Watermarking Technique using Block Permutation

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Abstract

A watermarking technique using block permutation is developed in this paper. The JPEG is a popular file format to transmit the digital content on the network. Nevertheless, there is a question which the two similar DCT coefficients will be quantified to the same rank in JPEG quantification process. This question more or less will cause the error of the extracting watermark from the watermarked image with lossy compression. In this paper, we introduce the watermarking technique using block permutation to improve the mistake as discuss above in order to decrease the bit error rate (BER) of the retrieve watermark. With this technique, the watermark can survive when the watermarked image is compressed using JPEG. Moreover, the proposed scheme doesn’t need the information of the watermark and the original host image in the extracting process.

Keywords- watermark; JPEG; permutation;

1. INTRODUCTION

Digital watermarking is an effective and common technique to resist unauthorized copying (Macq, 1995; Swanson, 1998; Sinha, 2002; Hsu, 1999; Cox, 1997). Hiding the watermark into the spatial domain is the simple (Wang, 2005). However, the hidden information will be erased easily by signal processing, such as the JPEG attack. Most of watermarking techniques, the watermark is embedded in the middle frequency portion of the host image in order to provide the robustness (Kung, 2002; Kung, 2003; Kung, 2008).

The DCT coefficients of the host image will be modify using the polarity information to achieve the robust. However, the original host image and watermark are needed in the extracting process (Hsu, 1999).

A hybrid watermarking technique based on Genetic Algorithm (GA) and Particle Swarm Optimization (PSO) in Discrete Wavelet transform (DWT) is proposed in (Lee, 2008). There are two complementary watermarks are hided simultaneously for higher detection response. But, each watermark could against a specific class of attacks. Recently, the idea of optimum scaling factors is selected intelligently is developed in (Harrak, 2006; Khan, 2008). However, those scheme are not designed as blind.

The correspondence between the communication and the data hiding is proposed. In the past