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Data Embedding and Extraction Using BPCS Algorithm

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Abstract:The steganography is the art of hiding the information and protect unauthorized access of the information. Steganography is a technique to hide secretes information in some other data without any loss of information. All the existing image stegnography technique having the limited percent of information hiding capacity, they can only hide 12-15% information of the vessel. the aim of the existing system is replace the frequency component of the image of replace the LSB bit of the image into the secret information, but the main aim of the proposed system Is to embedded the secret data or information in the bit plane of the image. To implement the proposed system use the characteristics of the human visual system, in this technique the human can't receive any information of the secret data in a complicated binary plane. To implement the proposed system we can can study the two methods of BPCS 1)web based BPCS 2)improved BPCS
Keywords-Steganography, WEB BPCS, improved BPCS, text informations, input images etc.

I. INTRODUCTION

The steganography is a technique of hiding the information the enables to secretly embed data when transferring file, moving file, the end user can't access and recognize the data without permission.the embedded data can't extract from any file however existing in the file. In stegnography technique hiding the information inside the image this image is also called as the carrier signal.the carrier is any media like audio, video inage etc.used to carry the information. With the help of digital technology the list of carrier has been existing like e-mails, audio and video, disk space and partitions and images etc.the two parts are more commonly used in information hiding.

In the steganography technique the data information is secret &it sends without any douts. The information in the form of image, text, video. The input information like text, video, images in which the secret information can be embedded. The input information can be hidden by any images, text or videos. Basically, stego-images in which the secret information can be embedded

1) Steganography 2) watermarking .3) cryptography

II. WATERMARKING

In the communication technique the the watermarking provide the copyright protection. In the existing watermark is often declared openly.in this technique the chances of information loss is more. The advantages of the stegnography over watermarking and cryptography is the messege can't attaract attension to themselves. The encrypted message no matter how unbreakable,will arouse suspicion and may in themselves be incriminating in countries where encryption is illegal[2].the cryptography only protects the contents of the message, where the stegnography can protect both messege as well as communication parties. In digital steganography use the electronic communication system can include steganographic coding inside of a transport layer such as document file, image file or protocol etc.

III. DESIGN AND IMPLEMENTATIO OF STEGANOGRAPHY

The figure shows the implementation of BPCS steganography, in the BPCS algoritham it separates the input images into bit-plane division.then the bit- plane is highly correlate with pixels of the bit-planes.[15]

This paper improves bit-plane complexity segmentation techniques, when the bit plane is highthen the pixel is also high.

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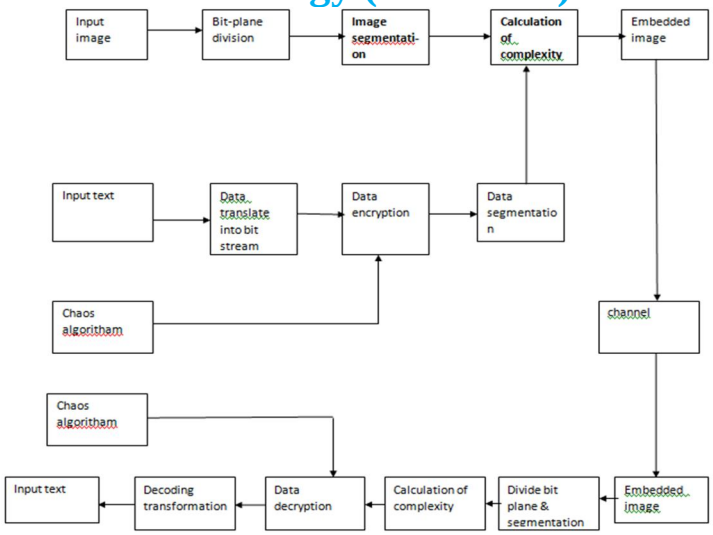

IV. CHARACTERISTIC OF STEGANOGRAPHY

Are several related goals to judge the steganography results are steganography strength, capacity, invisibility, undetectability Robustness,and signal to noise ratio .the capacity,undetectability and robustness are the three things that work opposition of each other. No steganography technique can be perfectly undetectable and robust and have maximum capacity [5].

V. DATA HIDDING TECHNIQUE: BPCS ALGORITHM

In the BPCS technique, the cover images seprates into two types like,informative region and noise-like region. The secret information is hidden into a noise block of cover image.

In LSB data is hidden by the last four significant bits.but in BPCS techniques the information is hidden in MSB as well as LSB planes.

