

Hiding the Military Secret Message by Reversible Data Hiding

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II. RELATED WORK

Encoding and Decoding Methods are used to secure important information.

Encoding:

In Military Secret Message (MSM) Method has following steps:

- Select the image that could be encode the secret data.
- Encode the data into the color image.
- Pixels are select from alternate location of pair of text.
- Image having details about pair of text.
- The image is encoded in each color frames R,G and B Respectively.
- Encode the text as a bit of color image.
- The image consists of secret data embedding in the selected image.
- The original image can be overwrite the secret data in that image.
- To increase the Transferring rate of image the data can be compressed.
- After embedding the data the encrypted key can be used to secure data.

Decoding:

- The secret data recover from the encoded color image.
- Encoded color image which has the information of secret text.
- The LSB bit of color image has '1' or '0'.
- The resulted encoded text which has the pixels of that image.
- The recovery of secret data can be drawn from the original image .
- The secret data can be viewed by the receiver.

III. REVERSIBLE DATA HIDING

A reversible data hiding is a kind of process covertly embedded in a noise-tolerant signal such as audio or image data. It is used to identify ownership of the copyright of such signal. It is the process of hiding digital information in a carrier signal. The hidden information does not need to contain a relation to the carrier signal. It may be used to verify the authenticity or integrity of the carrier signal or to show the identity of its owners. It is used for tracing copyright infringements and for banknote authentication.

Abstract: A data hiding is a technique that is used for embedding the important information into images. In reversible data hiding, the degradation of the original image is not allowed, such as medical imagery and military imagery. The secret data is embedded in the compression domain and the receiver wants to store the image in a compression mode to save storage space. An encoding message can be compressed and encrypted by the secrete key. A decode message consists of secret data that can be viewed by the encrypted key. This paper proposed a MSM (Military Secret Message) method which restores the important data. The experimental result shows that proposed system can provide good performance to secure important data.

Keywords: MSM, Secure data, RDH.

I. INTRODUCTION

The main aim of data hiding is to enhance communication security by embedding secret messages into an inconspicuous carrier and there by transmitting them to receiver [4]. The embedding process will usually introduce permanent distortion and reconstructed from the marked image [1]. The uncompressed image using an encryption key to produce an encrypted image and then a data hider embeds additional data into the encrypted image using a data-hiding key. To apply reversible data hiding to encrypted images by wishing to remove the embedded data before the image decryption [2].The information is embedded the data that it is perceptually and statistically undetectable .Data embedding also provides an embedding important control and information [3]. Reversible data embedding, which is often referred to as lossless data embedding, is a technique that embedding the data into an image in a reversible manner [5]. The original uncompressed image using an encryption key to produce an encrypted image and then a data hider embeds additional data into the encrypted image. To reduce transmission time the data compression is necessary [6]. The encrypted image can be compressed by using several techniques. In Lossy compression of an encrypted image flexible compression ratio is done [7]. The data exchange involves transmission of different types of data format such as medical images, texts, and graphs. Data hiding techniques can be also used for authentication [8]. As an effective means for security protection, encryption converts the ordinary signal into rough data, so that the traditional signal processing usually takes place before encoding or after decoding [9].

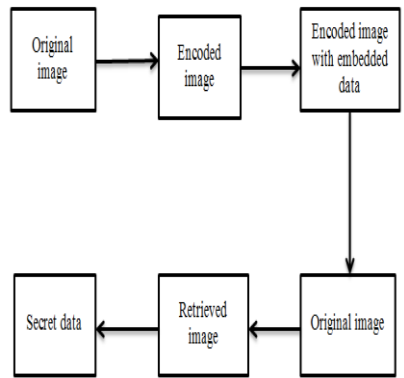


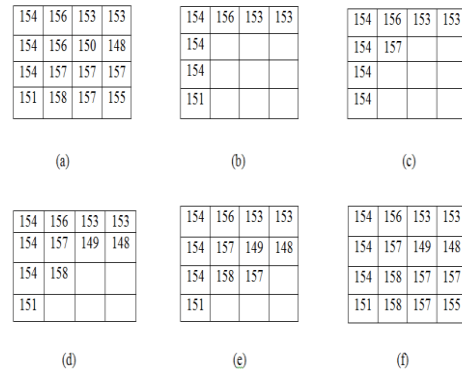
Fig 1: The process of Reversible data hiding

A data is embedded into a digital signal at each point of distribution. If a work is found later, then the data may be retrieved from the copy and the source of the distribution is known. Data hiding is the principle of segregation of the design decisions in a computer program that are protecting other parts of the program from extensive modification if the design decision is changed. The protection providing a stable interface which protects the remainder of the program from the implementation. Compression schemes can be roughly divided into two classes. Lossless compression, here can't afford to throw away any data at all and the compressed data must be completely recoverable. That is, the compression must be reversible.

