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
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

A Modified Hybrid Particle Swarm Optimization Algorithm for Multidimensional Knapsack Problem

Elsevier (2010).

Index Terms
Computer Science Algorithms

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