A New Distributed Computing Model: Isolated Island

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ABSTRACT

Inspired from the society and civilization optimization algorithm and the distributed genetic algorithm, a new isolated island computing model is proposed. The definition domain of the variables is divided into many adjacent and exclusive sub-domains, and then the optimum is found at every sub-domain respectively. Finally, the best solutions among all the optimal solutions of all the sub-domains are returned. One obvious feature of the isolated island model is that it is possible to find all the optimal solutions of a given multimodal problem at a single run. The isolated island algorithm based on this model and hill-climbing strategy shows the dominance to the local search through the experimental results. What's more, simulated annealing is also incorporated into the proposed I&I model for some benchmarks and even better results are obtained.

Keywords: isolated island model, distributed computation, society and civilization, local search, simulated annealing, genetic algorithm