Title:

Midrange exploration exploitation searching particle swarm optimization in dynamic environment

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Abstract

Conventional Particle Swarm Optimization was introduced as an optimization technique for real problems such as scheduling, tracking, and traveling salesman. However, conventional Particle Swarm Optimization still has limitations in finding the optimal solution in a dynamic environment. Therefore, we proposed a new enhancement method of conventional Particle Swarm Optimization called Midrange Exploration Exploitation Searching Particle Swarm Optimization (MEESPSO). The main objective of this improvement is to enhance the searching ability of poor particles in finding the best solution in dynamic problems. In MEESPSO, we still applied the basic process in conventional Particle Swarm Optimization such as initialization of particle location, population evolution, and updating particle location. However, we added some enhancement processes in MEESPSO such as updating the location of new poor particles based on the average value of the particle minimum fitness and maximum fitness. To see the performance of the proposed method, we compare the proposed method with three existing methods such as Conventional Particle Swarm Optimization, Differential Evaluation Particle Swarm Optimization, and Global Best Local Neighborhood Particle Swarm Optimization. Based on the experimental result of 50 datasets show that MEESPSO can find the quality solution in term of number of particle and iteration, consistency, convergence, optimum value, and error rate.

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