

ABSTRACT

Adaptive filters are extensively used in various digital signal processing applications, such as channel equalization, system identification, noise and echo cancellation, and beam forming. Recursive combination of an algorithm based on Karatsuba multiplication is exploited to design a generalized Least-Mean-Square (LMS) algorithm based Adaptive Filters (ADFs) Filter. A delayed error normalized LMS (DENLMS) adaptive filter is studied with pipelined architecture to remove the white Gaussian noise. An efficient implementation of a Least Mean Square (LMS) filter based on the use of the Modified Karatsuba Multiplication Algorithm (KMA) is presented. The MKMA is a fast divide and conquer algorithm for the multiplication of large numbers. As a result, the proposed circuit is highly efficient in terms of speed, area and power in comparison with the Conventional FIR filter architecture. Our proposed architecture has been coded HDL and simulated using Xilinx 12.1