Abstract:

This paper describes an efficient object-based hybrid image coding (OB-HIC) scheme. The proposed scheme is based on using the discrete wavelet transform (DWT) in conjunction with the discrete cosine transform (DCT) to provide coding performance superior to the popular image coders. The proposed method uses combination of the object-based DCT coding and the high performance of the set partitioning in hierarchical tree (SPIHT) coding. The subband image data in the wavelet domain is modified based on the DCT and the object classification of the coefficient in the low-frequency image subband (LL). The modification process provides a new subband image data containing almost the same information of the original one but having smaller values of the wavelet coefficients. Simulation results of the proposed method demonstrate that, with small addition in the computational complexity of the coding process, the peak signal-to-noise ratio (PSNR) performance of the proposed algorithm is much higher than that of the SPIHT test coder and some of famous image coding techniques.

Keywords:

Image compression; Region of interest (ROI); Image coding; Wavelet transform; Embedded coding; JPEG 2000; DCT; SPIHT; EZW.

Published In: