Abstract

This paper provides an overview of the transform and quantization operations in H.264 lossy coding techniques. It declares the detailed simplification process for arithmetic operations included in the implementation for the 4x4 AC and the 2x2 & 4x4 DC luma and chroma blocks applying fast DCT Butterfly implementation method for the AC component and the effective Hadamard Transform implementation for the DC components, in addition to the quantization process procedure. However, this paper main aim is to provide a complete software design and implementation for the decoder process as defined in the ITU-T standard release 2011, besides, it defines a proper way for implementing the encoder process according to the defined decoder procedure defined in the ITU-T Standard.

References

2. “H.264 and MPEG-4 Video Compression”, by Ian E. G. Richardson
8. “Source Coding and Compression Transform Coding”, by Dr. Eng. Khaled Shawky
9. “Low Complexity Transform and Quantization in H.264/AVC”, by Henrique S. Malvar, Fellow IEEE, Antti Hallapuro, Marta Karcz Ewicz and Louis Kerofsky, Member IEEE
11. “Low complexity DCT engine for image and video compression”, by Maher Jridi, Yousri Ouerhani, Ayman Alfalou
12. “Reference Design Software”.

**Index Terms**

Computer Science  
Signal Processing

**Keywords**

H.264, AVC, DCT, Hadamard, Butterfly, Quantization, AC, DC