A Modified Hybrid Particle Swarm Optimization Algorithm for Multidimensional Knapsack Problem

Abstract

In this paper, a modified hybrid Particle Swarm Optimization (MHPSO) algorithm that combines some principles of Particle Swarm Optimization (PSO) and Crossover operation of the Genetic Algorithm (GA) is presented. Our contribution has a twofold aim: first, is to propose a new hybrid PSO algorithm. Second is to prove the effectiveness of the proposed algorithm in
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dealing with NP-hard and combinatorial optimization problems. In order to test and validate our algorithm, we have used it for solving the Multidimensional Knapsack Problem (MKP) which is a NP-hard combinatorial optimization problem. The experimental results based on some benchmarks from OR-Library, show a good and promise solution quality obtained by the proposed algorithm.

Reference


Elsevier (2010).

**Index Terms**

Computer Science  
Algorithms

**Key words**

Particle Swarm Optimization  
Crossover Operation  
Continuous/Discrete Optimization Problems  
Multidimensional Knapsack Problem