

Self-Recovery in Fragile Image Watermarking Using Integer Wavelet Transform

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ABSTRACT

The growth of internet technology makes digital images can be easily distributed and modified to change image information. This research proposes fragile image watermarking based on LSB Adjustment on integer wavelet transform. This study focuses on self-recovery and authenticating the integrity of image contents. The proposed scheme embeds a watermark into the two-LSB by using LSB adjustment. The authentication bits are randomly located in the two-LSB with a secret key. The recovery data is generated based on IWT for the recovery process. The proposed watermarking method uses multi-layer authentication to achieve high precision and accuracy. This research also uses image inpainting techniques to improve the recovery under tamper attacks. The experimental results produce high imperceptibility with PSNR of 45.5 dB and SSIM of 0.997. The proposed scheme produces better self-recovered image quality than the existing scheme with PSNR of 37.98 dB and SSIM of 0.9928 against a tampering rate of 10%

KEYWORDS

self-recovered image, integer wavelet transform, authentication, tamper detection, Least Significant Bit.

ACKNOWLEDGEMENTS

This research was supported by Universiti Malaysia Pahang through the Research Grant Scheme PDU203210.