The study of effects of assigning main parameters of particle swarm intelligence on various applications

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ABSTRACT

Particle Swarm Optimization (PSO), compared to some earlier stage of the optimization algorithm, for example, Genetic Algorithm, Simulated Annealing, it is the newer algorithm in recent years. The nature and application range of the PSO are still worth to discuss and research. Another new algorithm under investigation is Ant Colony Optimization. When the dimension becomes high, the population size, as well as the generation number becomes large. Two more troubles to be forces are the possibility of solutions being trapped in the local optima, and the long computational time required. According to our investigation, besides the usual parameters to be set in PSO algorithms, appending the mutation mechanism provided by Genetic Algorithms, the encountered problems mentioned above can be reduced considerably. In this thesis, further investigations on various improved PSO suggested by researchers and comparisons of those to our proposed improvement. Comparisons by various simulations and compared results are examined to prove the effectiveness of our proposed method. With many comparison tables, it is shown that the proposed method is better than the other suggested improvement in the final results.

Keywords : Particle Swarm Optimization(PSO)、Genetic Algorithm(GA)、Simulated Annealing(SA)、Ant Colony Optimization(ACO)

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