《智能优化方法》课程论文

题　　目： 蚁群算法求解 TSP 问题

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摘要： 蚁群算法是受自然界中真实蚁群算法的集体觅食行为的启发而发展起来的一种基于群体的模拟进化算法，属于随机搜索算法。该算法自出现以来引起了学者们的巨大关注，在过去的短短十余年时间内，蚁群算法已经在组合优化、函数优化、系统辨识、网络路由、机器人路径规划、数据挖掘以及大规模集成电路的综合布线设计等领域获得了广泛的应用，并取得了较好的效果。本文以 TSPLIB 中的 ch130 为测试数据，通过数据测试分析蚁群算法中各参数对算法性能的影响，并使用遗传算法在此数据上实验来与之对比，以更加深入了解蚁群算法。

关键词： 蚁群算法；模拟进化；TSP

Ant Colony Algorithm for Solving TSP Problem

Abstract: Ant colony algorithm is inspired by the collective foraging behavior of the real ant colony algorithm in nature. It is a kind of colony based simulated evolutionary algorithm, which belongs to the random search algorithm. The algorithm has aroused great attention of scholars since, in the past ten years, the ant colony algorithm has been widely used in the field of combinatorial optimization, function optimization, system identification, network routing, robot path planning, data mining and integrated wiring design of large scale integration circuit, and has achieved good effect. In this paper, TSPLIB ch130 as test data, test data through the analysis of influence of various parameters on the performance of the algorithm in the ant colony algorithm, and use genetic algorithm based on the contrast experiment, with a more in-depth understanding of the ant colony algorithm.

Keywords: Ant colony algorithm; Simulated evolution; TSP

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