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SHARING VISUAL SECRETS IN SINGLE IMAGE RANDOM DOT STEREOGRAM

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Abstract- Image storage over the long time has been the major aspect of the current digital devices based system. The image has to be stores in the devices has to be transferred in the way that the quality of image not to be compromised and security has to be maintained. The loss less image cryptography has been in the view. The use of the Visual cryptography schemes(VCS) based image transformation has been proposed by the comparative study of the Huffman and the polar code models has been proposed in this work. The study has reviled that the use of the PC in comparison for the Huffman will enhance the image quality. The proposed work results are superior and has been stable over number of simulation criteria.

***KeyWords*: Visual Cryptography Schemes, Huffman, Polar Code.**

1. INTRODUCTION

The image cryptography deals with the two problems statement that are keeping the best image quality at any specified bit per rate in encryption and decryption, and performing this operation in the embedded style i.e., encodings of image at a specified type of the lower bit rates which are embedded in carrier image or file at the beginning of same stream of bit.

Image cryprography is nothing but hiding data in other file, but total size of the image but not reducing the quality of image. Based on the decryption of image the image can be also categorized into the two types:

- Lossy: it eliminate the content permanently can't be recovered later in the decompression Eg. Video and Sound.
- Lossless: file data is not loss after the decompression of the file Eg. Text or Spreadsheet files.

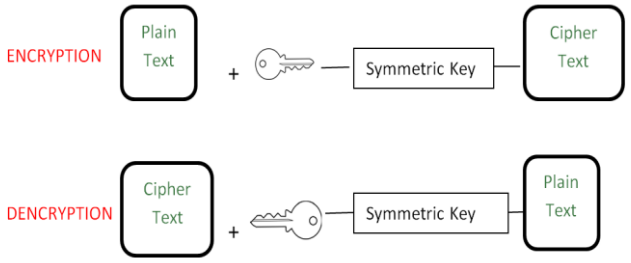

Fig1.1: Image Compression types

The proposed work is to hide the file and information data behind the images and transfer them over the network to provide security to the data in form of Random Dot Stereograms using Binocular Visual cryptography schemes (BVCS). By doing this the unauthorized users will not be able to identify the information

2. LITERATURE SURVEY

[1]In this paper the embedded zero tree wavelet transformation based algorithm (SIRDS) has been proposed which has the property that, every bits in image based bit stream are generated based on the importance, embedded code completely generated is stated. Code represents which is in the embedded format has to be in the sequence of the binary decisions which classify image as "null" image. Decoder in bit stream of the original image can end decoding in the image bit stream and is generated the exact image bit stream of image truncated bit stream.

[2]In this paper, the image compression based on the lossless polar compression scheme by using the q-ary memory less sources by adjusting the noiseless channel setting has been proposed. The Polar compression scheme for the binary image bit memory less sources has been stated by author. It is an generalized approach for the sources over the prime size alphabets. For decreasing the average codeword length of the compression scheme based on the iterative success cancellation list of the pre-decoding. The specific configuration in achieving the compression of image of the correlated sources has been considered, the polar compression schemes has been achieved at the admissible bit rate region.

[3]The author in this work has proposed the method of hiding secret message by using the cover image which will end user the unauthorized access is not permitted. The observer will not be able to realize hidden message. By this the user will be ensured the data security.An simple effective image coding technique has been propose by the author by using the image embedded in the zerotree run length wavelet (EZRW). The image coding algorithm is absed on the idea of the ZRW. It make the correlation of the data among the dominant pass and the subordinate pass in SIRDS. By this algorithm ratio of the compression is efficient than the SIRDS algorithm and with SPIHT algorithm for the most of test images.

[4]In this paper, lossy source coding based on the type of source-Gaussian by polar codes has been proposed. Author has stated the distributions in the planar mode of the discrete alphabet. The quantized approach and also by the adopting the Central Limit Theorem (CLT) approach. The alphabet size, when has been in the grows to the infinity value, the model of the polar codes will reach the rate distortion by the above stated Gaussian source. Comparing convergence rate on two of the distributions method, author has stated the quantized approach having convergence rate better than the CLT approach.

