Abstract

Multicriteria optimization applications can be implemented using Pareto optimization techniques including evolutionary Multicriteria optimization algorithms. Many real world applications involve multiple objective functions and the Pareto front may contain a very large number of points. Choosing a solution from such a large set is potentially intractable for a decision maker. Previous approaches to this problem aimed to find a representative subset of the solution set.
Cluster analysis is a technique used to organize and classify the solutions. An Evolutionary algorithm-based k-means clustering technique is proposed in this paper. The searching capability of Evolutionary algorithms is exploited in order to search for appropriate cluster centers in the feature space such that a similarity metric of the resulting clusters is optimized. The chromosomes, which are represented as strings of real numbers, encode the centroids of a fixed number of clusters. Applicability of this methodology for various applications and in a decision support system is also discussed.

References

- Lily Rachmawati, and Dipti Srinivasan, Senior Member, IEEE. Multicriteria Evolutionary Algorithm with Controllable Focus on the Knees of the Pareto Front. IEEE TRANSACTIONS ON EVOLUTIONARY COMPUTATION, VOL. 13, NO. 4, AUGUST 2009
Applying Evolutionary Clustering Technique for finding the most Significant Solution from the Large Result Set obtained in Multi-Objective Evolutionary Algorithms

- Jun Zhang, Member, IEEE, Henry Shu-Hung Chung, Senior Member, IEEE, and Wai-Lun Lo, Member, IEEE. Clustering-Based Adaptive Crossover and Mutation Probabilities for Genetic Algorithms. IEEE TRANSACTIONS ON EVOLUTIONARY COMPUTATION, VOL. 11, NO. 3, JUNE 2007

Index Terms

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Keywords

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