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Creative Image Covert Sharing Method with Autostereogram for Image Security

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ABSTRACT

Image covert sharing method (ICSM) is a secret sharing method which decodes the secret by using the contrast ability of the human visual system. Auto stereogram is a single two dimensional (2D) image that converted into virtual three dimensional (3D) images while viewpoint with eye converge or deviation. These two technologies are combined via human vision. In this paper presents a new image covert sharing method called (k, n) ICSM with auto stereogram.

In the method, every one of the shares is an auto stereogram. Stacking every k shares, the secret picture is recovered visually without some tools, but no covert information is achieved by less than k shares. The result of the retrieval image compared from original image give the 95% accuracy.

Keywords:- Image covert sharing method, auto stereogram, covert image, k shares.

I.INTRODUCTION

In Secret sharing techniques the huge part of information is converting which includes watermarking. The basic output devices, such as dot matrix printers, laser printers, and jet printers only black pixel and white pixel is printed instead of showing the gray level images. This gray level of image is used to density of printed dots. The density of the net dots to replicate the gray level is called "halftone". Halftone converted into gray level image into binary image before and transforms an image with gray level into a binary image before processing. Each pixel of the converted halftone image has only two promising color levels (black or white). Since human eyes cannot recognize too small printed dots and images are transformed black and white pixel.

Visual cryptography (VC), which was proposed by Naor and Shamir [1], allows the encryption of secret information in the image form. Therefore, secure data broadcasting becomes very significant .Because attackers cannot decrypt the secret information from one share. , As shown figure1 visual cryptography can extend as (k, n) – threshold visual secret sharing scheme that splits n transparencies into hiding information. It can be decoded must have k or more shares to stack.

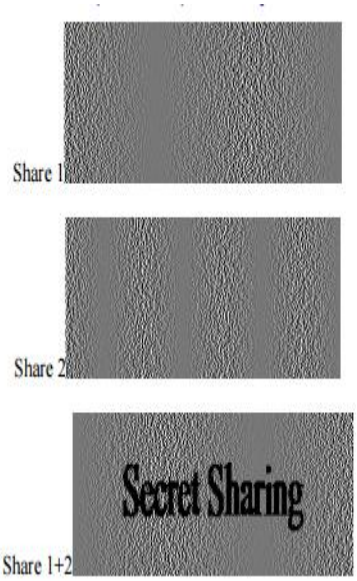

Figure1.Example of visual cryptography

In a k-out-of-n scheme of VC, a secret binary image is encoded into n shares of arbitrary binary patterns. The n shares are n transparencies allocated n contributor and every one contributor. No member knows the share given to another member. Any k or more contributors can visually expose the secret image by cover up any k transparencies together. The secret cannot be decoded by any k-1 or fewer contributors.

II. RELATED WORK

Sasikumar Yerramsetti [2] visual cryptography schemes which make random and worthless shares. This term paper explain binocular VCS (2 ,n) BVCS and encryption algorithm is used. This algorithm used to covert image allocation pixels single image random stereogram (SIRDS). The encryption algorithm should used to construction rule. This construction rule gives Non pixel extension allocate of the VCS. This procedure used to the exploit contrast of the recover image. To provide non extended and high range covered image to decrease the risk of interception for the period of the communication risk.

R.K Sharma [3] suggests scheme of recursive information hiding images by random grids. This method used to raise the information communicates per bit shares. This procedure created by the size of the shares. The technique encrypts each one picture arbitrary cipher grids. This technique produces the size of share in original picture without any alteration. The random cipher grids process provides to secrete of image consequences (n, n) recursive secret images.

Teng Guo[4] In this paper gives a new (k,n) TSISS method. The earlier research failing (k,n) sharing textual figure and then attach up protection defect AES encryption process. A new (k, n) TSISS is use the information only computational protected..This method implemented computational security is used only safe purpose.

Wanli Dang[5] this appearance develop the feature of decrypt image. In this paper XOR is also used. . In this paper executed by spilt the share picture part into two parts. Two parts are used to hide pixel.XOR operation is used to develop the visual quality in improved image. This method is change visually recognize someone share.

III. PROPOSED WORK

This paper has introduced a new method ICSM and auto stereogram, there are two possible ways. The first method is to add some 3D information into shares of a image covert sharing method meantime to ensure the contrast of the recovered covert an image. The second method is to Auto stereogram in these method establish the relationship between auto stereogram to hide a secret image securely, and at the same time these scheme maintain the 3D effect in each auto stereogram. It has good 3D effect and hiding accuracy.

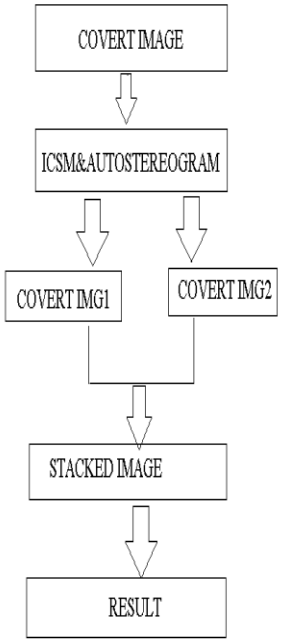

Fig.2 Over view of proposed work

METHODOLOGY

A.Algebric Construction of image covert sharing method

In this section a simple construction of ICS method called algebraic construction are described according to with a few modifications.

