

Design of Reconfigurable Fixed-Point LMS Adaptive FIR Filter

Authors : S. Padmapriya, V. Lakshmi Prabha

Abstract : In this paper, an efficient reconfigurable fixed-point Least Mean Square Adaptive FIR filter is proposed. The proposed architecture has two methods of operation: one is area efficient design and the other is optimized power. Pipelining of the adder blocks and partial product generator are used to achieve low area and reversible logic is used to obtain low power design. Depending upon the input samples and filter coefficients, one of the techniques is chosen. Least-Mean-Square adaptation is performed to update the weights. The architecture is coded using Verilog and synthesized in cadence encounter 0.18 μ m technology. The synthesized results show that the area reduction ratio of the proposed when compared with conventional technique is about 1.2%.

Keywords : adaptive filter, carry select adder, least mean square algorithm, reversible logic

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