USING DCT AND SIFT TO IMPROVE IMAGE SMOOTHNESS TO ANALYZE IMAGE EFFICIENCY

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Abstract
It is always necessary to deal with images, especially high-pixel-density images, when exchanging information from one side to another. Additionally, the image must be free of forgery, copying, or duplication. It is possible that forgery detection will cause problems if it can or has been connected to some post-handling operation such as re-sizing, shifting, resolution adjustment, JPEG pressure adjustment, and so on. In this paper, we will present a new method of copy-move attack detection that is based on the DCT and SIFT[e-sift] techniques, which will be demonstrated. By employing the proposed system, we will be able to detect forgery data, primarily images, and estimate the parameter associated with forgery. Individual features are matched to a database for verification, and the recognition process continues from there. DCT, JPEG, and PIXEL are some of the keywords used in this paper.
Keywords: e-sift, sift, dct, jpeg, pixel

I. Introduction

The world is changing on a daily basis, and with it, our methods of storing and controlling information. Because of their simplicity and rapidity of exchange, computerised images are the most efficient method of data exchange available. There are two types of image tampering methods that can be classified as follows: a) Active Method and b) Passive Method.

The Active method necessitates the inclusion of specific information within an image, either during the creation of the image or before it is made available to the public for consumption. This method can be used to determine the origin of an image or to determine whether or not any modifications have been made to the original image. Watermarking is one of the most commonly used active system methods. Passive system methods, on the other hand, do not require any transformation and only require that the watermark be inserted into the digital image. This method operates solely on the binary information contained in a digital image, and it does not require any additional information. For image matching and recognition, SIFT features are first extracted from a set of reference images and stored in a database before being used for image matching and recognition. A new image is matched by comparing each feature of the new image to each feature of the previous database and then finding candidate matchings based on the results of these comparisons. Fast nearest neighbour algorithm will be discussed in this paper because it is capable of performing this computation quickly on a large database.

The level of detail in a faked image varies depending on a variety of factors, which has become a significant concern because the quality of faked images can sometimes be so convincing that it is impossible to detect traces of image forgery using the visual method. It is possible to analyse these types of images using prototype techniques that are based on statistical methods in such cases.

The Challenges

A) Under the lossy compression.

B) Sometimes it is possible that the intruder may add the noise to an image to make the forgery detection difficult

C) Point of the region may be related before performing forgery.

D) The image which may be copied may get blurred out.

E) Copied regions texture may be changed. It may be made sometimes lighter or darker

Our proposed System

The SIFT is Scale Invalid Feature Transform which is used to detect and describe local features in and image. To help the extraction of these features the SIFT algorithm has the following 4 stage filtering approach

1.Scale Space detection:- This method has the following detecting points of the concept which is based on the key points. These key points are taken according to the maxima/minima of thee difference of the Gaussian.

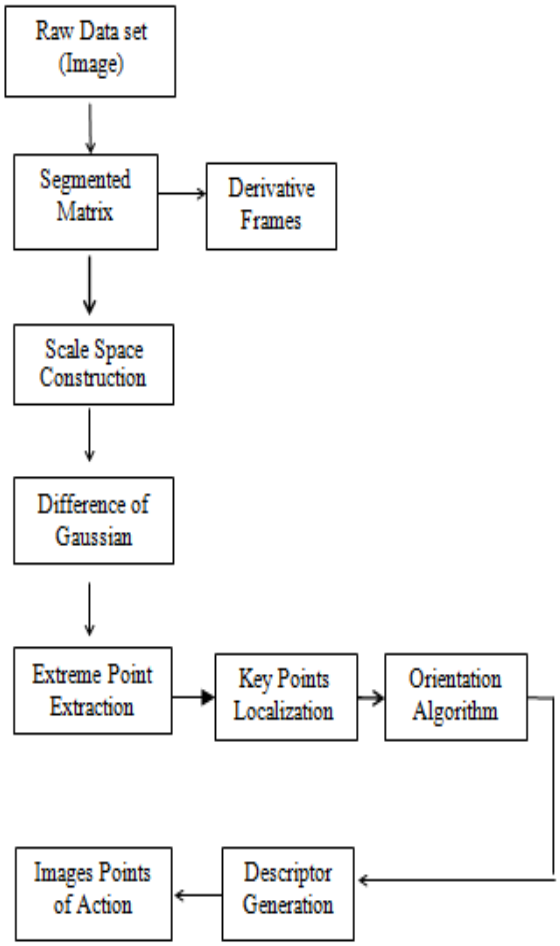
Key Points Localization:- After that, SIFT algorithm discards low key points and filters out only that are located on the edges.

Considering the Orientation:- One or more orientation are assigned to each key points based on based on the value of descriptor.

Key point Descriptor:- This step has a descriptor for every key point that is highly distinctive and partially invarient to the variation.

The Algorithm SIFT:-

As we are working in the SIFT algorithm that too in the DCT Domain. The DCT co-efficient reduces the images matrix with low loss of accuracy in image matching and retrieval



The SIFT descriptor is based on image in terms of fields and frames. This defection and description of local images features can help in object recognition. They are relatively easy to match against a large database of local features, however the high dimensionality can be issue and generally probabilistic algorithm.

Advantages of SIFT Algorithm

The key localization/scale/Rotation is very accurate, stable and rotation invariance

The geometric distortion indexing and matching has high efficiency and speed.

This method is having better error tolerance with fewer matches.

The Bayesian Probability analysis is more reliable analysis.

Algorithm to perform Hierarchical clustering:-

Step:- a] Suppose image is of NXN matrix so for N items we will have N clusters. Let the distance between the cluster equal to the distance between the items they contain.

Step:- b] Find the nearest pair of cluster and then merge them into a single cluster.

Step:- c] Compute distance between the new cluster and each cluster.

Step:- d] Repeat Step b and c until all items are clustered into a single cluster size N.

Conclusion

In the proposed work we have implemented the enhanced [E-SIFT] algorithm to detect the forged images. Average time to process the input by the proposed system has to calculate in this work. Proposed system also shows good accuracy in work that can contain forged image with transformation.

In future, such system can be enhanced to minimize the processing time to detect the forgery in the images to few seconds or even microseconds.

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