

Signal Restoration Using Neural Network Based Equalizer for Nonlinear channels

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Abstract : This paper investigates the application of artificial neural network to the problem of nonlinear channel equalization. The difficulties caused by channel distortions such as inter symbol interference (ISI) and nonlinearity can overcome by nonlinear equalizers employing neural networks. It has been shown that multilayer perceptron based equalizer outperform significantly linear equalizers. We present a multilayer perceptron based equalizer with decision feedback (MLP-DFE) trained with the back propagation algorithm. The capacity of the MLP-DFE to deal with nonlinear channels is evaluated. From simulation results it can be noted that the MLP based DFE improves significantly the restored signal quality, the steady state mean square error (MSE), and minimum Bit Error Rate (BER), when comparing with its conventional counterpart.

Keywords : Artificial Neural Network, signal restoration, Nonlinear Channel equalization, equalization

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