电子与信息学报 2007 29 (9): 2230-2234 ISSN: 1009-5896 CN: 11-4494/TN

论文

# 一种基于改进暂态混沌神经网络的信道分配算法

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收稿日期 2006-8-7 修回日期 2007-5-15 网络版发布日期 2008-1-25 接受日期

摘要
该文针对暂态混沌神经网络(TCNN)求解信道分配问题(CAP)，分析混沌神经网络模型及其混沌性态，依据其按自反馈连接权值的减小，由混沌态通过逆分岔而收敛到稳定状态的特性，提出了一种对暂态混沌神经网络进行分段退火的策略，即依据混沌神经网络运行过程中，对应Lyaponov指数的变化特性而确定分段点，使网络能有效地利用混沌态进行全局搜索和加快收敛；在7小区的信道分配中，网络收敛速度提升了30%左右，在25小区的Kunz基准测试程序的仿真中，收敛速度也提升了近15%；仿真结果表明其有效减少了网络运算的迭代步数，提高了网络的搜索效率；通过相应理论和仿真结果的分析，对网络的搜索性能、参数的选择与设置进行了进一步的讨论。

关键词 混沌神经网络 Hopfield神经网络 模拟退火 混沌噪声 信道分配问题

分类号 TN916.9



# A New Algorithm Based on the Improved Transient Chaotic Neural Network for Cellular Channel Assignment

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Abstract
In this paper, the Transient Chaotic Neural Network(TCNN) is used to solve the Channel Assignment Problem(CAP), and a new method named two-stage annealing method in TCNN is proposed. The neural network gradually convergences, through the transient chaos, to a stable equilibrium point according to the damping of the self-feedback connection weight, and the dividing point in the new model is chosen according to the change of the corresponding Lyapunov exponent. The two- stage annealing method can make sure the network take good advantage of the chaos to search the global minimum and enhance the convergence rate. In the 7-cell cellular network, the convergence rate is 30% higher than the TCNN model, and is also upgraded 15% in the Kunz's benchmark test. Simulated results show that the new model has a higher searching ability and lower computing time in searching the global minimum. The searching ability and the choosing of the parameters are also discussed based on the simulated results.

Key words Chaotic neural network Hopfield neural network Simulated annealing Chaotic noise Channel assignment problem (CAP)

DOI:

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