[5]The Haar wavelet approach in an low complex image in the 2D for the image compression has been proposed by the author and also the quality of the image is appraisal of has been proposed by the author. The transformed matrix is generated by the averaging and also by using the method of the differencing. In the wavelet co-efficient vales of the different thresholding, soft thresholding and the hard thresholding and also by adopting the universal thresholding.

2.1 Existing System

Channel coding, zip reversibly, allow the file to reduce size and keep the data intact, but the Jpeg image compression organized the visual observation of the input image and achieve the lossless image compression. And it will also reduce the quality of the image by image extraction mode.

Disadvantages of Existing System

- Picture quality is reduced.
- Recovery of the loss pixels is not easy.
- Total pixel of original and resulting image will vary.

2.2 Proposed System

We propose the comparison study of the binocular VCS (BVCS), called the (2, n)-BVCS, and a algorithm to hide image random dot stereogram (SIRDSs). It will perform the embedding of the zero trees wavelet of the input image and performs the coding algorithm by applying the source polar codes. (2,n)-BVCS differs in the sub band co-efficient operations. the SIRDS performs the DPCM encoding by adopting the low pass coefficients each will send the bits to the polar encoder, and other will perform in the high pass filter.

Advantages of proposed System

- It produces the image at high quality with least loss.
- PC (polar coding) will help to encode and decode in multiple bit rate.
- The PSNR of images are high compared to other methods.
- Fast bit stream efficiency can be achieved at multiple threshold values

3. METHODOLOGY

In this chapter we will describe the main modules which have been implemented in the proposed wok which are as follows.

3.1 Wavelet Transformation

The key functionalities of Wavelet Transformation are:

- Wavelets are enhanced in localizing edges and also better in the use of the other types of the anomalies.
- Yields : some of the Non-zero coefficients and also more type of the zero co-efficients.
- Difficulty: telling decoder exactly “where” and how the few of the non-zeros are.
- Significance map: binary array bit are pointing to the location of the zero or the alternative non-zero type of the coefficients.
- It needed the large value typically based on a fraction of bit under the value of the budget for specifying the SM.
- Wavelets will allows the structure which is based on the Zerotrees yields the efficient coding in the SM.

3.2 BVCS by Zerotree Coding

Every pixel based wavelet based coefficient value in the given image range at any given scale can be related to any of the multiple coefficients at alternative finer valued scale for the similar orientation.

- Zero tree root– ZTR is an low scale zero valued of the bit rate in the pixel coefficient for which the related higher-scaled values of the coefficients are treated as “zero-valued”.
- Specifying an ZTR based SIRDS image compression by using the Huffman encoder allows , SIRDS decoder to “track down” and also to

trace the zero valued out of all relevant higher-scaled valued in the coefficients

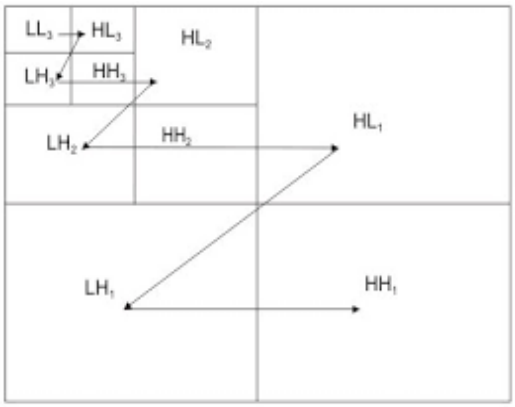

Fig3.2.1: Bvcs for Image Cryptography

3.3 SIRD Algoritham

The SIRDS uses an successive approximation based on the quantization together with the zerotree coding to provide the image embedding of the bit stream for the input image by the system.

