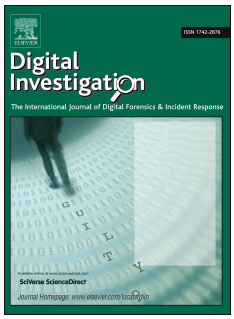
Accepted Manuscript



Passive forensics in image and video using noise features: A review

Ramesh C. Pandey, Sanjay K. Singh, Kaushal K. Shukla

PII: S1742-2876(16)30080-9

DOI: 10.1016/j.diin.2016.08.002

Reference: DIIN 644

To appear in: *Digital Investigation*

Received Date: 17 February 2016

Revised Date: 19 July 2016

Accepted Date: 23 August 2016

Please cite this article as: Pandey RC, Singh SK, Shukla KK, Passive forensics in image and video using noise features: A review, *Digital Investigation* (2016), doi: 10.1016/j.diin.2016.08.002.

Passive forensics in image and video using noise features: A review

Ramesh C. Pandey*, Sanjay K. Singh and Kaushal. K. Shukla

Department of Computer Science &Engineering, Indian Institute of Technology (BHU)

Varanasi-221005 (India).

**Corresponding Author Address, Room No-182, Vivekanand hostel, IIT(BHU), Varanasi ,Pin-221005, India, Email-id:rameshcse19@gmail.com, MbNo- +918004983754*

Abstract: –Due to present of enormous free image and video editing software on the Internet, tampering of digital images and videos have become very easy. Validating the integrity of images or videos and detecting any attempt of forgery without use of active forensic technique such as Digital Signature or Digital Watermark is a big challenge to researchers. Passive forensic techniques, unlike active techniques, do not need any preembeded information about the image or video. The proposed paper presents a comprehensive review of the recent developments in the field of digital image and video forensic using noise features. The previously existing methods of image and video forensics proved the importance of noises and encourage us for the study and perform extensive research in this field. Moreover, in this paper, forensic task cover mainly source identification and forgery detection in the image and video using noise features. Thus, various source identification and forgery detection methods using noise features are reviewed and compared in this paper for image and video. The overall objective of this paper is to give researchers a broad perspective on various aspects of image and video forensics using noise features. Conclusion part of this paper discusses about the importance of noise features and the challenges encountered by different image and video forensic method using noise features.

Keywords: Image Forensics, Video Forensics, Noise, Noise Extraction Techniques, Passive Forensic Techniques.

1. INTRODUCTION

Due to the rapid growth of powerful computers, easy to use image and video editing software and advancement in digital cameras, the authenticity of digital images and videos can no longer be taken for granted. The art of forging an image has a long history (Farid, 2006). However, in the current digital world, it is possible to create, alter and modify the content of image or video very quickly without leaving any noticeable traces of these tampering operations (Farid, 2009; Wang and Farid, 2006). The authenticity of images and videos has a significant role as these are popularly used as supporting evidence and historical records in numerous applications. These applications may be related to law enforcements, military, surveillance, insurance claims, medical imaging, journalistic photography and commercial purpose. All these aspects are generating a high demand for automatic forensic algorithms to determine the trustworthiness of a candidate image or video (Atrey et al., 2007).

1.1. Digital Forensic Task

According to (Chen et al., 2008), the task of digital forensic (Figure 1) can be broadly classified into six categories:

- ***Source Classification's*** objective is to classify the images or videos according to their origin, such as Canon versus Nikon, etc.