1. Column-Permutation Matrices and Polynomials

Let v be an n-dimensional row vector, each element of which is a color in E. Then define an n× n! Matrix C_n (v) called a column permutation (CP) matrix which consists of all n! Permutations of v.

the set row vector v = [r1 r2 · · · rn], it also recognize an equivalence class of CP matrix hCn(v)i and the concatenation operation distinct with a monomial Qn i=1 ri and operation +, respectively

2. Image covert sharing method for Gray-scale Images

In many studies of ICS-GS schemes, a secret image is usually assumed to be huge letters and/or simple geometrical shapes, e.g., circles, triangles,

etc. But the encrypt gray-scale images. However, concerning ICS-GS scheme, the optimality has not been considered sufficiently, and only the minimum contrast is treated.

In this chapter, we consider average contrast and brightness offset in addition to the minimum contrast, and we give the optimal construction of ICS-GS schemes for (n, n)-threshold access structures. In this section, (n, n)-ICS-GS schemes, average and minimum contrasts, and brightness offset are formally defined, and the polynomial representations of (n, n)-ICS GS schemes are described.

It is devoted to show that the optimal (n, n)-ICS-GS scheme, in the viewpoint of resolution, can be constructed by using the polynomial representation. Then, we derive tight upper bounds of the average and minimum contrasts. Finally in, we extend gray-scale images to color images with shades.

3.**Minimum Pixel Expansion of (n, n)-ICS-GS Schemes**

If the concatenation of CCW matrices is the content of a basis matrix, it can be represented by the corresponding basis polynomial. But we further show in the next theorem that the basis matrices of any (n, n)-ICS-GS scheme can be represented by the basis polynomials. For any (n, n)-ICS-GS-L scheme, basis matrices B(1), B(2), . . . , B(L) , can be constructed by the concatenations of CCW matrices in the case that all the basis matrices contain no common column vectors except zero column vectors.

ALGORITHM:

Input:

1. An access formation (k, n) on a locate P of n member.
2. The basis lattices B0 and B1 of a (k, n)-ICSM with pixel development m
3. The shading c { ∈ b, w} of the pixels of the first unknown image. b speaks to dark, and w speaks to white.
4. The shading c1, … ,cn∈{0, … , 255} of the pixels in the n gray scale image(depth maps).

Generation of the n shares:

1. New pixel extension m' = m + an (a will be a positive whole number) are prepared in m'/v lines and v segments.
2. construct n autostereogram with division parameters diminished to 1/v, in analysis of any past autostereogram computation.
3. Develop new basis network B'. Give B'[i] a possibility to be the i-th column in B'. The m' components in B'[i] incorporates every one of the components in B[i] and a ci, and whatever other component is dark. Any segment in B' has at most k – 1 dark.

Output: The matrix B

B. Auto Stereogram

To create the visual illusion of a three-dimensional (3D) scene from a two-dimensional image an auto stereogram is a single-image stereogram (SIS) designed. In order to perceive 3D shapes in this auto stereogram, one must overcome the normally automatic coordination between accommodation (focus) and horizontal vergence (angle of one's eyes). The illusion is one of depth perception and involves stereopsis.

1. Depth maps

Depth map is one of the example autostereogram. Three planes diagonally the x axis to the right side. The background plane is on the left side of the picture. The topmost plane is showing on the right side of the picture. There is a slight middle plane in the center of the x-axis. An Initial with a background plane anywhere icons are spaced at 140 pixels, only pixels raise a exacting icon by shifting it a certain number of pixels to the absent. For case, the center plane is produced by changing an icon 10 pixels to the left, effectively create a spacing consisting of 130 pixels. A depth map is just a grayscale image.

. **2.Random-dot**

To determine the amount of each pixel in the output picture will be established with the pixel of grayscale value in the depth map image. To achieve this scan each line in the output image pixel-by-pixel from left to right. Finally the number of depth planes must be smaller than the pattern width. This random dot auto stereogram is improved image with obvious grade on a flat background. Unknown 3D image will be appearing while the auto stereogram is viewed with appropriate viewing technique. These forms of Auto stereogram are known as Random Dot Auto stereogram.

3. Animated

Animated auto stereogram. Image is used 800 × 400 version. When The brain recognize animated auto stereogram.

4. Simulated 3D perception

The brain distinguish 2D auto stereogram converted into 3D images because decoupling focus from convergence actions the brain to perceive the eyes frequently focus and join in same distance it also called accommodative convergence. When the brain seeing routinely flattens the lenses and rotates the two eyeballs for wall-eyed showing.

