SECLUSION IN IMAGE TRANSFORMATION FOR DATA HIDING THROUGH IMAGE ENCRYPTION

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ABSTRACT

The data hiding technique is proposed mainly for the full security in data transmission. Here we use AES algorithm for both encryption and decryption. The original image is chosen along with target image. The original image is transformed by using RIT (reversible image transmission) method and stored in the target image. In target image by using pixel pattern the data is embedded .To retrieve the data and image the above process is reversed .

Keyword : - Reversible data hiding ,Reversible image transformation, Image encryption and decryption ,Data hiding

1. INTRODUCTION

The data hiding in target image which is an encrypted image allows the hider to embed extra messages. At receiving side the hidden data must be completely extracted and for this original image is required and must be perfect .For example, in hospital, an individual's medical records will not be revealed to any third parties. The admin need to embed the patient's records in an encrypted images. At the same side for decryption, the original image must be recovered without any fault or error and data must also be retrieved for this we use RDH technology (reversible data hiding) by this the original image can be recovered easily after the data extraction.

After the encryption, The RDH method is used for hiding the data, Where the original image is divided into several blocks and each one bit is embedded into each block by transferring Least Significant Bit (LSB) .At the receive side, The encrypted image is decrypted. Now the receiver transforms the pixel to from a new block .Now the bit which is embed can be extracted and as well as the image can be recovered. Based on the block size, the data is embedded. If the block size is not chosen properly, then the error might occur.

2. PREVIOUS WORK

LSB is the simplest form of steganography. LSB is based on inserting the data in the LSB of pixels which in turns modify the original image which is not noticeable to human eyes.This method can be easily cracked and it is vulnerable to attacks. The sender encrypts the image directly without using duplicate image .Now the data hider embed the text in encrypted image .The image encryption and decryption is done by using AES algorithm, The image decryption and data extraction must be done at same times.

In this part, Embedding the data in an encrypted image is reviewed. The image encryption is mainly designed for those applications in which the sender and receiver are not the same party. The sender who hides the data can't access the content in the image and the text is held by the person who hides the data .The sender does the encryption process, data hider does the hiding process The receiver does the extraction process and image recovery.

For an encrypted image, The RDH methods can be classified into two categories: VRAE and VRBE

VRAE: vacating room after encryption and

VRBE: vacating room before encryption

In VRAE, sender encrypts the original image. The additional bits are embedded by modifying the bits in the encrypted data.Puech et al proposed this idea puech et al proposed this idea first .By using advanced encryption standard (AES), The image is encrypted .One bit is embedded in each block containing n pixels, i.e the embedding rate is 1\n bpp.

The data extraction and image recovery are done at the receiver side. During the decryption process ,the extraction of data and recovering the image must be done jointly .They are inseparable both extraction and decryption. To be even more different Zang proposed a method, The encrypted image is divided into several blocks by the data hider and one bit is embedded into each block by transferring the three least significant bit of half the pixels.

On the receiver side, The image which is encrypted is decrypted to a proper original image. because of the spatial correlation in original image ,These blocks are presumed to be smoother than the other interfered block .Thus the original image and the bits can be extracted and recovered together. Based on the block size the embedding rate is dependent .If the block size is not chosen properly, Then the errors might occur during extraction and the recovery process.

These methods was improved by using spatial correction this spatial correction was used between the neighboring blocks. To achieve a better payload with less error, The side match algorithm is used. To overcome this inseparability, a separate RDH scheme is proposed. The data hider divides the encrypted image into several groups of size L, with G sized matrix , The LSB planes of each groups are compressed .for data hiding s-bits are available .In receiver side , By decryption MSB pixels are obtained.by comparing estimated bits corresponding to extracted vectors. In encrypted image as the additional bits are embedded, This can be extracted before image recovery and data extraction.

Higher payload is achieved by VRBE an extra RDH must be performed by the sender before encryption of an image

3. PROPOSED WORK

There are two major ways in which the data hiding in an image or in a video can be done using bit stream level and data level. We propose a method called reversible image transformation the original image is divided into many pixels and These pixels are transformed by using matrix transformation. This transformed image brings out a new image which is totally irrelevant to original image. Now this transformed image is encrypted inside the target image .Now we use reversible data hiding method to hide the data in the encrypted image. By using this method the data is embedded in the target image .now the target image will be visible where as the original image and hidden text will be invisible. This system provides more security for image as well as text and this method will be more useful for transferring the message which is highly confidential.

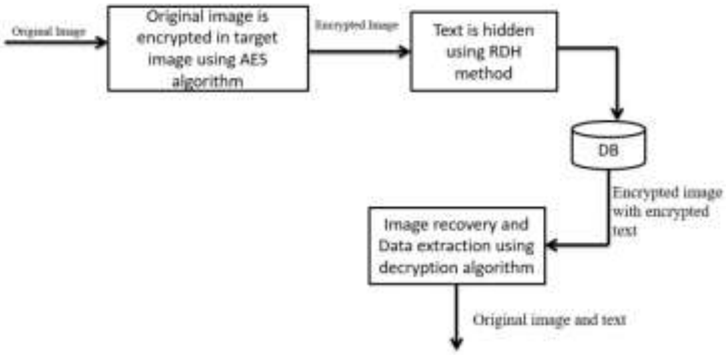

Original Image
Original image is encrypted in target image using AES algorithm
Encrypted Image
Text is hidden using RDH method
DB
Encrypted image with encrypted text
Image recovery and Data extraction using decryption algorithm
Original image and text

Figure 1: **ARCHITECTURE DIAGRAM**

3 .MODULE DESCRIPTION

a) Image transformation

b) Data embed in target image

c) Image decryption and data extraction

a) Image transformation:

In image transformation, We propose a method called reversible image transformation to encrypt spatial images; This was inspired by lee who proposed the technique for image transformation. The original image is transformed to target image with same size.

