The study of particle swarm optimization theory and algorithm improvement

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ABSTRACT

Developments in the Particle Swarm Optimization(PSO) since 1995 are reviewed. The proposal of Particle Swarm Optimization by professor Kennedy and Eberhart has been succeeded in solving for many optimization problems. Particle Swarm Optimization algorithm is a new soft computation method. which has the features of rapid convergence speed and fewer parameters needed to be adjusted. In this paper, to improve the calculation efficiency, the modified Proposes one kind of improvement pso algorithm is based on basic PSO algorithm ,and the mutation of genetic algorithm is introduced. Due to the undetermined parameters in PSO， and the extensive analysis on the effect of different parameters on the algorithm is given. Classifying optimization problems into three classes (easy,medium,difficult), this paper suggests an improved algorithm of PSO to handle three classes of optimization problems respectively. Then, parameter settings are analyzed systematically according to some existed testing results.

Keywords : Particle Swarm Optimization、mutation

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