

ENHANCED VISUAL SECRET SHARING MODEL IN CLOUD ENVIRONMENT

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Abstract: Nowadays, image data centralization and accessing are the most important process to achieve availability of images for further use. These tasks can be done through the cloud storage environment because it deals with the private secure data storage and sharing. In cloud storage, the confidential data can be stored and shared to the other user inter and intra clouds. In which for data availability and confidentiality in cloud storage using visual secret sharing scheme. To improve the strategy of cryptographic technique in secret sharing for cloud environment using Enhanced Visual Secret Sharing (EVSS) model with optimization of secure data storage and retrieval process. The improvements in efficiency as well as in throughput of the cycle time of storage and retrieval can be optimized through the optimization procedures. The throughput of the cryptographic strategic of secret sharing is optimized using Artificial Bee Colony optimization algorithm. The accuracy performance shows that the proposed algorithm can be proved through its implementation results through the MATLAB and virtual cloud environment tool.

Key terms: Visual secret sharing scheme, Artificial Bee Colony optimization, Cryptographic strategy

I. Introduction

With the innovations in Information technology and data storage, large amount of data can be stored and shared over the internet world using Cloud services such as iCloud, Flickr and Google Drive. Cloud computing [5] [6] [8] growing day by day with the feature of centralization of data that satisfies the data availability as exists in anywhere. It is most important to concentrate on the security policies and issues over the data storage and sharing in the cloud environment. For that, private clouds are deployed and used to ensure the data confidentiality and security. It can also provide betterments in developments of image data repository with secret sharing features. Nowadays, the many application areas have been used to share their confidential data through the visual cryptographic schemes [1] [2]. Though the existing schemes were more efficient in visual data cryptographic schemes, the image data may used as a cover image for watermarked or masked the secret text content and somehow the secret image can also be masked into the cover image for sharing [4].

In this paper, a novel Enhanced Visual Secret Sharing Scheme has been developed using the bit wise XOR operations held at the least significant bits of cover image. Thus the masked image can be stored and shared over the private cloud environment. This methodology can be supervised and also its efficiency for completion time can be improved through the Artificial Bee Colony optimization algorithm [8][9]. The experiments results can also be discussed to evaluate the efficiency of the proposed algorithm.

II. Related works

H Abdolrahimpour and E Shahab [1] have studied and reviewed all the existing techniques of the Visual Cryptographic schemes. It is the compilation of all the major applicable areas of visual cryptographic schemes. It concentrates on the algorithms based on block wise cryptographic techniques and their results should be compared with the entire existing works. In [2], they developed a mechanism for digital

watermaking method, this method uses a binary image for encode through watermark with the wavelet transform. This also achieved easier with the good visual visual quality.

S Patel and J Rao [3] have discussed the transmission risks through the implementation of secret sharing scheme using NVSS scheme. The different categories of medium of transmission through the management of visual secrecy were discussed and evaluated in that paper. The proposed scheme can reduces the unwanted interceptions over the shares while it is being transmitted. Z Zhou et al [4] have proposed the enhanced well known Thien and Lin's (k-n) secret image sharing scheme through the weaknesses at the time of image compression.

The secret sharing can be done over the secure cloud environment. In [5], the existing system can be done through the histogram modification based scheme. In order to maintain the data confidentiality, security and integrity of the image data, they proposed this scheme with the cloud storage. To ensure privacy and security over the images in the cloud can be done through the proposed system. Saravanan.N et al [7] have proposed methodology for performing task scheduling in cloud sources with optimized using Artificial Bee Colony optimization technique. It preferably proposed to avoid SLA violations in the cloud services.

III. Enhanced Visual Secret Sharing (EVSS) Model

It is proposed to create a model with the enhanced visual secret sharing schemes has illustrated in the figure 1. The end user need to share the secret in an image. The user has to give the text secret and the cover image for sharing. The secret text can be converted into binary codes. Initially, the cover image can be preprocessed through the image scaling. The cover image can be denoised through the Gaussian Filter to perform secret sharing. In this filtering technique, the Gaussian noise can be applied to the image and then processed to remove the noises; it can also remove the initial unwanted noises in the cover image.

The Artificial Bee Colony optimization applied to the following process to obtain the optimized solutions for the problem of secret sharing in a cover image. Initially the image pixels can be expanded through the image pixel separation processes. Thus the least significant bit of the image can be identified for XOR operation with the bit value of the text secrets.