VI. HIDING AND EXTRACTING DATA

Convert the sample 8 x 8 bit gray image into canonical gray form.the CGC format allow to manipulate the each bit plane without affecting the other bit plane that represent the each grayscale value.the 8 x 8 blocks are segmented within the image and each of the block is ocg form and each of having its own 8 x 8 plane.the complexity of the block is measure which is determined by the number of borders present in the 8 x 8 block for each plane.if the data embedded in the complex it can be embed in complex bit plane. If not, we will conjugate (exclusive or) the data with a checkerboard pattern (the most complex pattern possible) to ensure complexity. Once the data has been embedded, the image is converted back into the original format from CGC and saved. Extraction is basically the same as embedding, except if a bit plane is determined to be complex, it will then look at the conjugation bit and extract the data accordingly. Because the embedded data in the complex regions has to be complex, the complex regions before and after embedding data will remain complex. Color is basically the same process. However, it will have 3 8-bit grayscale values that represent each color, thus giving approximately three times the file size and three times the embedding capacity (to its corresponding grayscale version). A subtle other difference is that the color file has a slightly different file structure that does not contain a palette for the pixel values.[3]

ALGORITHM:

Convert the input images in png format.
Observe the histogram analysis.
Perform bit-plane coding.
Calculate the size of the images.
Perform BPCS algoritham.
Embedded images and text data to another uses.
Perform de-steganography and receive the original images.

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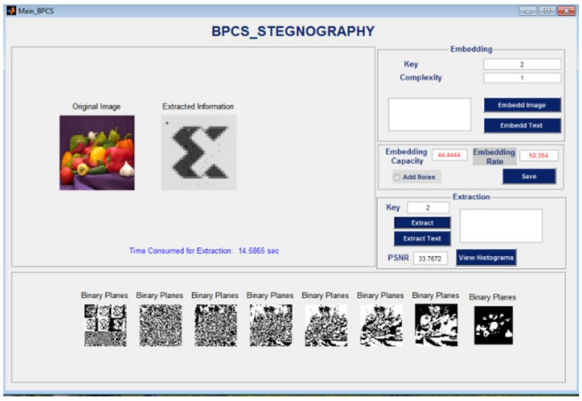
VII. RESULT & ANALYSIS

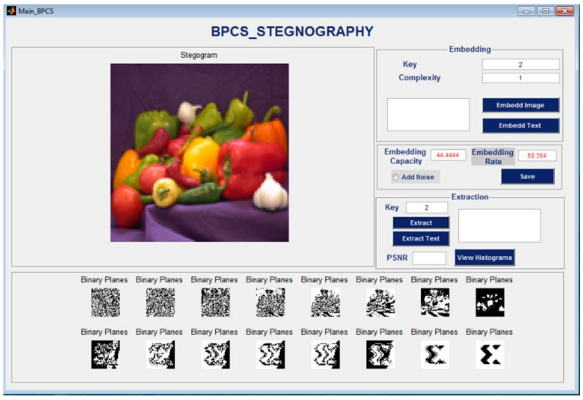
A. Step: 1

Firstly select the original image which should be greater in size than cover image. select the cover the image of size smaller then original image. We obtain the extracted information.



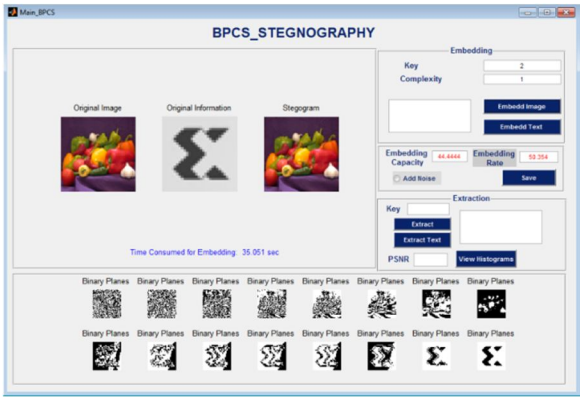
B. Step: 2

Here we embed the both original as well as cover image which we are hiding. By using bit plane coding steganography (BPCS) we divide the image into slices and thus the cover image will hide in the pixels of original image that would make more secure data to extract the cover information. Here we use the key that make more efficient data to hide and thus the security of the following data increases, and at the decryption same key will be used.



C. Step: 3

The final original image is obtained after embedding in which we hide our cover information.



D. Step: 4

The histogram plot of both the images is as shown in following diagram.

