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A self-organizing neural network using fast training and pruning



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ABSTRACT

A fast training and pruning algorithm is proposed for the feed-forward neural network (FNN) which consists of a fixed value subset-based training algorithm (FSBT) as well as a fast pruning algorithm (extended Fourier amplitude sensitivity test, EFAST) in this paper. The FNN is trained using FSBT, at each training iteration, only the weights of the independent nodes will be trained using the Levenberg-Marquardt (LM) algorithm, while keeping the weights of the dependent nodes unchanged. Meanwhile, the FNN is pruned using fast EFAST during training to remove redundant neurons in the hidden layer. In this way, the computational cost of the proposed EF-FNN will be reduced significantly. Experimental results suggest that the abilities of the final FNN are greatly improved. In the end, the

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