Abstract

Many optimization problems have complex search space, which either increase the solving problem time or finish searching without obtaining the best solution. Genetic Algorithm (GA) is an optimization technique used in solving many practical problems in science, engineering, and business domains. Parallel Genetic Algorithm (PGA) has been widely used to increase speed of GA, especially after the spread of parallel platforms such as GPUs, FPGA, and Multi-Core Processors. In this paper, we introduce a type of PGA called Fine-grained Parallel Genetic Algorithm, which has the advantages of maintaining better population diversity, and inhibiting premature. Fine-grained PGA is implemented on Field Programmable Gate Array, and the system is used to solve the classical TSP problem. The results show the advantages of the Fine-grained PGA over sequential GA, and the advantages of Field Programmable Gate Array as a parallel platform.

References

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**Index Terms**

Computer Science

**Algorithms**

**Keywords**

Parallel Genetic algorithm, FPGA, TSP, Parallel Processing.