

论文与报告

一种多层前馈网参数可分离学习算法

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摘要

目前大部分神经网络学习算法都是对网络所有的参数同时进行学习. 当网络规模较大时,这种做法常常很耗时. 由于许多网络,例如感知器、径向基函数网络、概率广义回归网络以及模糊神经网络,都是一种多层前馈型网络,它们的输入输出映射都可以表示为一组可变基的线性组合. 网络的参数也表现为二类:可变基中的参数是非线性的,组合系数是线性的. 为此,提出了一个将这两类参数进行分离学习的算法. 仿真结果表明,这个学习算法加快了学习过程,提高了网络的逼近性能.

关键词 [神经网络](#) [学习算法](#) [系统辨识](#) [参数解耦](#)

分类号

A Parameter-Separable Learning Algorithm for Multilayer Feedforward Neural Networks

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Abstract

Most learning algorithms simultaneously process all the parameters of the neural network. This often needs a large amount of time if the neural network is large. Many neural networks, such as perceptrons, radial basis function networks, general regression neural networks and fuzzy neural networks, may be regarded as a kind of multilayer feedforward neural networks. Their input-output mapping can be expressed as a linear combination of variable basis functions. Parameters of these neural networks can also be divided into two kinds. nonlinear arameters of the variable basis function and the coefficients of the linear combination. Based on this a parameter-separable learning algorithm is proposed. Simulation results show that the algorithm can accelerate the learning process and improve the approximating quality of the neural network.

Key words [Neural network](#) [learning algorithm](#) [identification](#) [parameter-separable](#)

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