An Ant Colony Simulator

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Delan Ren

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Abstract

In recent years, ant colony algorithms have become more popular research topics in the artificial intelligence area of computer science. This biological modeling algorithm simulates the natural behavior of an ant colony looking for food among the insect kingdom. This algorithm was initially proposed by Marco Dorigo in 1992 in his PhD thesis – the first algorithm was aiming to search for an optimal path in a graph based on the behavior of ants seeking a path between their colony and a source of food. The original idea has since been diversified to solve a wider class of numerical problems, and as a result, several problems have emerged, drawing on various aspects of the behavior of ants (Ant colony optimization, 2010).

The famous science journal “Nature” has published articles relating to ant colony algorithms several times, and lots of other publishers around the world have produced quite a few books for ant colony optimization. These days, ant colony algorithms have become a hot topic for the international artificial intelligence computing.

The biological modeling optimization algorithm is an important branch in the artificial intelligence research area, which includes simulation biosphere natural selection and heredity mechanism genetic algorithm (Duan, 2005). This thesis continues research on the original ant colony algorithm, and creates a simulator to handle the ant colony’s natural behavior to find food.

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