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Abstract

Genetic algorithms (GAs) are useful for solving multimodal problems. It is quite difficult to search the search space of the multimodal problem with large dimensions. There is a challenge to use all the core of the system. The Dual Population GA (DPGA) attempts to explore and exploit search space on the multimodal problems. Parallel GAs (PGAs) are better option to optimize multimodal problems. OpenMP GA is parallel version of GA. The Dual Population GA (DPGA) uses an extra population called reserve population to provide additional diversity to the main population through crossbreeding. DPGA and PGA, both provide niching technique to find optimal solution. Paper presents the experimentation of DPGA, OpenMP GA and SGA. The experimentation results show that the performance of the OpenMP GA is remarkably superior to that of the SGA in terms of execution time and speed up. OpenMP GA gives optimum solution in comparison with OpenMP GA and SGA for same parameter settings.

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Computer Science

Index Terms

Algorithms

Keywords

Genetic Algorithm (GA) Dual Population GA (DPGA) Serial DPGA Open Multi Processing (OpenMP)

Multimodal Function

Non-linear optimization problems