عنوان مقاله:

Local Promotion by Cellular Automata to Improve Genetic Search Strategy

محل انتشار:

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خلاصه مقاله:

In recent years, optimization problems are considered as complex problems which require accurate and fast search methods. Traditional search methods such as iterative search and evolutionary algorithms are not efficient since they are not complete and their convergence rate is slow. A lot of efforts have been carried out to improve the performance of genetic algorithms as a special class of evolutionary algorithms. The most considerable ones are related to using the idea of cellular automata due to its nature of local operation. However, a genetic cellular automaton considers the relationship between chromosomes, but sometimes is not efficient enough due to the early convergence problem. Also, the tradeoff between fast convergence and optimum exploration is unavoidable. In this paper, we propose a new genetic-based search method using cellular automata. In this method, in contrast to the traditional genetic cellular automata, the transition rule of cellular automata is utilized to promote the individuals before genetic operations have been accomplished globally. The experimental results have shown better convergence rate and also exploration accuracy compared to the traditional search methods.

کلمات کلیدی:

Search Strategies, Genetic Algorithms, Cellular Automata, Convergence Rate, Exploration Accuracy