

A Hybrid Watermarking Scheme Using Discrete and Discrete Stationary Wavelet Transformation For Color Images

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Abstract : This paper presents a new method which includes robust and invisible digital watermarking on images that is colored. Colored images are used as watermark. Frequency region is used for digital watermarking. Discrete wavelet transform and discrete stationary wavelet transform are used for frequency region transformation. Low, medium and high frequency coefficients are obtained by applying the two-level discrete wavelet transform to the original image. Low frequency coefficients are obtained by applying one level discrete stationary wavelet transform separately to all frequency coefficient of the two-level discrete wavelet transformation of the original image. For every low frequency coefficient obtained from one level discrete stationary wavelet transformation, watermarks are added. Watermarks are added to all frequency coefficients of two-level discrete wavelet transform. Totally, four watermarks are added to original image. In order to get back the watermark, the original and watermarked images are applied with two-level discrete wavelet transform and one level discrete stationary wavelet transform. The watermark is obtained from difference of the discrete stationary wavelet transform of the low frequency coefficients. A total of four watermarks are obtained from all frequency of two-level discrete wavelet transform. Obtained watermark results are compared with real watermark results, and a similarity result is obtained. A watermark is obtained from the highest similarity values. Proposed methods of watermarking are tested against attacks of the geometric and image processing. The results show that proposed watermarking method is robust and invisible. All features of frequencies of two level discrete wavelet transform watermarking are combined to get back the watermark from the watermarked image. Watermarks have been added to the image by converting the binary image. These operations provide us with better results in getting back the watermark from watermarked image by attacking of the geometric and image processing.

Keywords : watermarking, DWT, DSWT, copy right protection, RGB

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