



## 论文摘要

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### 前馈网络的混沌梯度搜索耦合学习算法及应用

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**摘要:** 针对BP神经网络易陷入局部极小的问题, 提出了混沌梯度优化的神经网络的学习算法, 其原理是: 采用梯度下降进行“粗搜索”, 混沌搜索进行“细搜索”, 并建立规则将两者结合起来, 以构成BP神经网络的基于规则的混沌梯度耦合学习算法. 它有效地利用了梯度下降算法的快速性和混沌寻优的全局性, 将该算法应用于某智能决策支持系统模型库中的模型学习, 有效地提高了前馈神经网络的学习效率.

**关键字:** 混沌优化; 神经网络; 梯度搜索; PS转炉

### A coupled exercise algorithm of forward neural network combined with gradient search and chaotic optimization search

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**Abstract:** Aimed at the fact that BP algorithm is likely to produce local minimum, this paper proposes some rules to judge local minimum in BP algorithm and also an improved chaotic optimization algorithm to jump local minimum effectively. This coupled algorithm is made up of rawsearching by gradient, elaborate searching by chaotic searching and some rules to judge local minimum. It makes full use of quickness of gradient search and full scope search of chaotic optimization. Its practical application to an intelligent decision and support system shows that the algorithm can improve the exercise efficiency of BP algorithm.

**Key words:** chaotic optimization; neural network; gradient search; PS convert furnace

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