1. Hiding the Secret bits:

Data hiding is concealing information in a host signal, such as text, image, audio, or video. Binary images are two-color images, with a 0 or 1 value for each pixel, in which each pixel requires only one bit representation, to indicate black and white. The difficulty lies in the fact that changed pixel values in a binary image are visually very noticeable. Hiding data in images is therefore more challenging the hiding it in other formats. The pixels in an image are grouped into non-overlapped blocks, each consisting of a number of adjacent pixels. For instance, it could be a horizontal block consisting of four consecutive pixels. A discrimination function that can capture the smoothness of the groups is established to classify the blocks into three different categories, Regular, Singular and Unusable. An invertible operation F can be applied to groups. That is, it can map a block from one category to another as $F(R)=S$, $F(S)=R$, and $F(U)=U$. It is invertible since applying it to a block twice produces the original block. In applications, such as in law enforcement, medical image systems, it is desired to be bale to reverse the stego media back to the original cover media for legal consideration. In military imaging, high accuracy is required. In some scientific research, experimental data are expensive to be achieved. The reversibility of the original media is desired. The data hiding schemes

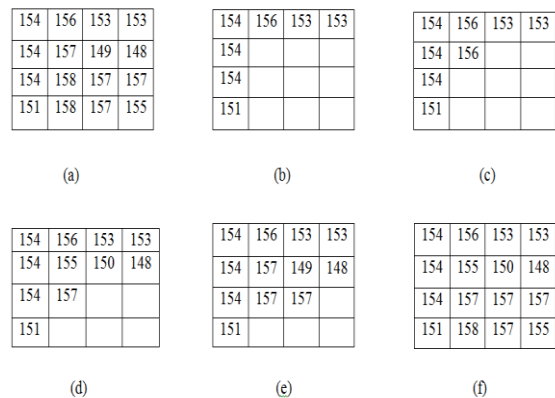
satisfying this requirement can be referred to as lossless. The terms of reversible, or invertible also used frequently.



(a) Original image, (b) initialized matrix and (c),(d)- (f) processing element results in matrix.

2. Recovery of Secret bits:

The recursive construction performs better than the non-reversible embedding code and compressed under the condition of the marked block. We will improve the recursive construction to the rate distortion bound for any given distortion. to improve recursive construction the use compressed algorithm in embedding code. To recover the message and reconstruct must be performed in a back word manner. All the reversible data hiding techniques in the first category aim at fragile authentication, instead of hiding large amount data. The amount of hidden data is rather limited and may not be suitable for applications such as covert communications and medical data systems. The first reversible data hiding technique, referred to as R-S scheme, which is suitable for the purpose of having high data embedding capacity. Later, a difference expansion scheme was developed, which has greatly advanced the performance of reversible data hiding in terms of data embedding capacity versus PSNR of marked images with respect to original images. Recently, some integer wavelet transform based reversible data hiding schemes have been developed which have demonstrated superior performance.



(a) Original image ,(b) initialized matrix and (c)-(f) results of processing elements in matrix.

IV. PROPOSED SYSTEM

The secret image is nothing but the original image. The secret message can be encoding in the MSM method. After that the original image has been decoding for the secret data. Hence from the sender to receiver the secret data has been hiding from one place to another place.

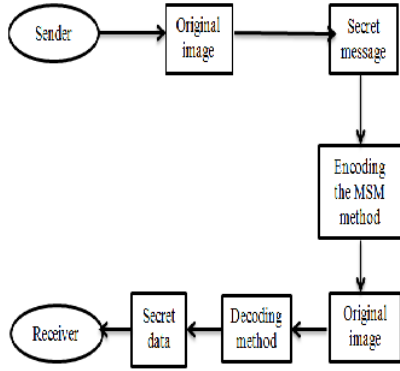
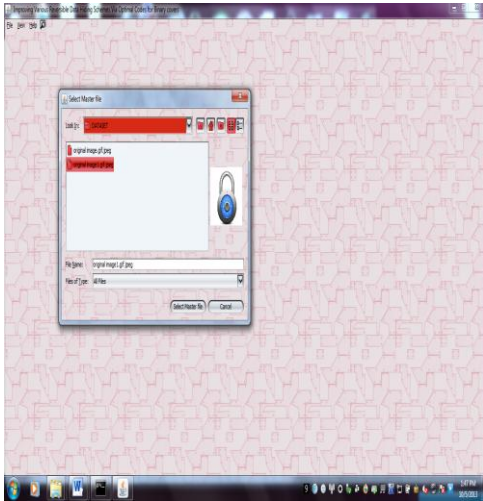
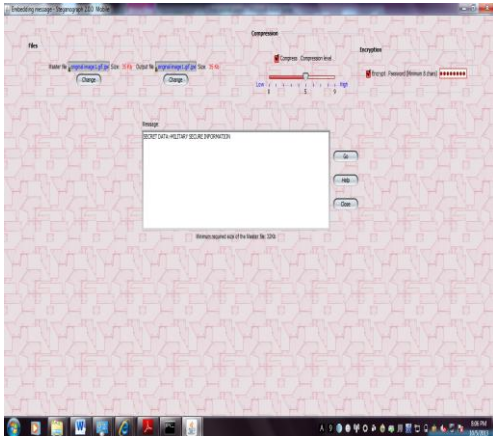


Fig2: Architecture of proposed System

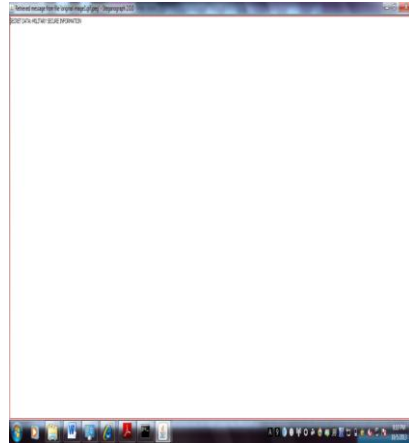
V. EXPERIMENTAL RESULTS



Choose the Original image



Military Secret Data can be encoding into the Original image



Recover the Important information from the Original image

VI. CONCLUSION

In this paper, we proposed Military Secret Message method for transmitting the secured message. The experimental result shows that the secret data can be encoded and decoded. In future work, we will pay our attention to secret file transmitting to one place to another place.

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