An Enhanced Method to Detect Copy Move Forgey in Digital Image processing using 2D-DWT Approach

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Abstract - *Communication in visual form is very important in itself. It is also a very convincing medium of transfer of information. Numerous fields of technology depend vastly on better quality and correctness of source image. But digital image forgery creates problems for these technologies. Manipulation of images is now a very easy job due to availability of numerous images editing software's. It is now possible to add, modify, or remove important features from an image without leaving any perceptual traces of tampering. Image forensics is a domain dedicated to stop such attempts and preserve the data in an image. Through this project, we would like to detect a faulty image from image move forgery attack.*

Key Words: GIMP, SIFT, RANSAC, DWT, SURF, FFT, LDP

1. INTRODUCTION

Images are one of the natural sources of information. Currently they are the most common and convenient way for expressing and transmitting information. Information expressed in thousands of words can be easily expressed by a digital image. The human being visual system has a high ability in deriving pictorial information from digital images. Nowadays, digital images play a very important role in our community, in a wide variety of applications.

There are mainly three types of image tempering techniques. Enhancing Tempering, Compositing Tempering, and Copy Move Tempering: In Compositing tempering, two or more images are used to make the new tempered image. It changes the whole content of the image. In Copy - Move tempering , technique some parts of the image are copied than pasted into same image then some post processing steps are apply to tempered image. It is difficult to identify which parts of image is copy and where it is pasted. It is difficult to identify this type of tempering.

2. LITERATURE SURVEY

•An efficient algorithm for image copy-move forgery detection based on DWT and SVD [2014]

In this paper, an efficient algorithm is presented for image copy-move forgery detection and localization based on DWT and SVD. Experiment results demonstrate that our proposed algorithm can effectively detect multiple copy-move forgery and precisely locate the duplicated regions, even when an image was distorted by Gaussian blurring, JPEG compression and their mixed operations [1]

•A Survey of Copy-Move Forgery Detection Techniques for Digital Images [April 2015]

The objective of copy- move forgery may be to conceal some unwanted features, or to add some local features which are otherwise absent. Extensive research has been done to device methods to detect copy-move forgery in both intensity domain and frequency domain. Various image analysis techniques using image moments, dimensionality reduction, texture analysis etc. Has been experimented. This paper presents a study of various image forgery techniques a survey of various attempts in copy-move forgery detection. A comparative analysis of major techniques is also presented.[2]

•Forensic analysis of digital image tampering [June 2015]

In recent decades, digital images have been used In a growing number of applications such as medical, Insurance, military and forensic analysis etc. With Increasing popularity and the availability of low-cost image Editing software such as Adobe Photoshop, GIMP (GNU Image Manipulation Program), paint etc. So the integrity of Digital image content can no longer be taken for granted. In this some part of image is copy then it is pasted on same Image, it cause change visual contents of image. This paper introduces a new methodology for the forensic analysis of Digital image tempering. In this, we propose detection Method based on SIFT (Scale Invariant

Features Transform).This method is robust and less time required to detect tempering in digital images than other Method. [3]

•A Scheme for Copy-Move Forgery Detection in Digital Images Based on 2D-DWT [Sep 2014]

In this paper, a copy-move image forgery detection Scheme is developed based on a block matching algorithm. Instead of considering spatial blocks, 2D-DWT is performed on The forged image and then DWT domain blocks are considered, Where only approximate DWT coefficients are utilized. In order To reduce the computational burden, unlike conventional Approaches, instead of performing block matching operation among all blocks, some candidate blocks are first selected from The non-overlapping blocks based on a similarity measure. [4]

•Detecting Multiple Copies of Copy-Move Forgery Based on SURF [March 2014]

An Extensive growth in software Technologies results in tampering of images. A major Problem that occurs in the real world is to determine whether an image is authentic or forged. Copy-Move Forgery Detection is a special type of forgery detection Approach and widely used under digital image forensics. In copy-move forgery, a specific area is copied and then Pasted into any other region of the image. The main Objective of this paper is to detect the multiple copies of The same region and different regions. In this paper, Key point-based method is used. In key point-based Method, SURF (Speeded Up Robust Features) method is Used for feature extraction. The g2nn strategy is done for identifying the matched points. Then the Agglomerative Hierarchical Clustering is done on the matched points so that false detection rate can be reduced [5]

•A Review on Copy Move Forgery Techniques [March 2015]

With the presence of image editing software and digital cameras, techniques for digital image tampering are Becoming more and more sophisticated and widespread. How to prove the integrity and authenticity of digital images Becomes a more and more urgent problem at present, especially in some critical applications, such as court evidence, News broadcast photos, medical images, defense photos, sports pictures etc., in which preserving the exact fidelity of The original image is a legal, moral or technical requirement. In this paper an overview of passive image authentication is presented and the different copy move Forgery detection techniques are reviewed.[6]

3. OBJECTIVES

To develop an efficient, robust and hybrid technique for copy-move image forgery detection algorithm. To evaluate the efficiency of the developed algorithm using some of the available standard image datasets.

