

基于相关性检测的数字图像盲取证算法仿真

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摘要: 针对数字图像篡改中最常用的模糊操作, 提出一种基于相关性检测的数字图像盲取证算法. 该算法假设经过模糊操作后的原始图像和被篡改后的图像中的像素与邻域像素的线性相关性得到增强, 采用基于阈值的最短距离聚类法检测像素线性相关性, 发现模糊操作痕迹, 进而实现数字篡改图像的盲取证. 大量的实验验证结果表明该算法能够有效检测出被篡改图像的模糊操作痕迹, 同时, 能够对被篡改区域进行准确定位.

关键词: 数字图像盲取证; 图像篡改; 模糊操作; 线性相关性

Blind Digital Image Forensics Based on Correlation Detection Algorithm

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Abstract: For the most common fuzzy operation in digital image tampering, a digital image forensics algorithm based on the correlation detection is proposed. The algorithm assumes that linear correlation of pixel and neighboring pixels of the original image after fuzzy operation and the image has been tampered is enhanced, which uses the shortest distance clustering method to detect linear correlation of pixels, and reveals the trace of tampering, thus achieves forensics of digital image tampering. Through a lot of experiments, the results show that, the algorithm can effectively detect fuzzy operation trace of the tampered image, at the same time, which can be able to accurately locate the tampered.

Key words: blind digital image forensics; image manipulation; fuzzy operation; linear correlation

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