

Discrete Swarm with Passive Congregation for Cost Minimization of the Multiple Vehicle Routing Problem

Authors : Tarek Aboueldahab, Hanan Farag

Abstract : Cost minimization of Multiple Vehicle Routing Problem becomes a critical issue in the field of transportation because it is NP-hard optimization problem and the search space is complex. Many researches use the hybridization of artificial intelligence (AI) models to solve this problem; however, it can not guarantee to reach the best solution due to the difficulty of searching the whole search space. To overcome this problem, we introduce the hybrid model of Discrete Particle Swarm Optimization (DPSO) with a passive congregation which enable searching the whole search space to compromise between both local and global search. The practical experiment shows that our model obviously outperforms other hybrid models in cost minimization.

Keywords : cost minimization, multi-vehicle routing problem, passive congregation, discrete swarm, passive congregation

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