4. PLANNING OF WORK

In copy-move forgery, there exists a strong correlation between the copied and pasted parts which can used as evidence for detecting copy-move forgery. Given a tampered image of size M*N, the major steps involved in the detection is as follows.

A. Pre-processing

The aim of pre-processing is the improvement of image data that suppresses unwanted distortions or enhances some image features important for further detection. The given image is converted into grey-scale (color conversion). When applicable (except for algorithms that require color channels). Other pre-processing techniques includes, dimension reduction, image resizing, low-pass filtering etc. In both block-based and key-point based methods necessary pre-processing can be applied.

B. Feature Extraction

For block-based methods, feature vectors are extracted for each block. While for key-point based methods, feature vectors are computed only key-points in the image such as regions with entropy etc.

C. Matching

After feature extraction, the potential copy-move pairs are identified by searching blocks with similar features. High similarity between feature descriptors can be interpreted as duplicated regions. In block-based method lexicographically sort similar features and Best-Bin-First search method to get approximate nearest neighbor in key-point based methods helps in the feature matching.

D. Filtering

A single similarity criterion is not enough to claim the presence/absence of duplicated regions. Filtering schemes are thus used to reduce probability of false matches. Finally post-processing can be done to preserve matches that exhibit a common behavior.

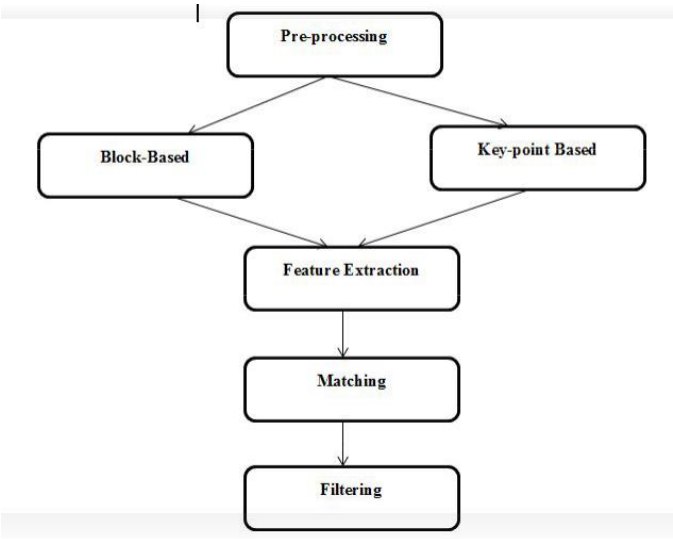

Fig 1: Filtering Method

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REFERENCES

[1]"Feng Liu, Hangzhou" and Hao Feng " An efficient algorithm for image copy-move forgery detection based on DWT and SVD" International Journal of Security and Its Applications Vol.8, No.5 (2014), pp.377-390 http://dx.doi.org/10.14257/ijsia.2014.8.5.33

[2] "Rani Susan Oommen Sree Buddha" "A Survey of Copy-Move Forgery Detection Techniques for Digital Images" International journal of innovations in engineering and technology (IJIET).

[3] "Bharat M. Prajapati and Nirav P.Desai" "Forensic analysis of digital image tampering" International Journal For Technological Research In Engineering
Volume 2, Issue 10, June-2015.

[4] "S. A. Fattah M.M.I. Ullah. M.Ahmed I. Ahmmed and C. Shahnaz ""A Scheme for Copy-Move Forgery Detection in Digital Images Based on 2D-DWT"

[5]"K.Kiruthika,S.Devi Mahalakshmi, K.Vijayalakshm" Detecting Multiple Copies of Copy-Move Forgery Based on SURF" ISSN (Online): 2319 -8753ISSN (Print) : 2347 -6710 International Journal of Innovative Research in Science, Engineering and Technology Volume 3, Special Issue ,3, March 2014

[6] "Rajdeep Kaur and Amandeep Kaur" A Review on Copy Move Forgery Techniques" International Journal of Computer Science and Information Technology & Security (IJCSITS), ISSN: 2249-9555 .6, No.2, Mar-April 2016

BIOGRAPHY

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