Abstract

Listless Block Tree Coding (LBTC) is Wavelet Block Truncation Coding (WBTC) algorithm without using lists. LBTC is evolved from two variants of Set Partitioning In Hierarchal Trees (SPIHT) which are Wavelet based Block Tree Coding (WBTC) and No list SPIHT (NLS). WBTC works on blocks with varying root sizes instead of pixels so it lowers the memory requirement as compared to SPIHT and uses three ordered auxiliary lists to keep track of the significant coefficients similar to SPIHT. SPIHT uses lists which keep on increasing at each pass and require a lot of memory, so another variant of SPIHT is NLS which uses a state table to store the significant coefficients. This state table uses four bits for each coefficient. In LBTC, listless variant of WBTC is implemented using the concept of NLS in which instead of lists, markers are used. This paper presents the proposed algorithm in which LBTC is combined with DWT and the quality of compressed image is improved significantly by optimizing the Peak Signal to Noise Ratio (PSNR) and Mean Square Error (MSE). It outperforms other compression methods by a wide margin in terms of PSNR and MSE though the time taken by the algorithm is more than LBTC.
Listless Block Tree Coding with Discrete Wavelet Transform for Embedded Image Compression at Low Bit Rate

- J. Zhu, S. Lawson, "Improvements to Spiht for Lossy Image Coding", IEEE, Jan. 2001
- P. Singh, M. N. S. Swamy, "Block Tree Partitioning for Wavelet Based Color Image Compression", IEEE, ICASSP, Jun. 2006
- R. Praba1, C. Vasanthanayaki, "Enhanced Wavelet Block Tree Based Image Coding Algorithm", Int. Conf. on Control, Automation,Communication And Energy Conservation, Jun. 2009

**Index Terms**

Computer Science

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**Keywords**

SPIHT  NLS  Block Tree  DWT  PSNR  MSE  EZW