IMPLEMENTATION OF PARTICLE SWARM OPTIMIZATION METHOD IN K-HARMONIC MEANS METHOD FOR DATA CLUSTERING

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Abstract

Clustering is the process of grouping data objects into set of disjoint classes called clusters so that objects within a cluster are similar and dissimilar with the objects in other clusters. K-Harmonic Means (KHM) is a clustering algorithm that can solve problems on the cluster center initialization of K-Means algorithm, but KHM still can not overcome local optima problem. Particle Swarm Optimization (PSO) is a stochastic algorithm that can used to find optimal solution to a numerical problem, but PSO has a problem at the convergence speed.

To overcome these problems, there is Particle Swarm Optimization K-Harmonic Means (PSOKHM) algorithm which is a combination of KHM and PSO algorithm. In this final project, PSOKHM algorithm used to perform data clustering, and KHM and PSO algorithm as a comparison for evaluation of the cluster-based objective function value, F-Measure, and the running time. Trials conducted with 3 scenarios of 5 different data sets. From the result of the test obtained that, when viewed from the objective function and F-Measure value, PSOKHM able to give better. Meanwhile, if viewed from the running time, PSOKHM surpasses PSO but it is not better than KHM.

Key Words : Data Clustering, K-Harmonic Means, Particle Swarm Optimization