

## Combining heuristics and modifying local information to guide ant-based search

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**ABSTRACT.** The aim of this paper is to introduce a new ant system algorithm with a new local updating pheromone rule for the *Traveling Salesman Problem*. In the model proposed, the ants are endowed with a memory of their best tour in the local pheromone trail. The ants reinforce this 'local best tour' with pheromone during an iteration to mimic the search focusing of the elitist ants. It is a modified *Ant Colony System* global rule used in the local search of an ant. The new algorithm is called *Inner Ant System (IAS)*. The new local correction rule is called *inner* rule. The experimental results of *IAS* are compared with *Ant Colony System* and *MAX - MLN Ant System* on different sets of parameters. The comparative tables and graphical representations are showing promising results for *IAS*.

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