FPGA Implementation of 4-Point and 8-Point Fast Hadamard Transform

Volume 124
Number 3
Year of Publication: 2015

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Abstract

Transformation is one of the fundamental blocks of many signal processing applications. The Hadamard transform is useful in variety of application including data encryption methods and latest data compression algorithms such as JPEG extended range (JPEG XR), High Efficiency Video Coding (HEVC) etc. Hadamard transform is multiplier less technique and requires additions and subtractions only. In this paper, we have proposed an efficient method of 4 and 8 points Hadamard transformation using a parallel processing to achieve higher speed. The 8-point DHT has been realized with 4 points DHT implementation. The modules are synthesized using Xilinx ISE 14.2 software with the usage of inbuilt memory core generator for storing co-efficient values. The performance has been verified with area and timing analysis. The proposed implementation shows excellent results and also compared to previous works.

References

1. Fan, Chih-Peng, Chia-Wei Chang, and Shun-Ji Hsu. "Cost-Effective Hardware-Sharing


Index Terms

Computer Science         Signal Processing
Keywords

Distributed memory, Frequency domain, Real time implementation, Reconfigurable, Synthesize.