IV. RESULT AND DISCUSSION

In this planned work is used to covert image by using color visual cryptography (k,n) techniques and covert information transfer into word file. That covet image is compared with new image. The decrypt image gives high simplicity and efficient.
Fig.3 shows the process of secrete the image.Fig.4and Fig.5 shows result of covert images using auto stereogram and ICSM with autostereograms.Fig.6 denote the result of recovery process of image. Fig.7 shows the result of covert message for image.Fig.8 shows the original image of the covert image. Fig.9 illustrates performance evaluation. This algorithm is evaluated using various methods and they are evaluated using PSNR value. The results are tabulated in Table1.

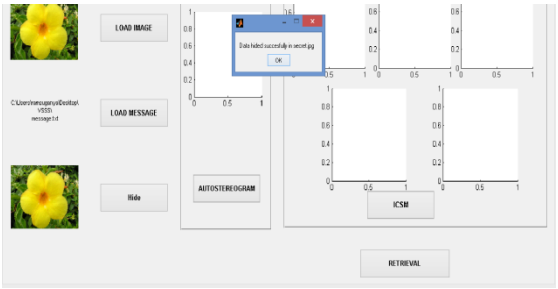

Fig.3 Hiding Images

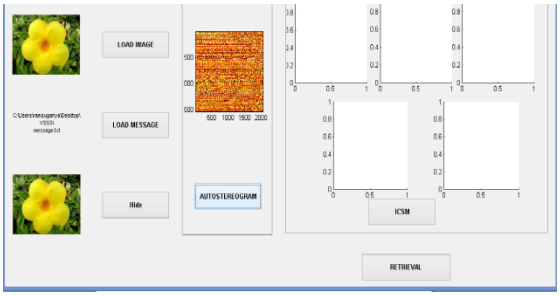

Fig.4 Autostereograms

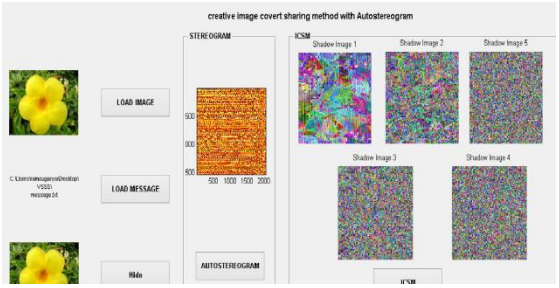

Fig.5 ICSM with Autostereogram

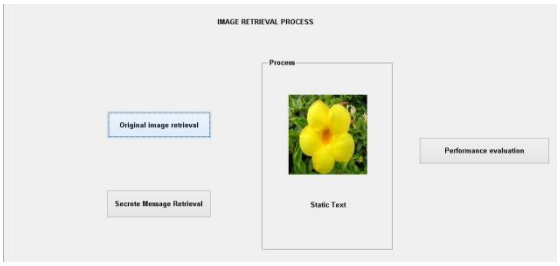

Fig.6 Image Retreival

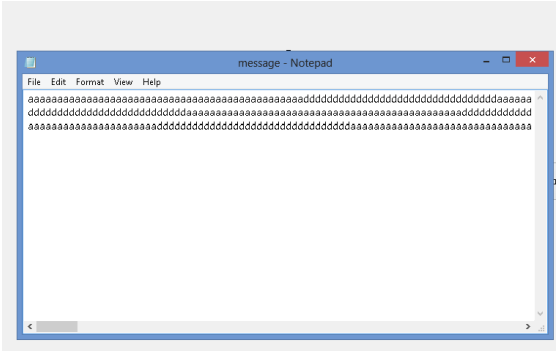

Fig.7 Secret Text

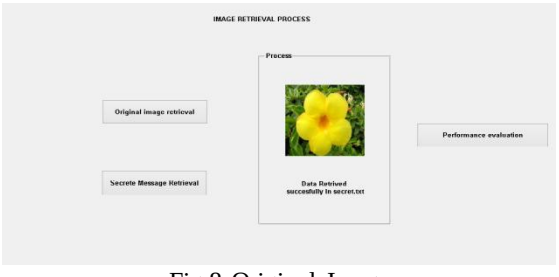

Fig.8 Original Image

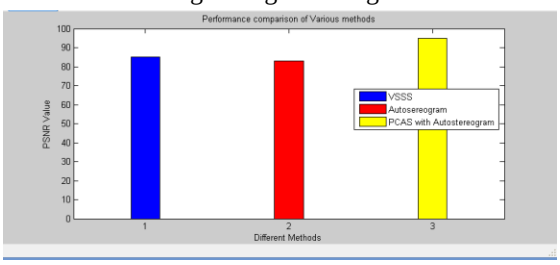

Fig.9 Performance Evaluation

Tabulations:

Methods	PSNR value (dB)
VSSS	83
Auto stereogram	85
Proposed Method	95

Table 1

V. CONCLUSION

This proposed work is done by hybrid method by applying ICSM with autostereogram. It introduces the visual quality of the recover secret message in an input image. When compare the performance of the proposed hybrid method and the performance of the existing methods, the results shows that maximum values for PSNR then existing method. . Hence it can be concluded that the proposed technique is best suited for image covert sharing scheme with high quality of image and message retrieval .In future plan is to develop this learn by using recursive room empty encryption algorithms for covert the image.

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