

一种可抵抗几何攻击的Directionlet变换域盲水印算法

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Blind Watermarking Algorithm Against Geometric Attacks Based on Directionlet-domain

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摘要

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摘要 抵抗几何攻击是数字水印研究领域具有挑战性的课题。该文提出一种利用Directionlet变换构造水印同步信息的盲水印算法：通过边缘检测算子锁定图像边缘；利用拉格朗日定理求取边缘斜率；选取两条边缘，用其斜率构成Directionlet变换的采样矩阵；在Directionlet变换域内自适应嵌入水印，排除几何攻击对水印检测的影响。仿真实验结果表明，该算法抵抗旋转等几何攻击具有很好的鲁棒性能。

关键词： 水印算法 Directionlet变换 拉格朗日定理 采样矩阵

Abstract: Watermark robustness to geometric attacks is still a challenging issue. A blind watermarking scheme is proposed against geometric attacks to construct watermark synchronization information by using Directionlet: Firstly, the edge detection operator is utilized to extract image edges; Then, the slope of those edges are computed according to Lagrange theorem; Finally, the direction vector of the two choosed edges constitute the generator matrix of Directionlet; Watermark are adaptively embedded into Directionlet coefficients of the selected cosets. It is Directionlet matrix formed of image edges that eliminates the effect of geometric attacks. Experimental results show the proposed watermarking algorithm is robust, especially at the geometric attacks such as rotation.

Keywords: Watermarking algorithm Directionlet transform Lagrange theorem Generator matrix

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