

Title: Source Identification Using Pattern Noise

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Abstract

While digital acquisition equipments such as digital cameras or scanners become indispensable equipments of image acquisition, digital processing software such as Photoshop, also tackle the difficulties of traditional dark-room techniques to allow people to edit the images for good or malicious purposes. Hence, digital forensics turned out to be a new and promising research discipline in helping the professionals to assure the authenticity of digital images, which could be as recognized evidences in the court.

The tasks of digital forensics can be divided into different categories, such as source classification, device identification and integrity verification, etc. Initially, the work was focused on both device identification and integrity verification. Device identification uses “biometrics of camera” at discriminating the source of photos. Recently, people have been flooded with forgery images. The authenticity of photos becomes an important issue in public journals or in the court. Integrity verification, known as forgery detection, supports to verify the authenticity of images. It is mostly based on detecting local inconsistencies in the image.

The pattern noise, averaging the fixed noises of the images taking from the same camera, is one of the efficient ways to be as the signature of camera sensor. It can be exploited to identify the source of sensor according to the correlation between the noise of image and the pattern noise of sensor. On the other hand, because pattern noise is an additive signal inherited from the defects of sensor, it is likely to be forged for malicious purposes. In our work, we have also examined some of forged tricks to show the characteristics of pattern noise.