

A Natural Preserving Transform Based Forgery Detection Scheme

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Abstract

This paper describes a simple fast forgery detection scheme. The proposed technique makes use of the fact that, the copied or tampered parts of the image, will not contain the correct camera fingerprint, of the regions it copied to. The technique is based on locating dissimilar blocks between the forged image fingerprint and its corresponding mother camera fingerprint. Dissimilarity is measured through searching for blocks in the forged fingerprint image, having the M largest Euclidian distance from their mother cameras fingerprint counterparts. A binary image is then constructed to mark these M probable tampered locations. Morphological labeling and dilation techniques, in conjunction with Natural Preserving Transform NPT of the forged image are used to get rid of isolated and superficial blocks. This is done through constructing a global binary image identifying tampered locations. This global binary image is constructed as the intersection of binary images resulting from decomposing the NPT, of the forged fingerprint, using blocks of different sizes. Cases of weakly correlated fingerprint images are also dealt with. Several illustrative examples are given to verify the ability of the proposed scheme to check whether the image under investigation is forged or not, and detect forgery even for weakly correlated fingerprints.

IEEE ISSPIT 2015, 8-10 Dec. 2015, Abu Dhabi, UAE. 2015, December