

Hybrid pattern search and simulated annealing for fuzzy production planning problems

Abstract

In this paper, the hybridization of PS (Pattern Search) method and SA (Simulated Annealing) are incorporated in the optimization process. This is in order to look for the global optimal solution for the fitness function and decision variables as well as minimum computational CPU time. The real strength of SA approach has been tested in a case study problem of industrial production planning. This is due to the great advantage of SA for being easily escaping from trapped in local minima by accepting up-hill move through a probabilistic procedure in the final stages of optimization process. In the Ph.D. Thesis by Vasant (2008) [\[4\]](#), 16 different techniques were provided of heuristic and meta-heuristic approaches in solving industrial production problems with nonlinear cubic objective functions, eight decision variables and 29 constraints. In this paper, fuzzy technological problems have been solved using hybrid techniques of pattern search and simulated annealing (HSAPS). The simulated and computational results are compared to other various evolutionary techniques.