

An improved robust watermarking scheme using flexible scaling factor

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ABSTRACT

Digital watermarking is needed to avoid piracy, forgery and illegal distribution from unauthorized people. The watermarking scheme is used to protect the ownership and copyright information in the multimedia data. A scaling factor plays an important role for balancing between invisibility and robustness for embedding watermark. However, the usage of a scaling factor may not be suitable for different selected blocks and image inputs. Flexible scaling factor is an alternative solution to obtain high robustness and invisibility in image watermarking. This research proposed a flexible scaling factor for DCT coefficients based on the image content itself. This research analyses the selected DCT coefficients against average coefficients on its block to obtain flexible scaling factor. The proposed scheme produced high invisibility with SSIM and PSNR values of 0.991 and 45dB, respectively. The proposed watermarking scheme also achieved strong resistant against noised image, filtered image and compressed image.

KEYWORDS

Embedding watermark; Extracting watermark; Flexible scaling factor; Image watermarking; Robustness watermark; Watermarked image

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