

# **Computational Experience On Four Algorithms For The Hard Clustering Problem**

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## **Summary**

In this paper, we consider the problem of clustering  $m$  objects in  $c$  clusters. The objects are represented by points in  $n$ -dimensional Euclidean space, and the objective is to classify these  $m$  points into  $c$  clusters such that the distance between points within a cluster and its center is minimized. The problem is a difficult optimization problem due to the fact that: it possesses many local minima. Several algorithms have been developed to solve this problem which include the  $k$ -means algorithm, the simulated annealing algorithm, the tabu search algorithm, and the genetic algorithm. In this paper, we study the four algorithms and compare their computational performance for the clustering problem. We test these algorithms on several clustering problems from the literature as well as several random problems and we report on our computational experience.

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