Discrete Wavelet Transform Method, a New Optimized Robust Digital Image Watermarking Scheme

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Abstract:

In this paper a wavelet-based logo water marking scheme is presented. The logo water mark is embedded in to all sub-blocks of the LLn sub-band of the transformed host image, using quantization technique. Extracted logos from all sub-blocks are mixed to make the extracted water mark from distorted water marked image. Knowing the quantization step-size, dimensions of logo and the level of wavelet transform, thewater mark is extracted, without any need to have access to the original image. Robustness of the proposed algorithm was tested against the following attacks: JPEG2000 and old JPEG compression, addingsalt and peppernoise, median filtering, rotating, cropping and scaling. Thepromising experimental results are reported and discussed.

Keywords: Wavelet transform, watermarking, quantizationtechnique,

1. Introduction

Nowadays protecting the copyright of the digital media has become an important topic due to digital media can be copied and modified easily. Many watermarking techniques have been proposed to solve the copyright protection problem for multimedia images.

The spatial and transform domains are two common methods for image watermarking. Embedding the watermark into the transform-domain generally helps to increase the imperceptibility, security, and robustness. Therefore, at present, most of image watermarking methods are in the transform domain, where DFT [1], DCT [2], DWT [3] are three main transform methods used. In terms of the extracting scheme, watermarking algorithms are also divided into two groups: blind and non-blind watermarking. In a non-blind watermarking the original image is necessary for the watermark extraction whereas in a blind watermarking the original image is not needed for watermark extraction.

The paper is organized as follows: section 2 explains the proposed algorithms for watermark embedding and extraction. Experimental results are presented in section 3.

2. ProposedWatermarkingScheme