

论文

单变量Sigmoidal型神经网络的逼近

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摘要: 引入了一种新的sigmoidal型神经网络,给出了其对连续函数逼近的点态和整体估计. 结果表明这种新的神经网络算子具有多项式逼近所不能达到的很好的逼近速度. 为了改进对光滑函数的逼近速度,我们进一步引入了一种新的神经网络的线性组合,并给出了这种组合逼近的点态估计和整体估计. 最后给出了一个数值例子.

关键词: 前向神经网络 sigmoidal函数 逼近速度

MSC2000

41A20; 41A25

On Approximation by Univariate Sigmoidal Neural Networks

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Abstract: We first introduce a new type of neural network operators with sigmoidal functions, and give the pointwise and global estimates of the approximation by the networks. The new neural network operators can approximate the functions with a very good rate which can not be obtained by polynomial approximation. To further improve the approximation rate for functions of smoothness, we also introduce a new type of combinations of neural network operators, and give pointwise and global estimates of the approximation by the combinations. A numerical example is given to demonstrate our new method.

Keywords: feedforward neural networks sigmoidal functions approximation rate

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