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A REVIEW PAPER ON ENHANCED DIGITAL IMAGE DATA HIDING USING BLOCK HISTOGRAM SHIFTING METHOD

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Abstract:-*Histogram is shifting method using image data hiding or image encryption. This technology has advanced and most of the people like using the internet because the primary medium to transfer information from one end to another end overall the world. The information or data transfer one end to another end using the internet very easy, quick and correct. But different issues with sending information or data over the internet are that the security threat. In this process, non-public or confidential information will be hacked are modified original information or data. Existing method block shifting histogram (BSH) based on block shifting, so the image is visible and low robustness. It is a very important requirement information security, and it is also important requirement transfer information through internet and safety. There are several analysis process techniques related to internet security likes image data hiding, watermarking, cryptography, and steganography—our proposed method a reversible bit histogram shifting method. Proposed method a bit shifting histogram is the generalized ways for image data hiding and improves the robustness of encrypted image. Our proposed method enhances the standard of the encrypted image and data or information hiding. It is good security & privacy and data image recovery. In information hiding in the encrypted image and highest robustness, so the security of encrypted image also as maintaining the standard of the original image during transfer and exchange of original image or image data.*

KEYWORDS: Image Encryption, Image Decryption, Data Hiding, Image Recovery, PSNR, Reversible Data Hiding, Image Protection, Block Histogram Shifting, Watermarking.

I. INTRODUCTION

Reversible data hiding and secure data or information in images is a method that hides information or data in digital images format then-secret communication. It is a method to hide extra message into cover media with a reversible approach accordingly that the original image and data cover content can be absolutely restored after extraction data or information of the hidden message. Traditionally, image data hiding is used for secret communication. Some Important applications, the embedded carriers or images are further encrypted to prevent the carrier or image from being analyzed to disclose the attendance of the embedment. Other applications could be for when the owner of the carrier or image might not want the other someone, including image data hider, to be familiar with the content of the image carrier before data hiding is actually performed, such as military images or secret medical images. This Condition, the content or data owner has to encrypt the content or data before passing to the data hider for information or data embedment. The receiver side can extract the embedded message and recover the innovative image. Many reversible data hiding have been proposed newly. Embeds image or data bits by expanding the different types of two consecutive pixels as bit 0 or 1. Uses a lossless compression method to create more spaces to carry information or data bits. Shifts bits and the bins of image histograms to leave a blank bin for data embedment. Adopts the difference expansion and histogram shifting for information or data embedment. Embeds information or data by shifting the histogram of calculation errors while considering the local activity of pixels to more enhance the quality of stego image as information [1]. The visible digital watermarking the paper focuses on the following points:

- The data hidden drawback may be solved exploitation histogram shifting algorithmic program for information hiding.
- It concentrates on the restoration of image quality in order that the covered image may be totally retrieved.
- For greatly enhancing the protection the cryptography of the covered image is completed in order that within the absence of the key, the illegal user cannot access the image info [2].

Reversible Information Hiding Method: Extra message are insert into some cover media, like military or medical pictures, in an exceedingly reversible manner, so the first cover content is often absolutely repaired when extraction of the hidden message is termed reversible information hiding. General signal process generally takes place before encoding or when cryptography. Generally, the content owner doesn't believe the supplier of the service; in such cases ability to supply manipulating the plain content secret is undesirable. Thus manipulation on encrypted information once keeping the plain content is allowed. Because of the restricted channel resource, a channel supplier with none data of the cryptography key might compress the encrypted information, once the key information to be transmitted. So as to confirm the privacy, the content owner ought to cypher the information once it shares a secret image with an alternative person. Some info's like the origin information, image notation or authentication information, and is wish to be superimposed among the encrypted image by a channel administrator who doesn't

understand the first image content. At the receiver side, it should be additionally expected that the first content is often recovered with none error when cryptography and retrieve the extra message. Meaning a reversible information hiding theme for the encrypted image is desirable. Information hiding is that the method of concealing the information into covers media. That is, the information hiding method links a collection of the embedded information and a collection of the quilt media data. In most cases of information hiding, the first image becomes distorted because of information hiding and can't be inverted back to the first media. That is, cover media has permanent distortion even when the hidden knowledge is removed. In some applications, like diagnosis and enforcement, it's desired that the first cover media are often recovered expeditiously with no loss. The marking techniques satisfying this demand are referred to as reversible, lossless, distortion-free or invertible information hiding techniques [3].

