Watermarking Based on Krawtchouk

Moments for Handwritten Document Images

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Abstract

In this paper, a digital watermarking technique for copyright protection based on the concept of embed a digital watermark and modifying coefficients in Krawtchouk moments domain is presented. This technique is specifically for handwritten document images using a QR code as a digital watermark. It consists in dividing the image into 8 × 8 pixels blocks, where the number of selected blocks is equal to the number of watermark bits. The Krawtchouk moments of each selected block are determined. After that, one coefficient is modified using Dither modulation. In addition, the results obtained in terms of perceptual quality (PSNR) and robustness (BER) show that the proposed technique is robust to JPEG compression attacks keeping imperceptibility.

Keywords: *Digital watermarking, Genetic algorithm Hadwritten documents, Krawtchouk moments, QR code*