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Reversible Data Hinding and Recovery Based on Compression Technique

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Abstract: **-- This method based on extraction of a data transmitted from administrator to the end user through an intermediate called remote server. The main contest of this method is to reduce the memory size of the data by progressive recovery compression technique, as we are sending the data into the server from the administrator to the client ,the raw data is converted to cipher text and unlike plain text the information is watermarked into three channel sets of embedding technique with an embedding key and addition message at data hider channel. Spiht algorithm helps in compression of rough data to improve the image quality . Thus on the receiver side the data is recovered without distortion. The Rate-distortion of the proposed method outperforms state-of-the-art-RDH-RC method.**

Keywords:-- **-reversible data hiding, spiht algorithm ,encrypted data.**

I. INTRODUCTION

The idea of this method is to protect the information transmitted from the content owner to recipient undergoes a number of transmitting process. This process involve three parties:1)content owner,2) data hider,3)recipient. This technique is more feasible in the applications and processing in like big data, cloud transmission, medical records and so on in our data to day life. Initially the data or image is encrypted at the content owner section with an encryption to convert the plaintext or image to the computer language to preserve privacy and upload the content into the cloud. On the server side along with the embedding key, additional messages are added(e.g., time ,size, label ,etc.) into the cipher text.

This embedding is not only useful for storage overhead but in convenient encryption of data. On the other side the additional message bits added at the data hider section for losslessly recovery of the original image at the recipient side after entering the decryption key.

The accessing owner encrypts the original data using stream enciphering which is understood by a computer with an encryption key, the intermediate channel known as data hider or data embedder embeds additional message bits into cipher text blocks containing least significant bits(LSB) flips of half the pixels in each block. At the recipient side the decrypted cipher text image is formed with two candidates for each block are generated by flipping again. As the regional block is smoother than interfered ,embedded bits can be extracted and the original image retrieved losslessly. This method is an progressive recovery under exploiting spatial correlation between neighboring blocks to achieve better embedding rate, which was further improved in a full embedding strategy. One problem is data extraction can only be done after image decryption. The data hider permutes and divides the encrypted pixels to into segments and compresses the LSBs of each layer segments to fewer bits using a predefined matrix. After decryption the LSBs of original blocks are compared with estimated bits with the compressed .If higher bitplanes are used better embedding rates are achieved some other traditional methods to improve the embedding by reserving room technique or vacating embedding room before encryption,e.g.

This can provide the rate distortion of the method which is an important characteristics. Rat defines the embedding rate of the method and Distortions defines the difference between the original image to decrypted marked image .

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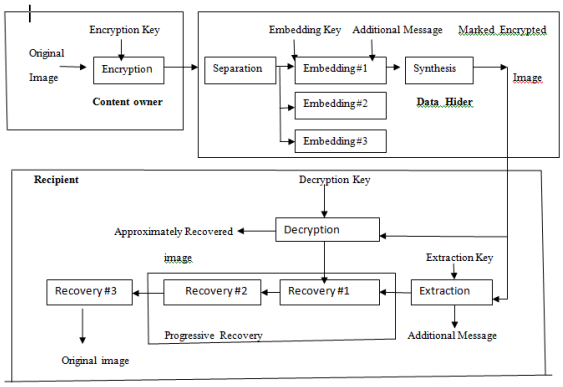

Fig.1 framework of the proposed Method

A .Image Encryption

With an encryption key the content owner uploads the data into the server into grayscale image X sized MXN, with the encryption key ��$_{ENC}$,the key stream K with 8MN bits can be generated and cipher text image generated by

$$\mathbf{J} = Enc(\mathbf{X},\mathbf{K}) = \mathbf{X} \oplus \mathbf{K}$$

"⊕" represent the encipher algorithm and the plaintext image can be recovered by

$$\mathbf{X} = Dec(\mathbf{J},\mathbf{K}) = \mathbf{J} \oplus \mathbf{K} \quad (2)$$

B. *Data Embedding*

On the server side, the data-hider embeds additional message into the cipher text image into three sets as shown in figure. Namely the square ,the triangle and the circle respectively. With the embedding along with payloads the synthesis of encipher text image is formed counting and comparing each LSBs of pixel layers in the original block for retrieval of original image by decryption .

C. Image Extraction

The client act as an end user to decrypt the original image with the help of embedding key to obtain the additional bits added at the data hider section. This bits are useful for calculation of distortion which defines the differences between original image and marked decrypted image on LSBs count. The decryption key and encryption keys are used for three round decoding process.

II. IMPLEMENTATION

Spiht Algorithm

SPIHT represents a highly developed and a progressive implemented technique in image compression because it broke the trend to more complex structural (in both the theoretical and the computational senses) compression schemes. Its superior results using the simplest method: uniform scalar quantization. Thus, it is much easier to design fast SPIHT codec. The SPIHT algorithm is nearly symmetric, i.e., the time to encode is nearly equal to the time to decode.

III .CONCLUSION

Based on the previous work ,a new protocol is developed for the high security data transmission through the server .The state-of-the-art is outperformed. This provides a better RDH-RC method with good quality image with low PSNR and low distortion .The spiht algorithm enables a good compression technique and a good image quality regulator.

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