Abstract

Although Ant Colony Systems (ACS) have gained much attention in last two decades but slow execution and convergence speed are still two challenges for these meta-heuristic algorithms. Many parallel implementations have been proposed for faster execution. However, most of available implementations use coarse-grained synchronization mechanisms that are not efficient and scalable. In this work, we have taken a fine-grained (ant-level) approach that is more efficient and scalable. We have used traveling salesman problem as a test case and have presented a parallel fine-grained implementation for shared-memory multi-core systems. Our experimental results show that our proposed parallel implementation can achieve considerably higher speedup values on modern multicore processors.

References

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**Index Terms**

Computer Science  
Algorithms

**Keywords**

Ant Colony System  Parallel Computing  Traveling Salesman Problem  Shared Memory System