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A Review paper On CopyMove Image Forgery Detection Using SIFT

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ABSTRACT- Now-a-days all the visual forms are become digital for the communication of important data. Due to improvement in computing and network technologies, in past few years we have seen a considerable rise in the accessibility and transmission of digital images using imaging technologies like digital cameras, scanners. This technology is also used for manipulating digital images. There are number of operation in which we can change the image contain, like scaling, rotating, cropping. Preserving originality of image is very difficult due to easily availability and free downloading image editing software. So detecting image forgery is challenging task. In recent years, more data are created in digital form allowing easy control over manipulation due to the technology progress. Unfortunately, this progress may have dragged along a lot of risks, especially the ones related to the security of digital files. A specific form of image forgery operation called "copy-move" is considered one of the most difficult problems in the case of forgery detection. For this case, a part of the image is copied and pasted on another location of the same image to conceal undesirable objects in the scene. A copy-move forgery is created by copying some region and pasting that particular region within the same image, and. In recent years, one of the most actively researched topics in blind image forensics is the detection of copy-move forgery. A considerable number of different algorithms have been proposed focusing on different types of post processed copies. Here, we aim to answer which copy-move forgery detection algorithms and processing steps perform best in various post processing scenarios. In this paper we review different types of methods that are used to detect the copy move forgery in the image also, we propose a scheme to detect the copy-move forgery in an image, mainly by extracting the key points for comparison. The main difference to the traditional methods is that the proposed scheme first segments the test image into semantically independent patches prior to key pointextraction.In this paper, we are representing a review on the existing copy move forgery detection techniques. In this paper, we propose a method that automatically detects duplicated regions in the same image. Duplicated detection is performed by identifying the local characteristics of the images (points of interest) using the Scale Invariant Feature Transform (SIFT) method.

KEYWORDS **-** segmentation, key point extraction, copy move forgery detection, SIFT.

I. INTRODUCTION

Digital images are the foremost source of information in today's digital world. Due to their ease of acquisition and storage they are the fastest means of information convey. Images can be used as an evidence for any event in the court of law. The images broadcasted in any TV news are accepted as the certificate for the truthfulness of that news. Digital images are being used in many applications ranging from military to medical diagnosis and from art piece to user photography. Hence the digital image forensics emerges as fast growing need of the society.

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Thus the images are required to be authentic. Due to advancement of computers and availability of low-cost hardware and software tools it is very effortless to manipulate the digital images without leaving the visible traces of manipulation. It has become difficult to trace these manipulations. As consequences, the integrity and authenticity of digital images is lost. This modification of images can be used for some malicious purpose like to hide some important traces from an image. Thus modified images are used to transmit incorrect information. In order to identify the integrity of the images we need to identify any modification on the image. SIFT is (Scale Invariant Feature Transform) used to match the image based on the feature key points (scale and rotation invariance). Sift algorithm are used to find the key points on the images, in this method include the sift description and sift descriptor. Sift feature are discard the low response features. Good forgery detection method should be robust to post-processing operations, such as scaling, rotations, JPEG compression and Gaussian Noise addition.

