Abstract

Adaptive filters are used in the situation where the filter coefficients have to be changed simultaneously according to the requirement. Adaptive filters are needed for fast convergence rate and low mean square error. Many algorithms have been proposed and proved that they have better convergence speed and tracking abilities. This paper shows the ability of adaptive filter for noise cancellation i.e., estimating the desired speech corrupted by unwanted signal i.e., noise. This paper is going to compare the performance of adaptive algorithms for noise cancellation in real time signals like recorded speech with different background noise. In the existing papers the authors have taken the input signal as sinusoidal signal etc. In order to measure the performance step size is the main factor for the convergence speed and mean square error. Many analyses proved that RLS algorithm had faster convergence speed and smaller steady state error compared with basic LMS algorithm and normalized LMS algorithm (NLMS). The existing simulation results enable to measure the performance of filter and show the convergence speed improvement when using RLS algorithm, NLMS algorithm and LMS algorithm.

References

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Study of Different Adaptive Filter Algorithms for Noise Cancellation in Real-Time Environment

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Index Terms

Computer Science

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Keywords

Adaptive filters; Wiener filters; Performance comparison; Convergence speed; Mean square error; Least mean square; Normalized least mean square; Recursive least square;
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