

研发、设计、测试

基于RLE编码定位的数字水印算法

刘晶¹, 刘刚², 张九龙¹

1. 西安理工大学 计算机科学与工程学院, 西安 710048

2. 西安电子科技大学 计算机学院, 西安 710071

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摘要 提出了一种二值水印嵌入方案。对水印图像进行游程编码, 对载体图像进行离散小波变换, 选择最高级细节子带中最大系数为嵌入目标, 由密钥K1将水印图像的游程编码拆分成两部分, 密钥K2和水印图像的RLE码值共同确定嵌入位置。检测时, 根据游程码值和小波系数变化幅度两个原则检测水印信息。实验结果表明: 该方案不仅具有很好的不可感知性, 而且对常规图像处理 and 几何攻击均具有较好的鲁棒性。

关键词 [游程编码](#) [小波变换](#) [二值水印](#) [几何攻击](#)

分类号

Image watermarking algorithm based on RLE orientation

LIU Jing¹, LIU Gang², ZHANG Jiu-long¹

1. Faculty of Computer Science and Engineering, Xi'an University of Technology, Xi'an 710048, China

2. School of Computer Science and Technology, Xidian University, Xi'an 710071, China

Abstract

The paper presents a new binary watermark method based on Run Length Encoding (RLE) and Discrete Wavelet Transform (DWT). The watermark is embedded into the image by modifying some of its wavelet coefficients in low-middle-frequency sub-band. The selection of the coefficients is based on the RLE of the binary watermark image and the key K2. Experimental results show that the proposed scheme is not only invisible and robust against common signals processing such as noise adding, sharpening, median filtering, and JPEG compression, but also robust against the geometric attack such as rotation, scaling, translation, row or column removal, shearing, and bending of images.

Key words [Run Length Encoding \(RLE\)](#) [Discrete Wavelet Transform \(DWT\)](#) [binary watermark](#) [geometric attack](#)

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通讯作者 刘晶 liujing@xaut.edu.cn

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