Reversible information hiding (RDH) Message this could be done by choosing an encoding key that is used to encode the initial data once encrypting the data or information hiding secret is used, and this information hiding secret is embedded on the encrypted data with the assistance of information hider block and this encrypted information containing embedded data is forward the channel. This will received by image decoding, which will decode the received information and by this decoded data, the initial data is extracted by activity the reverse operation by using an equivalent encode key[4].

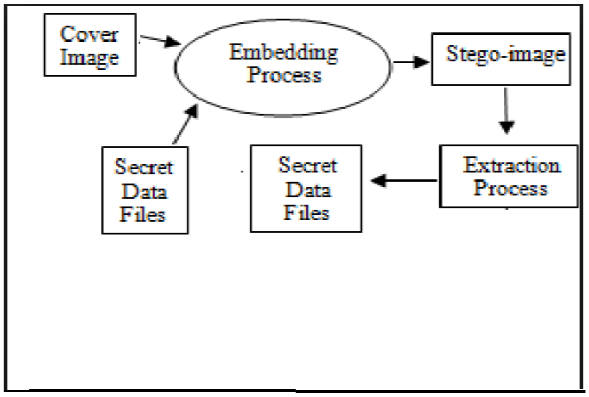

Fig1 Reversible information hiding method

Histogram Shifting**:** Data hiding technique supported bar graph shifting is used to insert information in cover media by shifting the bar graph of image. This method detects peak and 0 points within the bar graph. By shifting these peak and 0 points, information is embedded. It provides high information hiding capability with low distortion. The input image is split into blocks. Shifting of the bar graph is finished on every block. Because of that information, hiding capability is increased, and visual quality is improved further. Embedding image at intervals blocks is a lot of in quantity as compared with embedding at intervals one image. This method doesn't permit overflow, and underflow drawback that's grayscale exceeds on top of 255or falls below zero [5].

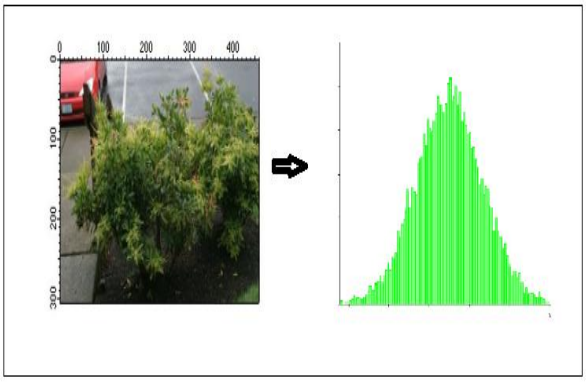

Fig 2 image convert into the histogram

II.RELATED WORK

Jiantao Zhou et al. [9] proposed another reversible data hiding scheme over encrypted images. The data embedding is achieved through a public key modulation mechanism, and so there is no need for a secret key. It is a grand two-class SVM classifier at the receiver side to distinguish between encrypted and non-encrypted image patches, and it also allows to jointly decoding the embedded message and the original image. The data embedding is done by simple XOR operations, without the need for accessing the secret key.

Ashwind S et al. [10] a novel method is proposed by reserving room before encryption with a traditional RDH algorithm. It maintains the excellent property that the original image can be losslessly recovered after embedded data is extracted while protecting the image content's privacy. An algorithm on Reversible Data Hiding on images and data enhances not only the data transmission but also data security.

X. Zhang et al. [11] Digital watermarking is a kind of data hiding technology. Its basic idea is to embed covert information into a digital signal, like digital audio, image, or video, to trace ownership or protect privacy. Among different kinds of digital watermarking schemes, reversible watermarking has become a research hotspot recently. Compared with traditional watermarking, it can restore the original cover media through the watermark extracting process; thus, reversible watermarking is very useful, especially in applications dictating high fidelity of multimedia content, such as military aerial intelligence gathering, medical records, and management of multimedia information. Reversible watermarking scheme based on additive interpolation-error expansion, which features very low distortion and relatively large capacity. Different from previous watermarking schemes, we utilize an interpolation technique to generate residual

values named interpolation-errors and expand them by adding to embed bits. The strategy is efficient since interpolation-errors are good at de-correlating pixels, and additive expansion is free of expensive overhead information.

