A Hybrid Clustering Technique Combining A PSO Algorithm with K-Means

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Abstract

Particle Swarm Optimization (PSO) is an evolutionary computation technique. Separate adjustment to inertia weight and learning factors in PSO undermines the integrity and intelligent characteristic in the evolutionary process of particle swarm to some extent, thus it is not suitable for solving most complicated optimization problems. On the basis of previous researches, the aim of this study was to improve the computational efficiency of PSO and avoid premature convergence for multimodal, higher dimensional complicated optimization problems by considering the mutual influences of inertia weight and learning factors on the updates of particle’s velocities. A typical data analytical scenario is a multidimensional problem and data clustering can lead to multi spatial analysis. Cluster can be a result of various algorithms. In this paper PSO based k-means clustering is applied to generate clusters. And provide multimodal and higher dimensional complicated optimization problems, and can accelerate convergence speed, improve optimization quality effectively in comparison to the algorithms of PSO K-means.
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References


Index Terms

Computer Science  Algorithms

Keywords

Data Mining, Clustering, Evolutionary Algorithm, K-means, PSO