

# Study on Particle Swarm Optimization based Clustering

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## **Abstract**

*Clustering (or cluster analysis) aims to organize a collection of data items into clusters, such that items within a cluster are more “similar” to each other than they are to items in the other clusters. There are many applications for clustering such as image segmentation, marketing, ecommerce, business, scientific and engineering. Swarm Intelligence that mimics the natural collective intelligence to solve the computational problem has emerged and widely used in data mining. Particle Swarm Optimization (PSO) is a kind of swarm intelligence algorithm that is inspired from the bird flocking behaviour where each particle (bird) is searching (flying) in problem search space to find optimal solution. Clustering can be viewed as searching the appropriate cluster in multidimensional problem space. Unlike traditional algorithm for local search such as K-means, PSO is a global search algorithm that can search for global solution in search space. This paper used the particle swarm optimization algorithm for the clustering task and compared the result with classical K-means algorithm.*