Array processing involves manipulation of signals induced on various antenna elements. Its capabilities of steering nulls to reduce co-channel interferences and pointing independent beams towards various users, as well as its ability to provide estimate of directions of radiating sources, make it attractive to the mobile communications system designer.

In this paper existing Least Mean Square (LMS) algorithm is modified to obtain lesser Mean Square Error (MSE) by using leaky factor in the weight updation. A novel approach named as TURBO LMS is proposed which reduces the Mean Square Error and increases the convergence speed by a large amount as compared to existing beamforming algorithms.
Simulation of Beamforming algorithms namely Least Mean Square (LMS), Leaky Least Mean Square (LLMS) and novel TURBO LMS algorithm are done for various look directions and jammer configurations and their MSE characteristics are compared. MATLAB simulation shows that the proposed TURBO LMS algorithm has improved convergence as compared to existing beamforming algorithms. Performance of TURBO LMS algorithm is measured by varying number of array elements.

Reference


Index Terms

Computer Science                      Signal Processing

Key words

Adaptive array beamforming             LMS algorithm
TURBO LMS

Mean Square Error