

ABSTRACT

A subband echo cancellation algorithm based on the combination of frequency and time domain adaptive filter architecture is proposed for Asymmetric Digital Subscriber Line (ADSL) system. It computes the adaptive weights of each frequency subband in frequency domain and modulates these sets of subband into filter coefficients in the time domain by Inverse Fast Fourier Transform (IFFT). This filter becomes the estimation of the real echo.

The proposed method, Time and Frequency Domain Echo Cancellation (TFDEC), achieved the better performance in the noise toleration and convergence rate. Comparing to the existing echo cancellations, TFDEC is faster in convergence time than Time Domain Echo cancellation (TDEC), and more accurate in echo identification than Frequency Domain Echo Cancellation (FDEC) even under the situation of noise interruption. The increasing in the computational complexity can be accommodated by the advanced technology in digital signal processing.

The echo paths are adequately modeled by either time invariant Finite Impulse Response (FIR) or Infinite Impulse Response (IIR) filters.