



## **TRANSMISSION RISK REDUCTION USING LSB REPLACEMENT ALGORITHM**

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**Abstract— This paper gives idea about for sharing the secret information without affecting its privacy. Steganography is a technique that hiding confidential information in such a way that no one, apart from the sender and intended recipient, suspects the existence of the message. Steganography has a number of applications. It is used for transmitting financial documents, banking applications, remote electronic voting applications, sharing secret information, authentication & validation. In day to day life information is increasingly important and gets more value when shared with others. To provide security for sharing information various techniques proposed for the Steganography. In this paper proposed a new technique of image steganography i.e. LSB replacement and Image encryption for providing more security to data as well as our data hiding method. In LSB replacement steganography replaces the last bit of each of the data values to reflect the message that needs to be hidden.**

**IndexTerms—Cryptography, Steganography, LSB, Encryption, Data hiding.**

### **I. INTRODUCTION**

Nowadays, information gets more value when shared with others. Due to internet, it is possible to share information like audio, video, images easily. Everyone wants to keep the secret information of work to be safe. But at certain level security related issues are there. Hackers access unauthorized data. Steganography and Image encryption are used to solve this problem.

Steganography is a technique that hiding confidential information in such a way that no one, apart from the sender and intended recipient, suspects the existence of the message. Generally this can be done by encoding the secret information. In this the secret message is made to hide in the cover image so that it couldn't be identify to any person that whether there is any message hidden in the information being shared. Steganography word is the combination of two Greek word "stegos" and "graphie". For the Greek word Stego means "cover" and graphie means "writing". Steganography is the art and science of secret communication. In practice it is encoding/embedding secret information in such a way that the existence of the information is invisible.

In this paper develop a LSB replacement algorithm for hiding data into the image. In LSB replacement steganography replaces the last bit

of each of the data values to reflect the message that needs to be hidden.

## II. PROPOSED SCHEME

The block diagram of the Natural image based visual secret sharing using steganography is as follows. The block diagram consists of three modules such as feature extraction, encryption and hide-noise like share. The three meaningful shares can be of different types of images. These images can be of any type such as printed images, digital images, hand printed pictures, even flysheet etc.

### A. Feature Extraction Module

Gray scaling includes black, white and also some shades of gray. Thresholding is the simplest method of image segmentation. From a gray scale image, thresholding can be used to create binary images. In Password generation, calculate the number of black and white pixels. Then generate one key. This key is used for the encryption. When a large amount of noise clusters together, the image is severely disrupted; this makes it impossible for the naked eye to identify it. The pixels-swapping process is used to cope with this problem.

### B. Encryption

Input: 3 natural images and one secret image.  
Output: Noise-like share.

### C. Hide the Noise-like Share

To reduce the transmission risk of share S, the share is concealed behind cover media by the data hiding process like Steganography. Steganography is art of concealing of message on a file within another message, word or file.

Input: Generated noisy share.

Process: The dimension of the cover image must be larger than that of the secret image. Least Significant Bit (LSB) embedding is a simple strategy to implement steganography.

Output: Stego Image.

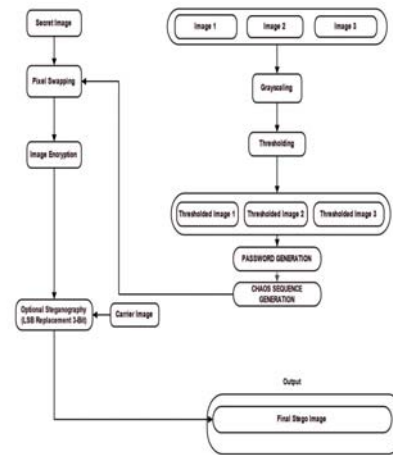


Fig .1

## III. IMPLEMENTATION

### A. Image encryption

1. Read the three images
2. Convert these three colour images into the gray scale.
3. Then convert into the thresholding.
4. Assume the initial value of the password is zero.
5. If  $x=y=0$  then calculate black pixels.
6. If  $x=y=1$  then calculate white pixels.
7. Add password value into the black and white pixels. Then we get the first password value.
8. In this way calculate the black and white pixels of the second and third image.
8. Then add the calculated black and white pixels in the first password value.
9. Then the password is generated using the three images.

### B. LSB Replacement Algorithm

1. Read the carrier image.
2. Load the file path.
3. If not load the file then it shows that the file path is empty.
3. Initial value of key is 1.
4. If not written the key then default value of key is 1.
5. Otherwise written the key.
6. Read the file path and read the file size.
7. Calculate required length bits.
8. Hide the data serially.
9. Actual file data write
10. Then stego image is seen.
11. Load the stego image.