M.S Hwanga et al. [12] planned a histogram shifting technique for image reversible data hiding testing on high bit depth medical images. Among image local block pixels, the high correlation for the smooth surface of the anatomical structure in medical images are exploited. Thus a different value is applied for each block of pixels to produce a difference histogram to embed secret bits. During data embedding, the image blocks are divided into two categories due to two corresponding embedding strategies. Via an inverse histogram shifting mechanism, the host image can be accurately recovered after the hidden data extraction

T.Wang et al. [13] a new and reversible watermarking method is proposed to address this security issue. Specifically, signature information and textual data are inserted into the original medical images based on recursive dither modulation (RDM) algorithm after wavelet transform and singular value decomposition (SVD). In addition, differential evolution (DE) is applied to design the quantization steps (QSs) optimally for controlling the strength of the watermark. Using these specially designed hybrid techniques, the proposed watermarking technique obtains good imperceptibility and high robustness. Experimental results indicate that the proposed method is not only highly competitive but also outperforms the existing methods. Localization algorithms, e.g., the Dead Reckoning, the maximum likelihood estimation (MLE) and the Sequential Bayesian estimation (SBE). To the best of our knowledge, the reference is the first survey focusing on MWSNs localization.

L. Dong et al. [14]. Proposed a novel reversible image data hiding method (RIDH). In this paper, the two-class SVM classifier is designed to separate out encrypted and non-encrypted patches of images. This method provides higher embedding capacity and it also able to reconstruct the original image and embedded message. Mainly, the RIDH algorithm is designed for plaintext documents. In this message bits are embedded into the original image; hence we can say that it works for lossless compression algorithm for certain compression features of images. The DE, i.e. different expansion method improves the prediction error expansion (PEE)-based strategies which offer the state-of-the-art capacity distortion performance. The proposed two-class SVM classifier can efficiently separate outs the encrypted and non-encrypted patches of the image.

Siva Jana Kiraman et al. [15] proposed a grey block embedding method LSB bits are modified based on the MSB bit plane. In the embedding process, the grey image is divided into the 4*4 blocks further divided into 2*2 blocks. The embedding process is done in 2 phase outer embedding and the inner embedding. In the outer, a reference point is found in each of the 2*2 blocks and base o the MSB bit plane of than reference point in the 2*2 block the secret data is\ embedded into the other pixels. In the inner embedding, the values of the reference point have been changed to increase the security. In the extracting process, the reference point value is bought back and based on the reference point value, and the actual value is extracted from the stego image. The proposed scheme increases the embedding capacity and security by the complexity.

Zhaoxia Yin et al. [16] since there is good potential for practical applications such as encrypted image authentication, content owner identification and privacy protection, reversible data hiding in encrypted image (RDHEI) has attracted increasing attention in recent years. In this paper, we propose and evaluate a new separable RDHEI framework. Additional data can be embedded into a cypher image previously encrypted using Josephus traversal and a stream cypher. A block histogram shifting (BHS) approach using self-hidden peak pixels is adopted to perform reversible data embedding. Depending on the keys held, legal receivers can extract only the embedded data with the data hiding key, or, they can decrypt an image very similar to the original with the decryption key. They can extract both the embedded data and recover the original image error-free if both keys are available. The results demonstrate that higher embedding payload, a better quality of decrypted-marked image and error-free image recovery are achieved.

III.EXPECT OUTCOME

The infield of digital image processing and determine the number of challenges like more MSE and low PSNR in BHS method. Improve digital image encryption, or data hiding is the basic means of copyright protection to copyright, the product identification code and the buyers of information (called watermark) into digital products and best solution.

IV. CONCLUSION

A study on numerous reversible information hiding techniques is performed. Reversible information hiding schemes for an encrypted image with a less PSNR computation is analyzed, that consists of image cryptography, information activity and information extraction/ image recovery phases the initial pictures are encrypted by a cryptography strategy. Thus a study regarding a cryptography strategy is performed. Though a data or information hider doesn't know the initial content, he will infix the key information into the

encrypted image. Reversible information hiding in encrypted pictures may be a new topic drawing attention as a result of the privacy-protective necessities from cloud information management. Previous ways implement RDH in encrypted pictures by vacating area once cryptography, as against that is projected by reserving area before cryptography. Therefore the information hider will take pleasure in the additional area emptied get in the previous stage to form data hiding method effortless. This methodology will profit of all ancient RDH techniques for plain pictures and reach wonderful performance while not loss of good secrecy. These novel methodologies are able to do real changeability, separate information extraction and a great improvement on the standard of marked decrypted pictures. Hence the receiver can easily extract the image and the secret data error-free according to his needs by using both the histogram shifting and any one of them, as this method is highly separable. Compared to the other existing BHS methods, the proposed method highly improves the embedding rate, as well as the PSNR of the image, is also good. The above work is simulated using MATLAB simulation tool.

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