Abstract

In this paper, we have proposed an approach to implement Ant colony optimization algorithm especially Max-Min Ant System for solving Travelling Salesman problem on GPU. GPUs are specially designed microprocessor for graphical operation and can be used for general purpose operations. ACO is a nature based inspired algorithm based on heuristics to find the solution for combinatorial optimization problems such as TSP. In this paper we have discussed many different programming issues of GPUs using OpenCL such synchronized memory access and barriers. We have used a partial solution for the stochastic probability function used in ACO for the tour construction to increase the speed-up. Thus with this implementation we are able to gain a speedup of 4.01x in CPU parallel and up to 11.29x speedup in GPU parallel.

References

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Index Terms

Computer Science

Algorithms

Keywords