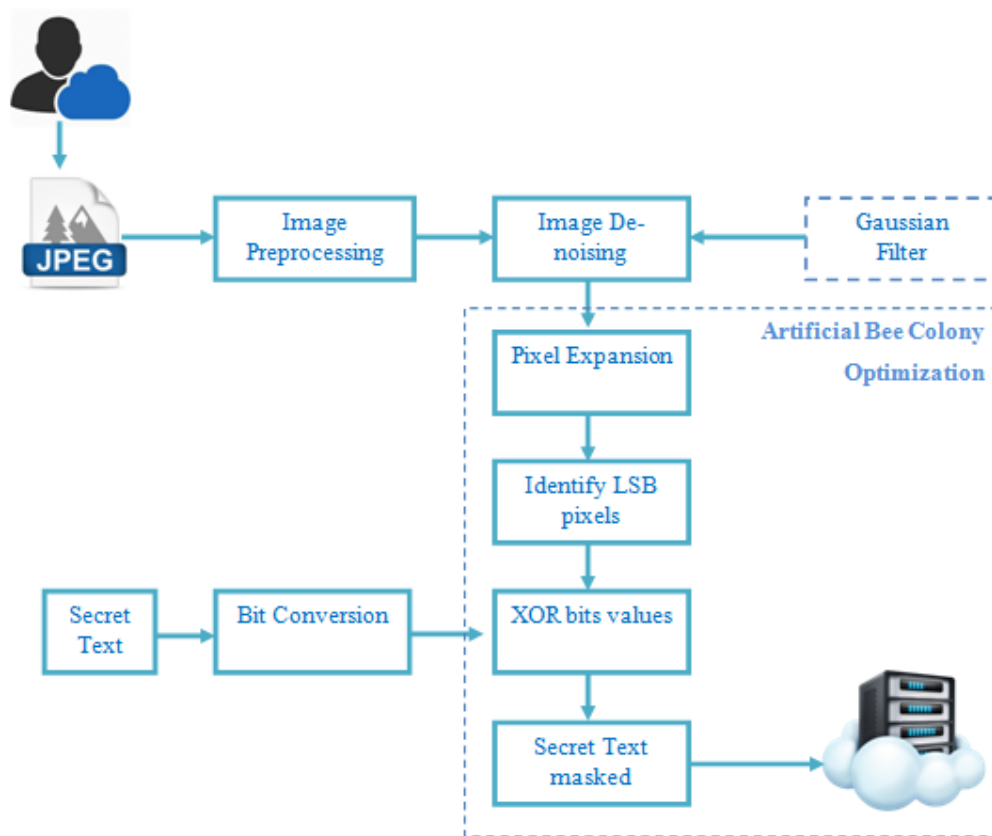


Fig.1 Enhanced Visual Secret Sharing Scheme Architecture

The secret text masked image can be stored in the cloud environment. It can be shared to the members of the cloud. Thus the optimization technique can be utilized in these processes to perform as much as good rather than the existing. It can be optimized by means of appointing three bees such as Onlooker bee, scout bee and Employee bee to perform these operations in higher efficiency.

IV. Optimization in Secret Sharing and Cloud Storage

Here the optimization of the processes such as pixel expansion, XOR operation of bits and storing into the cloud environment. The Artificial Bee Colony optimization can be performed as follows using these three bees.

Onlooker bee – Initialize to work and make schedule

Employee bee – Perform secret sharing and storage

Scout bee – Monitoring and administration

The Onlooker bee works for performing what are the operations are in queue. It organizes and schedules the work process to make implementation of secret sharing and cloud storage. The employee bee is the one working for the processes to make those operations. The scout bee allocated for monitoring the other bee works.

V. Implementation Results

Thus the implementation can be done through the MATLAB tool to make visual secret masking and it has stored in the virtual machines for sharing into the cloud users. The input cover image has been illustrated in the figure 2.1. Let us consider the secret text “Enhanced visual secret sharing scheme” may be masked into the image that has been displayed in figure 2.2.



Fig.2.1 Original Input cover image



Fig.2.2 Original Input cover image

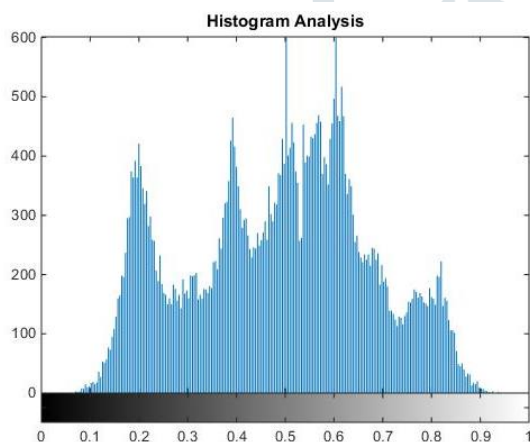


Fig.3.1 Histogram Analysis for original image

PSNR ratio is 50.0024

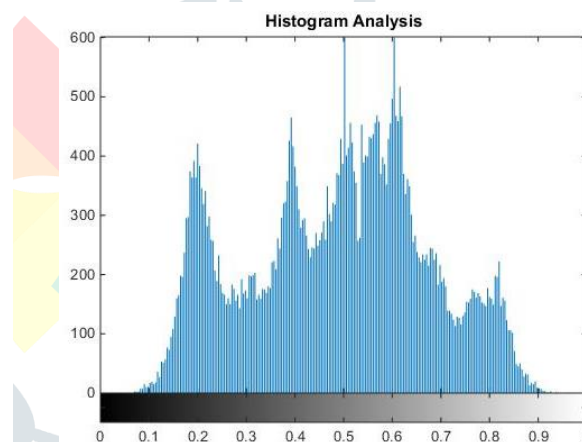


Fig.3.2 Histogram Analysis for secret masked image

PSNR ratio is 50.0256

The obtained results can be compared with the histogram analysis. The variations in the histogram analysis for original image and the secret masked image can be displayed in the figure 3.1 and figure 3.2. The performance of the scheme can also be compared with the PSNR ratio of the images. There is so fewer variations in the PSNR ratio identified that proved the performance of new proposed scheme.

VI. Conclusion

Thus the proposed algorithm can be developed through the entirely extreme technique called Enhanced Virtual Secret Sharing Scheme. The main advantage of this proposed scheme is reduced PSNR ratio when compared to the existing works and also the variations in the histogram are also analyzed. The completion time of the text masking and cloud storing should be optimized through the Artificial Bee Colony optimization algorithm. However, the experiments have been done and evaluated through the

implementation of procedural secret masking and optimization. In future, it can be modified through the improvements in methodology of visual secret sharing through the audio or video files.

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