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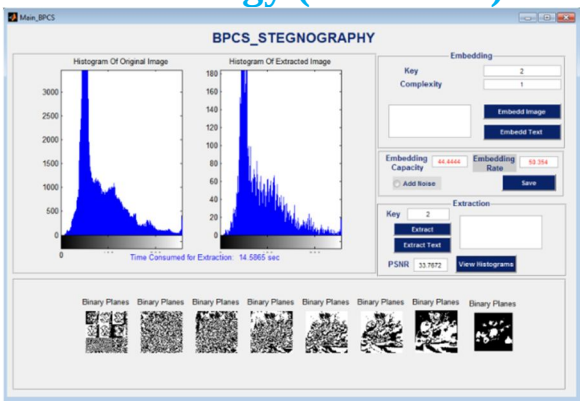

VIII. CONCLUSION

The aim of this paper is to demonstrate BPCS stegonagraphy, which is based on a property of the visual human system. The most important factor for this technique is that human can not see any information in the bit plane of color image if it is very complex. We have specified the two techniques of BPCS one is Web based anther is improved based BPCS technology. The advantages o this techniques provide a high security while, transmission the information internet communication. The original information is combined with image and both the information are encrypted and send over the internet. To adept this technique we used the improved steganography text based on the chaos and BPCS method and applied it to secret information.this design provide good visibility and high data embedding capacity etc.

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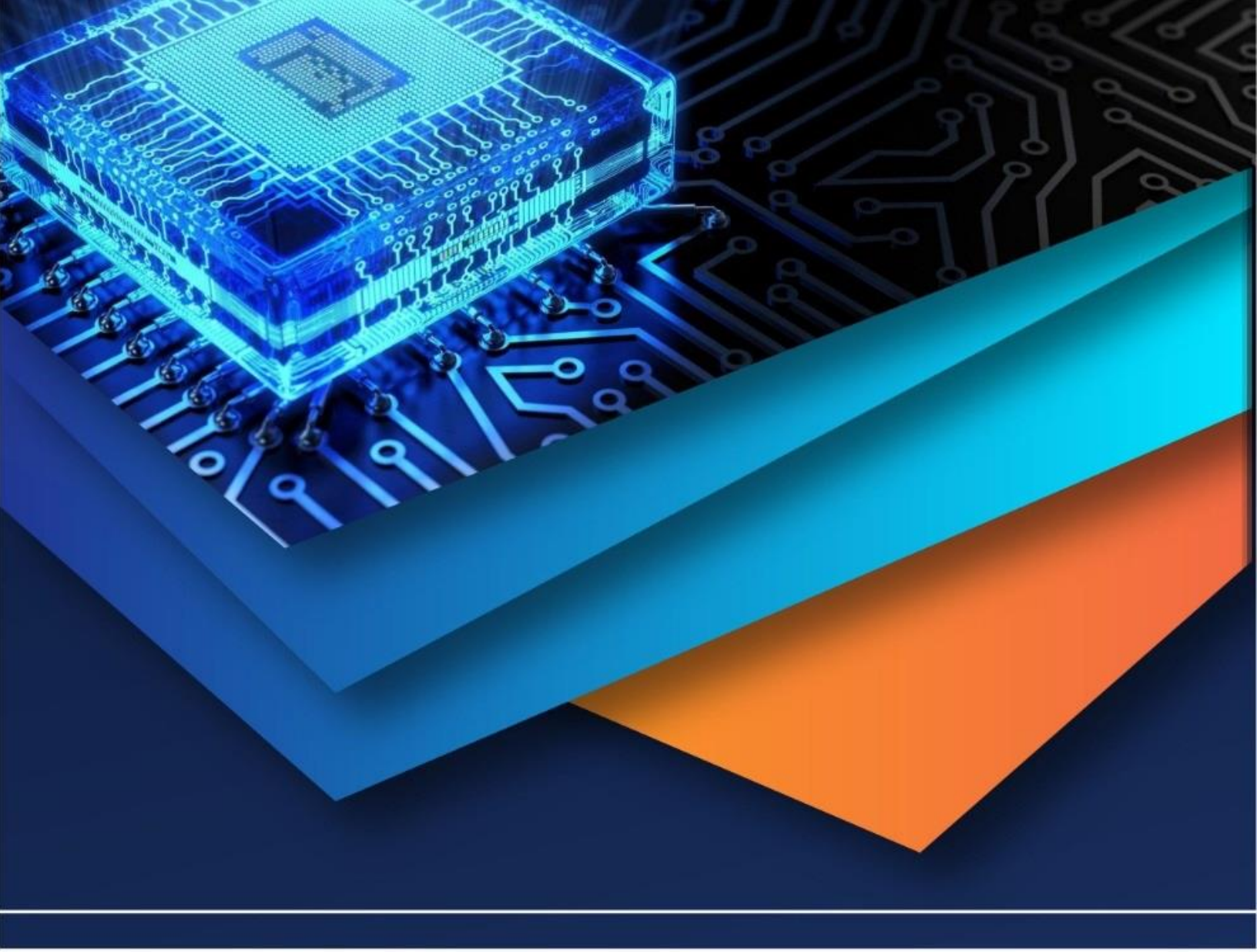

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