# ABSTRACT

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## Parallel Distribution with Queen Ant Strategy in Ant Colony Optimization

(xi + 41 pages: 9 figures)

Nowadays, there are a lot of optimization problems in our life. One of methods to solve the optimization problems is called Ant Colony Optimization (ACO). The concept of ACO is based on the ability of ants to find the shortest path between their nest and the food source. This paper discussed about a distributed parallel processing of Queen Ant Strategy named "$AS_{queen}$" which imitated an ant society where a queen ant governs.

Ants of the artificial colony are capable of solving the Traveling Salesman Problem (TSP). They are able to generate successively shorter feasible tours by using information accumulated in the form of a pheromone trail. Analysis about searching the shortest path with ant algorithm and pheromone approach give the same comparison result as 2:1 that had been approved. All parameters in ant algorithm are dependent between one and another. Therefore a good balance among the parameters should be achieved.

It can be concluded that the distributed parallel of $AS_{queen}$ based on the replicated-worker pattern in the object-shared space is confirmed to be effective. The access load to the object-shared space can provide high data rate more faster than concurrent process by increasing the number of computers for the worker agent groups. In the future plan, a more detailed analysis by applying the other various TSPs will be needed to clarify the feature of the distributed parallel in $AS_{queen}$.

Referensi : 9 (1997 - 2006)