In lossless way the image cannot be resorted .For color image we transform the RGB color channel .For Example, We can assume gray image as one channel to describe .The original image and the target image is selected with the same size.

The original image and target image is divided into non overlapping blocks and the blocks are paired in sequence (B1, T1)…… (Bn,Tn) the original image Bi of I and Ti of target block J .Bi is transformed towards Ti and Ti^1 is generate towards Ti is replaced with Ti after transformation each block will have close mean and standard deviation (SD) with the target block .SD and mean must be computed the blocks with the closet SD must parried .according to the SD the original image and the target image are sorted in the ascending order from the transformed image recover the original block must be recorded and embedded

The quality of the transformed image will be good, If the block size is small the block with closed SD value for maintaining the similarity between the target image transformed image, We rotate the blocks into 4 directions

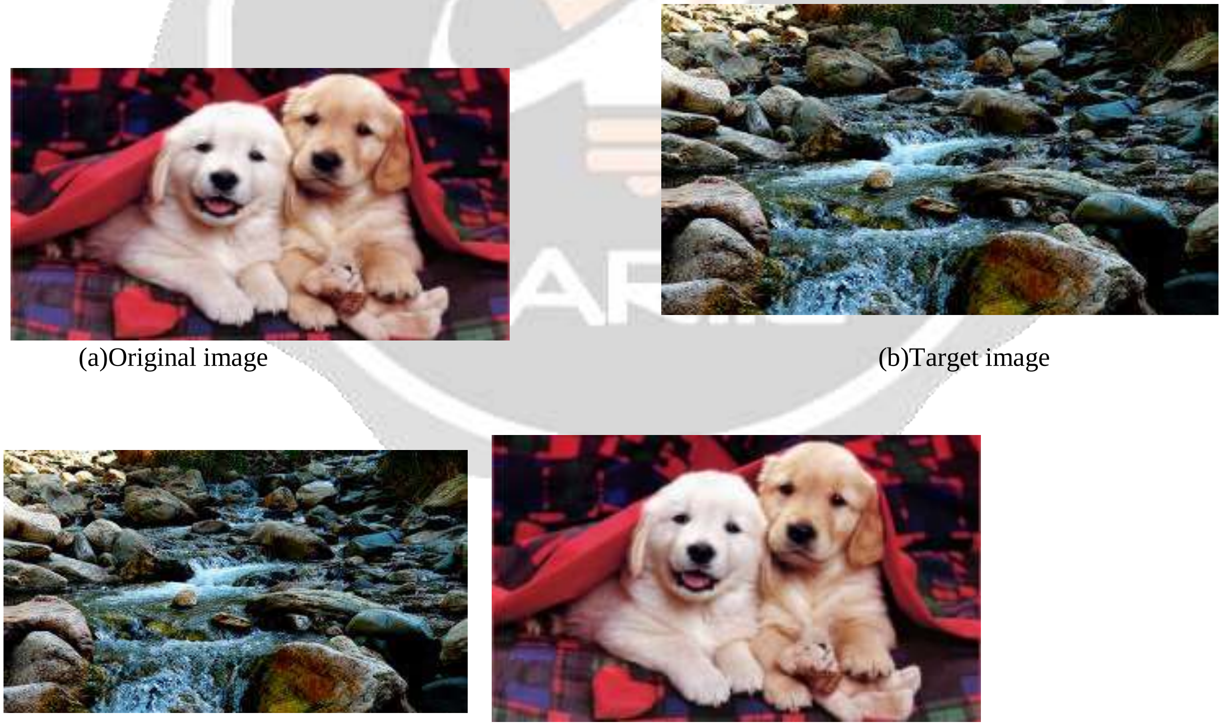
b) Data embed in target image

Reversible data hiding is a technique used to hide the data in digital image for private and secret communication. The additional message is hidden in cover media. So that the original content can be restored ,After the extraction of the message .For secret communication, The data hiding is used . sender must encrypted the data before sending it to the data hider.

Now the receiver can recover the image and can extract the data as well as .Many methods have been proposed .to create an extra space, Lossless compression technique is used .Encryption is mainly used for the privacy and it is effective .In order to share the image secretly with the other person, The sender encrypts the image before transformation .I some scenario, The channel Admin try's to append some additional text with in the original image which is encrypted. He might not know the original content for example, For protecting the patient records the information's of patients are encrypted in an image. The conent from the original image can be recovered without any fault (or) error during the decryption process and data can be retrieved at receiver side .encryption is the process of encoding the information in such a way that the hacker cannot hack the content but the authorized person can .Using encryption algorithm, The image is encrypted .By using decryption algorithm ,The authorized person can decode the cipher text

c) Image decryption and data extraction

Now what we have expressed here is, the original image is divided into several block and they are transformed .After the transformation, this image is encrypted in the original image .This transformed image is encrypted in the target image and the data is hidden in the target image this is done by using the technique reversible data hiding (RDH). By using AES decryption algorithm, the data extraction and image recovery, is done jointly



(a)Original image

(b)Target image

(c)Encrypted image with data

(d) Decrypted image with data

Figure -2: output

4. CONCLUSIONS

Normally, In this century, it is used different to protect the data from a third party (or) the hacker. This methods provides the way to protect the data with double security which means the image is also hider as well as the text so the hacker cannot extract the data and the original image which is highly impossible and In future, What way the quality of an encrypted image can be improved and how we can extend our thought of RIT to audio and video

5. REFERENCES

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