计算机工程与应用 2010 46 (1): 42-44 ISSN: 1002-8331 CN: 11-2127/TP

研究、探讨

基于复杂网络理论及蚁群算法的MA迁移策略

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收稿日期 2008-7-21 修回日期 2008-10-20 网络版发布日期 2010-1-7 接受日期

摘要 移动Agent问题主要是解决移动Agent在不同主机间移动时如何根据移动Agent的任务和其他约束条件来规划最优的迁移路线。蚁群算法是一种新的生物进化算法，具有并行、正反馈和启发式搜索等特点，是一种解决旅行Agent问题的有效手段，但同时也存在一些缺点，如运算过程中收敛速度慢，易出现停滞现象等。复杂网络理论是一个新兴的理论，它发现现实的网络具有新的特性，为了刻画这一新的网络结构，引入了新的特征度量，节点的“度”就是其中一个。在蚁群算法的基础上，在状态转移规则等中加入度这一系数，同时自适应调整挥发系数ρ来提高算法的性能。将该算法用于移动Agent问题，模拟计算结果显示移动Agent在移动时能以最优的效率和最短的时间来完成迁移。

关键词 移动Agent 蚁群算法 复杂网络

分类号 TP301 N94

Migration strategy for mobile agent based on complex networks theory and genetic algorithm

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Abstract

The problem of mobile Agent is mainly to solve the problem of planning out an optimal migration path according to the tasks and other restrictions when agents migrate to several hosts.Ant colony algorithm is a new evolutionary algorithm and extremely suitable to solve the mobile agent problem，which has the characteristic of parallelism，positive feedback and heuristic search，but it has shortcomings such as needing much time and easier occurring of stagnation behavior.Complex networks theory is a new kind of theory.It finds that some reality network has new character.In order to describe this new network architecture，it introduces some new characteristics measures，and the “degree” of the node is one of the characteristics measures.On the basis of ant algorithm，this paper adds the parameter of degree into state transfer rules，meanwhile，uses adapt adjust information element hangover coefficient to improve the capability of the arithmetic.The algorithm can solve the mobile agent problem.The results show that mobile agent is able to choose optimal efficiency and the shortest possible time to complete the migration.

Key words mobile agent ant colony algorithm complex networks

DOI: 10.3778/j.issn.1002-8331.2010.01.014

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