12. Enter the same key that used in steganography
13. Then performing the desteganography the data is hide in the image.

#### IV. EXPERIMENT AND RESULT

##### A. Image Password Generation

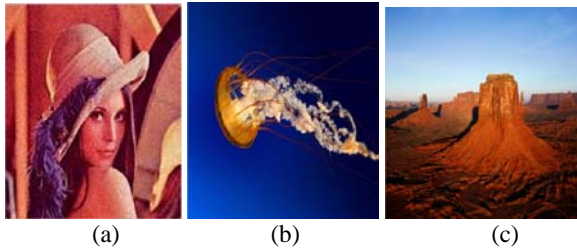


Fig.2 Original Images

We have implemented Image password generation algorithm on an images using MATLAB. First we have to take the original images figure (2) (a),(b),(c) . Then color to grey scale image conversion figure (3).

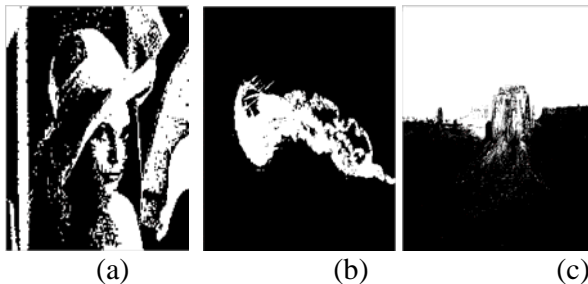


Fig. 3 Thresholding Images

Calculate the black and white pixel values using these 3 images. Initial value of the password is zero. This password value is added in the calculated black and white pixel values .Then generates one key is 155408.

##### B. Result for the LSB replacement



Fig. 4 Carrier Image

First we have taken the carrier image. Then take the secret image and enter the password. After applying the LSB replacement algorithm we get the stego image.

Hello

Fig. 5 Secret Image



Fig. 5 Stego Image

#### V. CONCLUSION

We have implemented Image password generation algorithm and LSB replacement algorithm in MATLAB. Key is generated using Image password generation algorithm. This is used only for the encryption. Data is hiding using LSB replacement algorithm. This algorithm provides an easy way to hide secret information in images. Stego image is seen. In this image the data is hide so that it couldn't be identify to any person that whether there is any message hidden in the information being shared.

#### REFERENCES

- [1] J. Fridrich, R. Du, and M. Long, "Steganalysis of LSB encoding in color images," in Proceedings of the IEEE International Conference on Multimedia and Expo. New York, USA: IEEE Computer Society Press, 2000.
- [2] Amanpreet Kaur<sup>1</sup>, Renu Dhir<sup>2</sup>, and Geeta Sikka<sup>3</sup> .A New Image Steganography Based On First Component Alteration Technique((IJCSIS) International Journal of Computer Science and Information Security, Vol. 6, No. 3, 2009)
- [3] J. Fridrich, R. Du, and L. Meng, "Steganalysis of LSB Encoding in Color Images," Proc. IEEE Int'l Conf.Multimedia and Expo, CD-ROM, IEEE Press, Piscataway, N.J., 2000.
- [4] Finlayson, G. D., Qiu, G., Qiu, M., Contrast Maximizing and Brightness Preserving Color to Grayscale Image Conversion, 1999.
- [5] Tarun Kumar, Karun Verma," A Theory Based on Conversion of RGB image to Gray image", International Journal of Computer Applications Volume 7– No.2, September 2010.
- [6] Arvind Kumar, Km. Pooja, "Steganography-A Data Hiding Technique" International Journal of Computer Applications ISSN 0975 – 8887, Volume 9– No.7, November 2010

- [7] A. Nissar and A. H. Mir, "Classification of steganalysis techniques: A study," *Digit. Signal Process.*, vol. 20, no. 6, pp. 1758–1770, Dec. 2010.
- [8] P. L. Chiu, K. H. Lee, K. W. Peng, and S. Y. Cheng, "A new color image sharing scheme with natural shadows," in *Proc. 10th WCICA*, Beijing, China, Jul. 2012, pp. 4568–4573.
- [9] Amirthanjan,R. Akila,R & Deepikachowdavarapu, P., 2010. A Comparative Analysis of Image Steganography, *International Journal of Computer Application*, 2(3), pp.2-10. [2] Bandyopadhyay, S.K., 2010.
- [10]Swati Tiwari1, R. P. Mahajan2 "A Secure Image Based Steganographic Model Using RSA Algorithm and LSB Insertion " in *International Journal of Electronics Communication and Computer Engineering* Volume 3, Issue 1, ISSN 2249 –071X