

## A NOVEL MULTIPURPOSE IMAGE WATERMARKING SCHEME BASED ON BLOCK-RELATION

DA-JINN WANG

Department of Information Management  
National Kaohsiung Marine University  
142, Hai-Chuan Rd. Nan-Tzu, Kaohsiung 811, Taiwan  
wangdaj@mail.nkmu.edu.tw

TSONG-YI CHEN, THOU-HO (CHAO-HO) CHEN AND SHANG-WEI LIN

Department of Electronic Engineering  
National Kaohsiung University of Applied Sciences  
415, Cheng-Kung Road, Kaohsiung 807, Taiwan  
{ chentso; thouho; 1094320140 }@cc.kuas.edu.tw

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**ABSTRACT.** *In this paper, we propose a new scheme that uses block-related index and three types of coefficient-scan strategy in image authenticating and recovering. Block-related authenticating information makes the feature codes tolerant in compression processes. Besides, a block-classification method is used for classifying blocks into flat, vertical-detailed or horizontal-detailed types. With that, a useful coefficient-scan strategy is chosen for preserving and recovering block information. As the experimental results, the watermarked image can provide a PSNR higher than 40.00dB and can mark and recover the blocks which could be maliciously tampered with.*

**Keywords:** Watermarking, Image authentication, Image restoration, Image compression

1. **Introduction.** More and more watermarking approaches have been proposed for tamper detection and copyright protection. The reproduction of a digital media element is simple and robust. How to protect and prove the original copies or tampered is an important issue. In the past, several techniques and concepts, such as fragile watermarks, semi-fragile watermarks, and robust watermarks, based on data hiding or steganography have been introduced for tamper detection in digital images and for image authentication.

The fragile watermark is embedded with very low robustness. Therefore, this type of watermark can be destroyed even by the slightest manipulations and thus it is comparable to the hidden message in steganography methods. It can be used to check the situation of the integrity of objects. Neither the fragile nor robust watermarks deal with the information preserving very well. Semi-fragile watermarks are marginally robust and are less sensitive to pixel modifications. So, it is possible to use them for quantifying shuffling from malicious changes, such as feature adding and removal. The primary applications of a semi-fragile watermarking system resemble those of fragile watermarking systems.