Pilot based Channel Estimation and SCGNN based Equalization for MIMO-OFDM System

International Journal of Computer Applications
Foundation of Computer Science (FCS), NY, USA

Volume 131
Number 3

Year of Publication: 2015

Authors:
Zeeshan A. Abbasi, Zainul Abdin Jaffery

10.5120/ijca2015907205

Abstract

In this paper a new channel equalization technique is described based on Scaled Conjugate Gradient Neural Network (SCGNN) for Multiple Input Multiple Output (MIMO) Orthogonal Frequency Division Multiplexing (OFDM). To estimate the channel in frequency domain, Space Time Block Code (STBC) is used. At the beginning of each transmitted OFDM block the pilot sequence is inserted to estimate the channel. In the transmitter the 16-QAM modulation is used as it is efficient in conserving bandwidth. The performance is evaluated using MATLAB and various results are plotted at different values of SNR. It is observed from the simulation that the proposed channel estimation and equalization method greatly reduced the Symbol Error Rate. We are able to achieve the SER as low as 0.01 at a very low value of SNR. The MMSE is also greatly reduced and the system converges very fast.

References

1. Sanjana T and Suma M N, “Comparison of Channel


7. Xiang Li, Wen-De Zhong, Arokiaswami Alphones and Changyuan Yu, “Channel Equalization Using Independent


Index Terms

Computer Science

Signal Processing
Keywords

Scaled Conjugate Gradient Network, MIMO, OFDM, Equalization