The Sequence of the decreasing the values of the Thresholds values

- *To*, *T1*, . . . , *TN-1* with *Ti* = *Ti-1*/2
- coefficients of the ranging < 2 *To*

We will allow the 2 of the Separate Lists:

- Dominant type List – in which the coordinates of the pixel coefficients are not found and is considered to be the dominant significant.
- Sub-ordinate type List – in which the magnitudesof the image pixel coefficients are found and is considered to be the significant value.

Dominant Pass (Significance Map Pass)

- Coefficients values of the Dominant List compared with Ti.
- significance mapping result : zero tree coded
- sent :– Coding of the significance :- using the following 4 types of the symbols:
  - Zero tree root :- (ZTR)
  - Positive (+)ve Significant (POS)
  - Isolated Zero (IZ)
  - Negative(-)ve Significant (NEG)
- For every co efficient which has become the significant based on the image magnitude : in the Subordinate List & it has remove from the Dominant type of the List by the adaptive AC.
- Halve quantizer in the system cells for the next finer quantizer.
- If (magnitude co efficient : upper half compared to cell of old one, than "1".
- If (magnitude co efficient: lower half compared to cell old one, than "0".
- Entropy code in the sequence of the image refinement bits using adaptive AC.
- Stop if the total number of the bit budget has all exhausted.
- Encoded stream has the terminology as :
  - Initially we get an optimally lower rate of the version.
  - More number of the bits come : will get successive comparable better rate of distortion.
  - It will terminate at the time of required prior to the reaching of the fullrate