II. LITERATURE SURVEY

Image forgeries are not new, history has recorded that is happen on early as on 1840.Hippolyta barnyard, the first person to create fake image. In order to address the problem of copy move forgery, researchers have developed various techniques which can be classified in to two main categories: block-based and visual feature-based methods or key point based method [1].“ A Survey on the Digital Image Copy Move Forgery Detection Techniques”, in this paper the authors explained different types of image forgery like, Copy-Move Forgery, Image Forgery using Splicing, Image Resampling and how this forgeries are created or what type of changes observed in the image in different types of forgery. In this paper authors explained basic two techniques i.e. Block based method and key point based method and discuss that key point based methods are better than the block based method. [2]. “Exposing Digital Forgeries by Detecting Duplicated Image Regions”, in this paper the authors consider first applying a principal component analysis to small size image blocks to yield a reduced dimension This representation is robust to minor variations in the image due to additive noise or lossy compression. Duplicated regions are then detected by lexicographically sorting all of the image blocks. We show the efficiency of this technique on credible forgeries, and quantify its robustness and sensitivity to additive noise and lossy JPEG compression [3]. “Rotation Invariant Localization of Duplicated Image Regions Based on Zernike Moments”, in this paper the authors detect the copy move forgery using Zernike Moments. This paper proposes a forensic technique to localize duplicated image regions based on Zernike moments of small image blocks We exploit rotation invariance properties to reliably unveil duplicated regions after arbitrary rotations. We devise a novel block matching procedure based on locality sensitive hashing and reduce false positives by examining the moment’s phase we find that the proposed method performs properly in particular when duplicated regions are smooth. Among the tested block-based methods, our detector is fastest, outperforming others by a factor of 2 at least. In the experiment it is also finds that all these detectors are considerably slower than SIFT-based methods [4]. In “Copy Move Forgery Detection in Contrast Variant Environment using Binary DCT Vectors”, in this paper the authors consider thatDCT coefficients are used to detect the copy move forgery. However, every method has its own merits and weaknesses and hence, new techniques are being continuously devised and analyzed. There are many post processing operations used by the manipulators to obstruct the forgery detection techniques. One such operation is changing the contrast of the whole image or copy

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moved regions. Here first the image is divided into so many number of overlapping blocks and then discrete cosine transform for each block is find out and for matching purpose DCT coefficient correlation is used. The experiments show that the proposed method is able to detect copy move forgery in presence of contrast changes [5]. In this paper, "Comparative study of image forgery and copy move techniques" The detection of a forged image is driven by the need of authenticity and to maintain integrity of the image. This paper surveys different types of image forgeries. The survey has been done on existing techniques for forged image and it also highlights various copy – move detection methods based on their robustness and computational complexity [6]. In this paper, "segmentation based on image copy move forgery detection by using image feature matching" In this paper, we propose a scheme to detect the copy-move forgery in an image, mainly by extracting the key points for comparison. The main difference to the traditional methods is that the proposed scheme first segments the test image into semantically independent patches prior to key point extraction. As a result, the copy-move regions can be detected by matching between these patches. The matching process consists of two stages. In the first stage, we find the suspicious pairs of patches that may contain copy-move forgery regions, and we roughly estimate an affine transform matrix. In the second stage, an Expectation-Maximization-based algorithm is designed to refine the estimated matrix and to confirm the existence of copy move forgery.

III. PROPOSED SYSTEM

In this paper, "segmentation based on image copy move forgery detection by using image feature matching" In this paper, we propose a scheme to detect the copy-move forgery in an image, mainly by extracting the key points for comparison. The main difference to the traditional methods is that the proposed scheme first segments the test image into semantically independent patches prior to key point extraction. As a result, the copy-move regions can be detected by matching between these patches. The matching process consists of two stages. In the first stage, we find the suspicious pairs of patches that may contain copy-move forgery regions, and we roughly estimate an affine transform matrix. In the second stage, an Expectation-Maximization-based algorithm is designed to refine the estimated matrix and to confirm the existence of copy move forgery

IV. CONCLUSION

From the literature survey and copy move forging techniques, we concluded that the major problem with copy move forgery is the detection of duplicated image regions affected by common image processing operations, e.g. compression, noise addition, rotation, scaling, flipping etc. The other challenge is the computational load which can be excessive. Among the algorithms discussed above, key point based methods like SIFT can be considered effective in detecting duplicate regions even if the regions undergo transformations like scaling and rotation as well as robust to noise and changes in illumination conditions. SIFT has some limitations in dealing with flat duplicate regions. Zernike moments, on the other hand, are effective in detecting copy-move blocks even for the flat regions but these are not good in detecting scaled copied blocks. Block matching methods using square blocks are not suitable for detection of rotated or scaled duplicated blocks. However, using circular blocks instead of rectangular blocks can significantly make the detection invariant against rotation. So, there is the requirement of the some advanced techniques that can work naturally. So, as a future reference, we want to suggest the nature inspired techniques to check the image forgery by making use of natural experience of nature.

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