Abstract

The most methods used for solving multi objective optimization problems (MOPs) are based on the Pareto-optimal frontier, but this approach will become questionable when the number of objectives grows. This paper presents an approach for solving MOPs using PROMETHEE method (Preference Ranking Organization methods for Enrichment Evaluation). In this paper the optimal solution of MOPs is built base on minimizing the preference of positive ideal solution and maximizing the preference over negative ideal solution. Thus, a k-dimensional objective space is reduced to a two-dimensional space. The concept of membership function of fuzzy set theory is used to represent the satisfaction level for both criteria and a max-min operator is used for solving the transformed problem. Finally a numerical example is illustrated.
Extension of PROMETHEE Method for Solving Multi-Objective Optimization Problems

Michalewicz (Eds.), Handbook of Evolutionary Computation, IOP Publishing Ltd. And Oxford University Press, New York, USA, pp. F1.9:1-F1.9:15.

Index Terms

Computer Science

Algorithms

Keywords

Multiobjective Optimization Problem (MOP)  PROMETHEE method  Preference function

Fuzzy set theory.