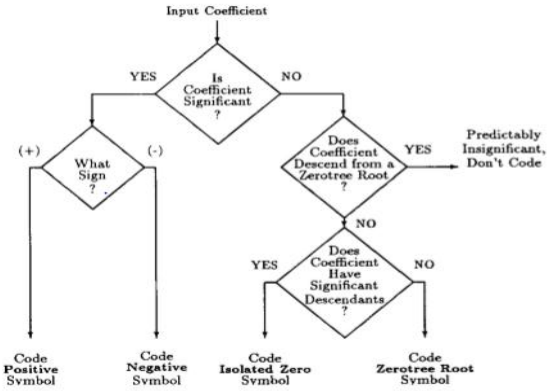

Fig 3.3.1: Encoding of significance Map

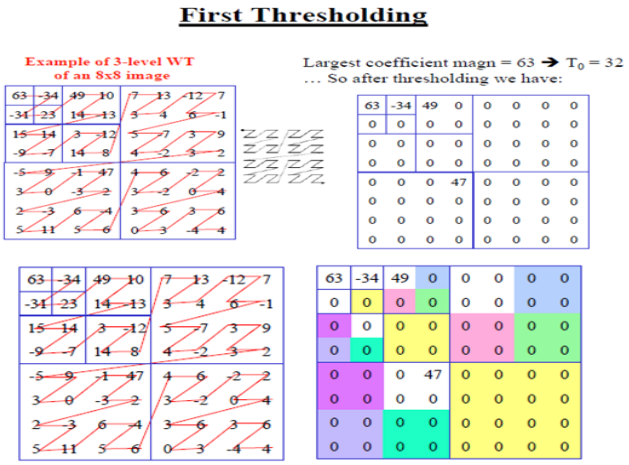

Fig 3.3.2: First Thresholding

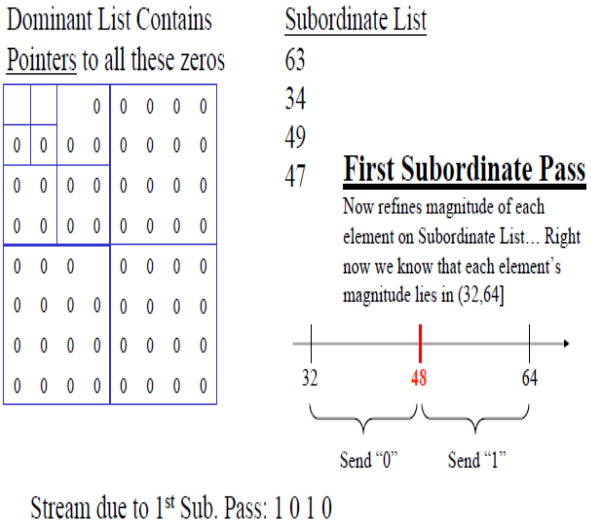

Fig 3.3.3: First Subordinate Pass

For each of the threshold set we perform two passes:

- Dominant Pass
- Subordinate Pass.

In the same manner for the first thresholding the image compression has been performed in the second pass by using the threshold value of the image t1=t0/2=16, from 8 to 16 bits.

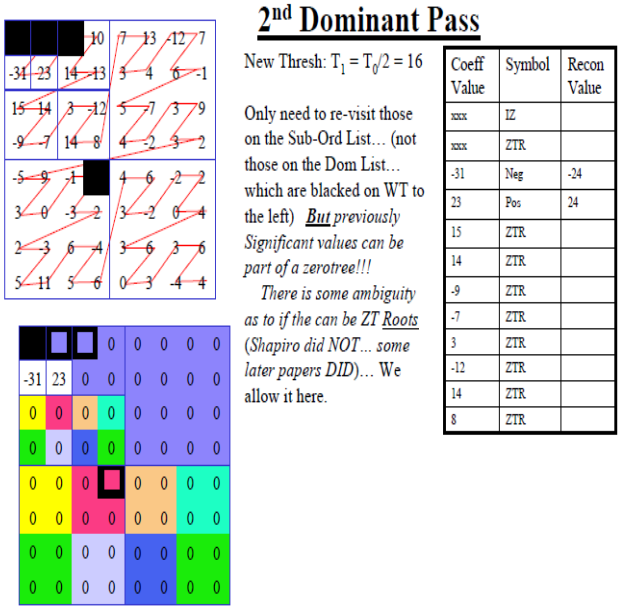

Fig 3.3.4: Second Thresholding

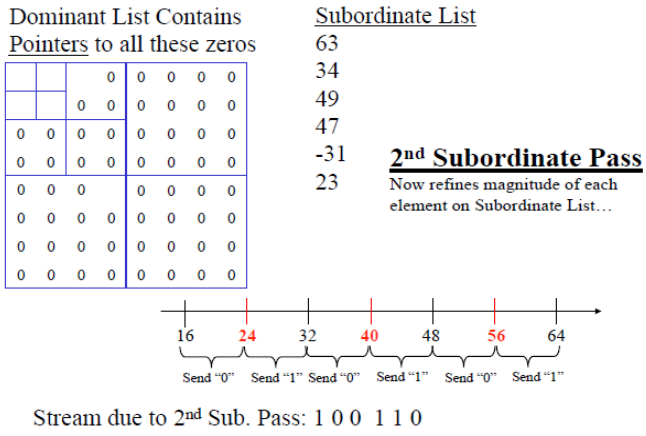

Fig 3.3.5: Second Subordinate Pass

3.4 Huffman Password Coding

Huffman coding is an data compression techniques used by long time which is invented by David Huffman. The optimal prefix code will be generated by using this method from the image data set based on the probabilities in various image compression applications. It has the variable code length by the bits. It is basically based on coding, which means probability of the image dates set symbol has the direct bearing on the representation. As occurrence of a symbol is higher shorter will be the bit-size. As the representation of the image bit set will be split equally and the columns will be compressed in the regular form the quality of the image is retained.

