

ABSTRACT

In this paper, Position Based Pixel Swapping Standard Method has been proposed, which includes the secret data must be encrypted using key and hiding secret data in image using Data Hiding Algorithm. Applied higher group LSB method to it and finally hides the data into red, green and blue images of a selected data or information. Therefore, the proposed algorithm is a combination of encryption of any form of data or information first then hiding the any form of data or information into the cover image which provides double security. The result of the proposed algorithm is analyzed and discussed using MSE, PSNR, entropy.

KEYWORDS: Data Extraction, Data Hiding, least significant bit, MSE, PSNR, RGB images, Steganography.

INTRODUCTION

In the world of technology, data security is really a big issue such that the data or information cannot be mistreat for an illegal purpose. [11] Data Hiding is one of the techniques that have been receiving much attention now days. The main motive for this is encryption and decryption. Using this data or information is imperceptibly hidden. This art of hiding data or information is known as Steganography.

Steganography is one of the security in which data is secretly embedded in a cover image, where the actual data or information which want to be sent is completely changed to another form, and hidden data under a cover image and sent to the destination [12]. The person only who knows the technique to decrypt the data or information can easily decrypt the message. The performance of Steganography methods can be rated by three Parameters: capacity, security and imperceptibility. So “Steganography means hiding one piece of data within another.”

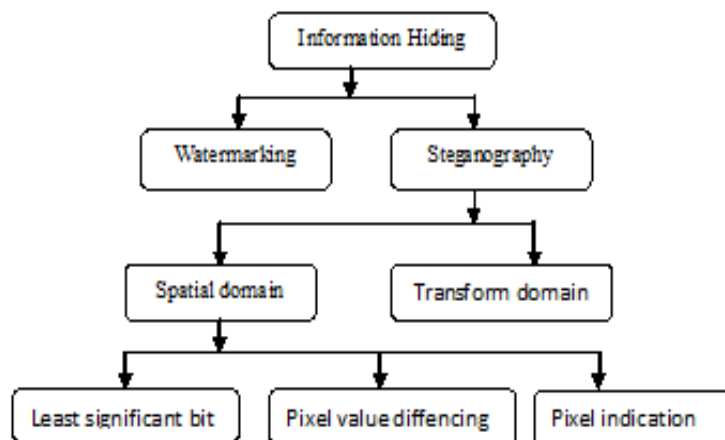


Fig1: Information Hiding Technique

The Steganography algorithm helps to perform secret communication. The most popular data formats used are .bmp, .jpeg, .mp3, .txt, .doc, .gif.

Cryptography concentrates on keeping the data and message content secretly whereas data hiding focus on keeping the existence of the message secret. [6] Data hiding is another most important technique for secured communication. The hidden data must be secure during transformation can be obtained by two ways: encryption and data hiding. A combination of the two techniques can be used to increase the data security.

LITERATURE SURVEY

In 2004 Tung-Hsiang Liu and Long-Wen Chang, [1] proposed data hiding technique for binary images. The proposed method embeds secure data at the edge portion of host binary image. Binary images consist of only two colors therefore changing any pixels in this image could be easily detected by human eyes. We find the best changeable pixels in a block by changing distance matrix dynamically and compute its changeable score by weighting mechanism. The proposed method uses the pseudo random number generator based on Rabin Public Key Cryptography System to embed secret data into a binary image. According to the pseudo random number generator, we can distribute secret data into the binary image to make binary image quality better and get high security.

In 2005 H.-C.Wu, N.-I.Wu, C.-S.Tsai and M.-S. Hwang [2] proposed Novel stenographic method based on LSB Replacement and Pixel Value Differencing (PVD) methods for improve the hidden secret data capacity and to provide an imperceptible stego-image quality. First, a different value from two consecutive pixels by utilizing the PVD method is obtained. A large difference value can be located on an edged area smooth area and the small one can located on smooth areas. Because the range width is variable, and the area in which the secret data is concealed by LSB or PVD method are hard to guess, the security level is the same as that of a single using the PVD method of the proposed method. From the experimental results, compared with the PVD method being used alone, the proposed method can hide much larger information and maintains a good visual quality of stego-image.

In 2008 Beenish Mehboob and Rashid Aziz Faruqi [3]. This paper discusses the art and science of Steganography in general proposed Novel technique to hide data in a colorful image using LSB. Many techniques are used in various formats to hide data in steganography. Least Significant Bit are normally used to hide data in a digital image. The idea of playing with 0's and 1's seem quite simple but a slight change in value may transform an image completely. The other bits may be used but it is highly likely that image would be distorted.

In 2009 AmanpreetKaur, RenuDhir, and GeetaSikka [4] proposed Image Steganography Based on First Component Alteration Technique. In this paper, introduced spatial domain technique having new steganography scheme. Hide secret data in cover-image using first component alteration technique. Techniques used so far focuses only on the two or four bits of a pixel in an image (at most five bits at the edge of an image.) which results less peak to signal noise ratio and high root mean square error.

In 2010.M.B. Ould MEDENI [5] proposed a novel steganographic method for hiding information within the spatial domain of gray scale image. The proposed approach works by dividing the cover into blocks of equal sizes and then embeds the message in the edge of the block depending on the number of ones in left four bits of the pixel. The proposed method not only has an acceptable image quality but also provides a large embedding capacity. The results are compared with the PVD method, and the values obtained are better than the PVD method.

In 2012 Tasnuva Mahjabin, Syed Monowar Hossain and Md. Shariful Haque [7] proposed data hiding method based on least significant bit (LSB) substitution and pixel value differencing (PVD). Using LSB & PVD methods achieved an increased embedding capacity and lower image degradation also improved security. An efficient and dynamic embedding algorithm was proposed here that not only hides secret data with an imperceptible visual quality and increased capacity but also make secret code breaking a good annoyance for the attacker. This feature of this method provides security of the hidden secret data.

In 2013 Komal B. Bijwe [9] proposed a shifting method with efficient higher LSB method and segmentation for data hiding with encrypted data into pixels region of a multicarrier image objects. We know that steganography is the science which takes place secret data communicating in an appropriate multimedia carrier, e.g. data, image, audio and video files. Using this method, it is useful to hide data or information secretly but for the different image file formats have different methods of hiding messages.

In 2014 Vinit Agham [10] proposed the novel separable scheme used for encryption. With using encryption it also include key. Using this scheme hide large amount of data without compressing and quality of image also maintain. But according to this paper, scheme is not work if data or information is in the form of sound and video.

In 2015 Sneha A. Deshmukh [12] proposed data is hidden in RGB component of pixels with LSB 5 bit Replacement method. In this an Authentication of Secretely Encrypted Message Using Half-Tone Pixel Swapping from Carrier Stego Image. This paper used a secured LSB (5 bit) for image steganography has been presented. In this the proposed method not only has an acceptable image quality but also can provide a large embedded secrete data capacity.

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