Title: A Flexible Architecture for the Computation of Direct and Inverse Transforms in H.264/AVC Video Codecs

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Source: IEEE Transactions on Consumer Electronics

Volume: 57 **Issue:** 2 **Pages:** 936-944 **Published:** May 2011

Document Type: Article

Language: English

Abstract: A new high throughput and scalable architecture for unified transform coding in H.264/AVC is proposed in this paper. Such flexible structure is capable of computing all the 4x4 and 2x2 transforms for Ultra High Definition Video (UHDV) applications (4320x7680@ 30fps) in real-time and with low hardware cost. These significantly high performance levels were proven with the implementation of several different configurations of the proposed structure using both FPGA and ASIC 90 nm technologies. In addition, such experimental evaluation also demonstrated the high area efficiency of theproposed architecture, which in terms of Data Throughput per Unit of Area (DTUA) is at least 1.5 times more efficient than its more prominent related designs(1).

Author Keywords: Video Coding; H.264/AVC; Unified Transform Kernel; Scalable Architecture

KeyWords Plus: Standard

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Publisher: IEEE-INST Electrical Electronics Engineers Inc
Publisher Address: 445 Hoes Lane, Piscataway, NJ 08855-4141 USA

ISSN: 0960-1481

Citation: DIAS, T.; LOPEZ, S.; ROMA, N.; SOUSA, L. - A Flexible Architecture for the Computation of Direct and Inverse Transforms in H.264/AVC Video Codecs. IEEE Transactions on Consumer Electronics. ISSN 0960-1481. Vol. 57, n.º 2 (2011) p. 936-944.