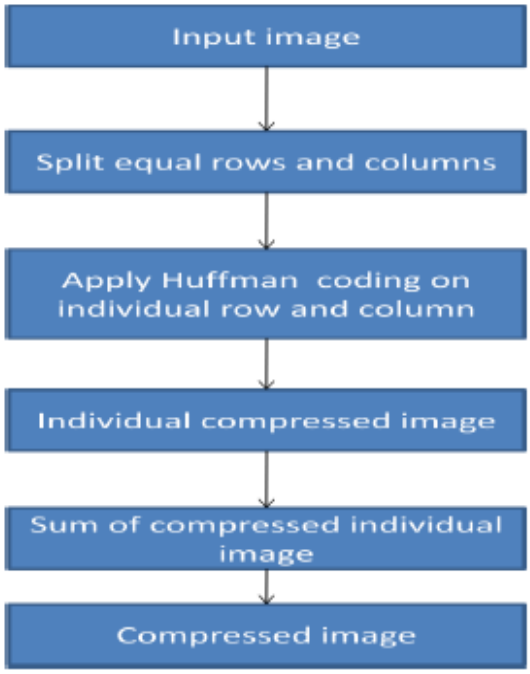

Fig 3.4.1: Flow chart of Huffman coding

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4. FLOW CHART

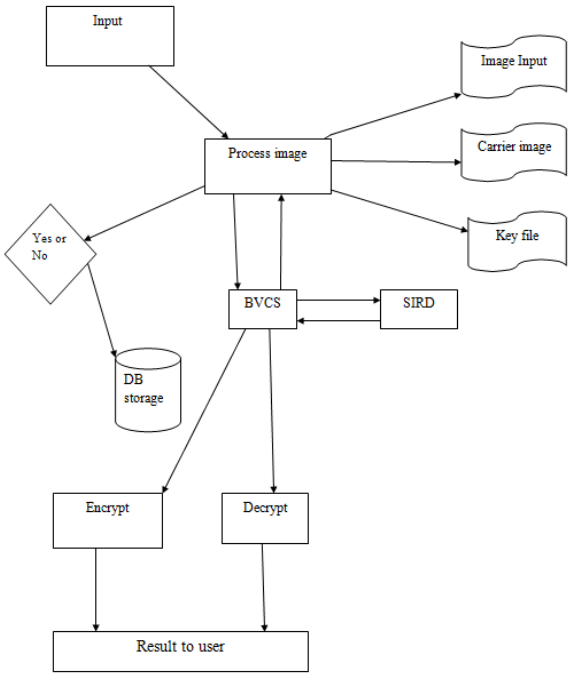

Fig: 4.1: Flow Chart

5 RESULTS:

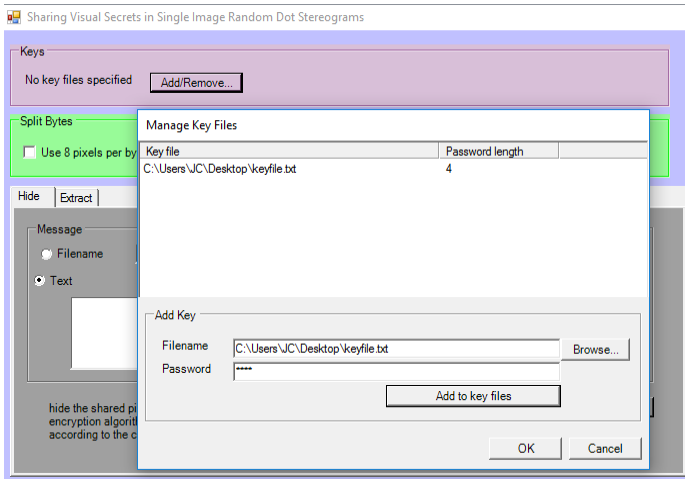

Fig 5.1: Specifying keyfile name

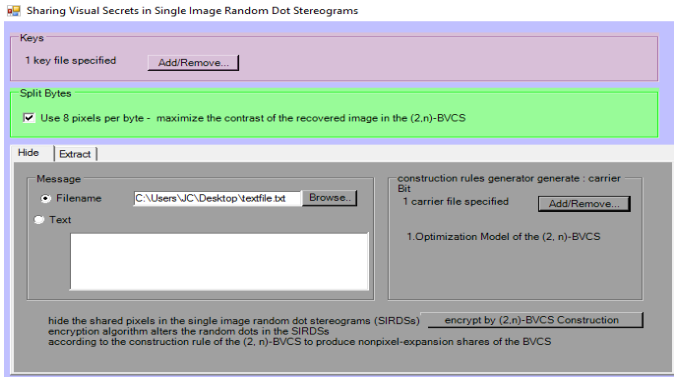

Fig.5.2: Browsing textfile

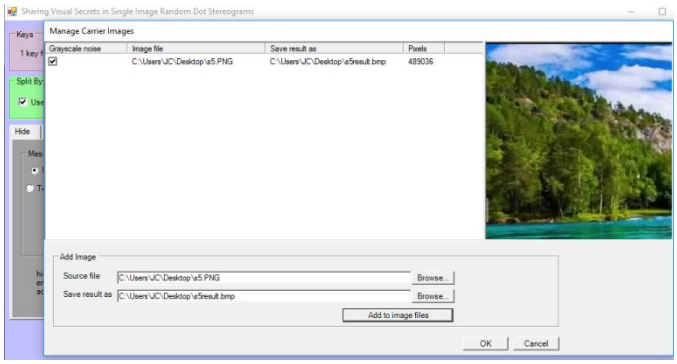

Fig.5.3 Adding image file

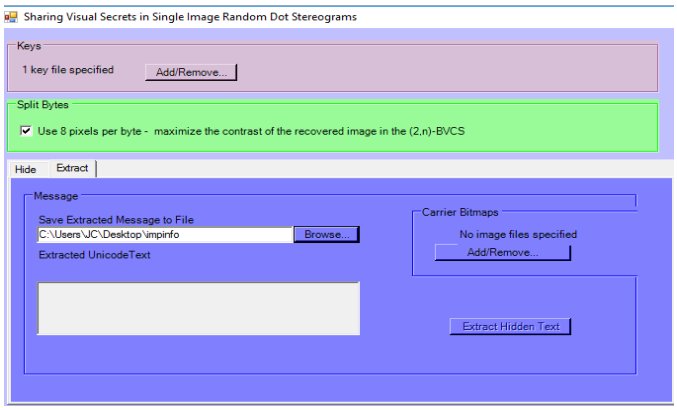

Fig.5.4: Extracting file

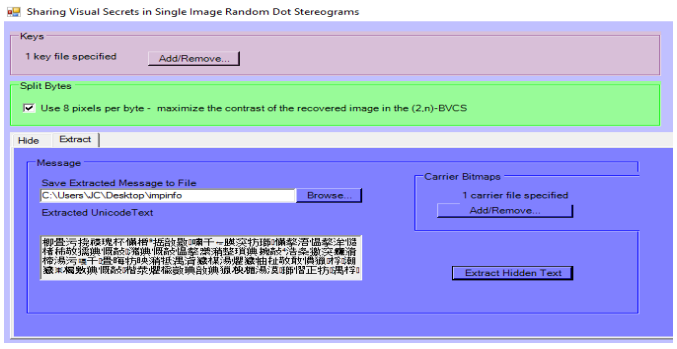

Fig.5.5: Encoded information

6 CONCLUSIONS

In this work the image visual cryptography technology (VCS) by using the Huffman encoding model by secret key image has been proposed and compared. It has used the zero tree based wavelet co-efficient at the composition level of the image pixels. The BVCS uses the less data storage are as compared to the Huffman and also differs in the rate of the distortion. BVCS and SIRDS (with Huffman) differs in the sub band co-efficient operations the BVCS performs the DPCM encoding by adopting the low pass coefficients each will send the bit streams to the polar encoder, and Significance Mapping operation is performed in the high pass filter.

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