

A Review on Different Techniques for Forgery Detection in Medical Imaging and Digital Document Authentication Systems

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ABSTRACT

Image is the most prevalent source of the facts description. It is better to represent the fact using image rather than the large number of words. Image is used in various fields like scientific, Journalism, Medical, Education etc. But today there are various forgery tools are available which can forged the image to represent the false facts. This means image can no more considered as the authentic source of information. Whatever it represents can be false. Person who is representing the facts or even who is seeing the facts can be unknown to the fact that the image is manipulated. In that situation large number of researcher are researching on developing a automated tools which can detect the forgery in the image. That means can detect which part of the image is being forged. So that user before using any image can know whether the image is forged or not. Different techniques are being under the development stage with different success rate to detect the forgery in the image.

Keywords: *Forgery, Image processing, forensic*

I. INTRODUCTION

Image is being used in different fields of the society. These fields can be education to the scientific use. There are various critical fields which directly has impact on the people who are using this information. There are wide variety of the sources of the information. Image is one of the best way to represents the information. But this source may not be no more authentic sources. There are various fields where the information can be forged using technology. This means the information can be falsely being put in front of the user of the information.

What is image: I image is the way to keep information in multimedia way into the computer memory. It will store the large amount of descriptor information. So that the multimedia information can be imparted to the users. Who are interested in the information.

1.1 Types of images

1. JPEG (pronounced JAY-peg) Jpg images are developed by the Joint Photographic Experts Group. It the image standard specially suitable for the internet. The image standards are regularly being maintained by the JPG group so that the image remains of higher quality.
2. GIF (pronounced JIF by many, including its designer; It is another image format specially mend for the internet. These types of images are being used for the interchanging the graphics data between two remote hosts. These are the another compressed format.
3. PNG (pronounced ping) is a Portable Network Graphics). It is the improved format being developed by Portable Network Graphics. It is improved version over to the gif and jpg. PHG format used the compressed format which is loseless compression. So that the image being retrieved is lossless image.

1.2 image processing

image processing is the way the image is made useable for the specific purpose. Image processing includes various stages of processing like.

1. Pre-processing.
 2. Processing.
 3. Features extraction.
1. Pre-Processing: it includes processing the image based on identify the lacking point in the image like noise in the image, skewness in the image, size problem in the image etc. in pre processing all these problems will be identified and removed.
 2. Processing: It includes after pre-preprocessing stage. In involves various types of processing processes. Like segmentation etc. it will extract the required segment of the image so the further processing.

3. Features extraction: it is the final phase of image processing. Various features related to processed image are being extracted. These features are matched against the standard features for comparing the quality of the image.

1.3 Image Forgery

1. Copy Move Forgery

Copy-move forgery, as depicted in Fig. 1, is one way of forging the image. While having forgery of the image, one part of the image is copied and pasted else where in same image.



Fig. 1 Forged Image

Because the part of the image is being copied from same image so the resolution, lighting and colour will remain same. It will be very solid to detect the forgery in the image by the naked eye. On the basis of our preliminary study [3] a methodology based on SURF is projected to notice copy move falsification in digital images with high resolution. Large images are considered in our work because there is an overall higher number of feature vectors, and thus there is considerably a higher chance of matching wrong blocks. The proposed method has also been tested against rotation in selected angle, scaling and images distorted by adding a Gaussian noise.

II. LITERATURE SURVEY

[1] Badal Soni et. al(2018): Author in this paper has worked on image forgery detection using SIFT key Points taking out and compactness based clustering algorithm. In SIFT key point based extraction will be matching the key point of the image. Later on to improve the results density based algorithm is used to reduce the false detection. This density based system of clustering is to detect the forgery in the system. So that the forgery can be detected for the false detection system.

[2] Yong Yew Yeap et. al(2018): Author in this paper has worked on. This CMFD based technique is underwent on various images which has geometrical attacks. These attacks are being detected with higher success rate. This success rate is around 85.67%. The database is being used as MICC-F600 and MICC-F2000 databases.

[3] Badal Soni et. al(2017): Author in this paper has worked on the technique of copy and move from one position to other position. Where one or extra region of the picture is being derivative from one part of the image and pasted else where in same image. This paper has proposed a technique based on block based blind technique.

[4] Navpreet Kaur Gill et. al(2017): Author in this paper has reviewed on various types of copy-paste based forgery detection technique. This paper has done improvement in detection process of fraud discovery and inclusive orientation index has been exhibit on submissive method for counterfeit identification. This paper has succeed in getting the improvement in the image forgery detection process

[5] Ashwini V Malviya et. al(2016): in this paper author has proposed a procedure of features extraction for the forgery detection. Auto Color Correlogram, is easy features extraction technique. is being applied for the extract the features vector. ACC based technique for the features extraction is being used.

[6] Guzin Ulutas et. al(2016): Author in this paper has proposed a technique as an best way to detect the forgery detection. This technique used AKAZE features and non linear scale space for the detection if copy paste region.

III. COMPARATIVE ANALYSIS

S.No	Author Name	Year	Description
1.	Badal Soni	2018	Technology- CMFD SIFT key point extractions <ul style="list-style-type: none"> • Pros- test the robutness of proposed method • Future work- improve the detection across forgery.
2.	Navdeep Kaur Gill and Ruhi Garg	2017	<ul style="list-style-type: none"> • Gived the comparsons between active approach and passive approach for image forgery detection
3.	Yang Yew Yeap	2017	Technology- CNFD <ul style="list-style-type: none"> • Oriented FAST • Rotated breif • 2NN Pros- overall accuracy rate 84.75% and 82.79% Cons- accuracy degraded with reduced copied object size.
4.	Ashwini V Malviya and Sidharth A Ladhake	2016	Techonology- ACC <ul style="list-style-type: none"> • ACC is successful in accurately detecting the duplication region • Pros- ACC is straightforward and low complication attribute withdrawal method
5.	Guzin Ulutas and Gul Muzaffer	2016	<ul style="list-style-type: none"> • Technology CMFD the proposed method detects “Object removal with unifrom background” and replication.

IV. CONCLUSION

Image forgery is the major problem in today’s technologies. The technology is growing in both positive and negative sense. In both the ways the people are getting effected. Image forgery will be the major concern of today’s internet and information oriented world. People can believe the wrong and forged information. There are various researchers who are researching on the issue of image forging. Various tools and techniques are under development stage which can scan the images for the purpose of forgery detection. So that any image which is being communicated to other can be detected for the forgery. So that wrong information can be detected easily. Different techniques has different success rate. The accuracy of the detection has further scope for improvement.

V. FUTURE WORK

In CMFD some part of the image has been cutted and moved into the other part of same image. The cutted image segment can be text, background part etc. Using key points based CMFD technique in sequence of individual skin texture such as periphery, Blob, corner of the image are extract and store in the form of attribute matrix. Quality vector is typically constructed using pixel information within the exact porthole of the attention point. With key points technique, the preprocessing footstep of chunk partition can be eliminate.

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