

Copy-Move Image Forgery Detection using Scale Invariant Feature Transform

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Abstract—Digital image forgery is a one of multimedia security whose objective is to show the wicked manipulations in digital images. Among different types of image forgery, copy-move forgery detection (CMFD) is the most popular one where a part of the original image is copied and pasted at another position in the same image. Various methods have been developed in the past few years. to achieve geometric transformation like rotation and scaling, a novel methodology based on Scale Invariant Features Transform (SIFT) is proposed.

The proposed algorithm mainly involves in feature matching in which features are extracted from each block by computing the dot product between the unit vectors. Random Sample Consensus (RANSAC) algorithm is used to remove the false positive matches. The experimental results of the algorithm are presented to confirm that the technique can extract more accurate results compared with existing forgery detection methods.

Keywords— SIFT, RANSAC, CMFD, KEYPOINT MATCHING

I. INTRODUCTION

Digital images are widely used everywhere in the world. Newspapers, magazines, apparel industry, medical field, science field, forensic labs etc. are relied on digital images. Exchanging soft copies of several documents may be normal practice in the present scenario. So, there is a chance of forgery while exchanging such sort of documents.

Detection of image manipulation is extremely important because an image is often used as legal evidence, in forensics investigations, and in many other fields. The pixel-based image forgery detection aims to verify the authenticity of digital images with no prior knowledge of the first image.

II. COPY-MOVE IMAGE FORGERY DETECTION:

An image forgery is called as Copy-Move forgery [5] if some part of an image is copied and pasted within that same image. This is usually done to suppress some information of the image. There must be a possibility that one or more regions are copied and moved into the image. Due to the duplicated portion or portions comes from the same image, the properties of the duplicated region will be same as the original region. detection methods must be consistent with the statistical measures presented in each part of the images. the example of copy-move image

forgery detection shown in the Figure 1.

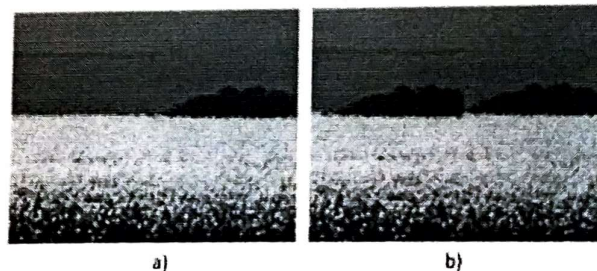


Fig 1: Copy Move Forgery a) Original image b) Tampered image

The figure 1 is a example of the cloning technique where the region of image is copied and pasted within the image in such a way that it is not recognizable with naked eye. this process is considered as an illegal act, the appropriate technique must be developed to detect the forged region accurately.

III. RELATED WORK

In the copy-move forgery detection, block-based methods that is DCT (discrete cosine transform) [8], DWT (discrete wavelet transform) [11] gives the proper results only when the copied region is directly pasted i.e. duplication is performed without any transformations. If