouping a set of objects in such a way that objects in the same group (called **cluster**) are more similar (in some sense or another) to each other than to those in other groups (clusters). It is an unsupervised learning method because no prior information is provided i.e. the input data are not class labelled. Typically, we may use clustering algorithms to discover the classes within the data.

Discovering the meaningful patterns and trends out of large datasets needs a very special attention now a days and one of the most prevalent and widely studied problems in this area is the detection and formation of clusters accurately and correctly.

One of the problems of the normal clustering algorithm is that it gives a hard partitioning of the data, that is to say that each point is attributed to one and only one cluster. But points on the edge of the cluster, or near another cluster, may not be as much in the cluster as points in the center of cluster. Another problem is that the presence of noise may affect cluster quality.

The objective of this project is to present an algorithm for detection of clusters such that each object is assigned a degree of belongingness to a certain cluster, as in fuzzy logic. This algorithm is capable of identifying clusters of some arbitrary shapes that are widely separated as well as multi-density clusters over large multidimensional datasets as well as detecting noises using the density-based approach and fuzzy logic. Experimental results are reported to establish the superiority of the technique.