



# International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

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Vol. 5, Issue 2, February 2017

## A Review on Image Mosaicing for Secure Transmission of Exam Paper

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**ABSTRACT:** The rapid spread of the digital world nowadays which is powered by ever faster system demands greater speed and security. Real time to secure an image is a challenging task due to the processing time and computational requirement for RGB image. So, to cope with these concerns, many innovative techniques of image processing for data hiding are required. In this paper new data hiding scheme is proposed which is known as image mosaicing. Image mosaicing is the process of merging split images to produce a single and complete image of the document. For this technique two input images are required one is secret image and second is target image, by merging these two a new image is made called as a mosaic image. So, the creation of mosaic image and lossless recovery of secret input image for question paper security is presented in this paper.

**KEYWORDS:** Mosaic image, Colour transformation, secure image transmission, image encryption and data hiding.

### I. INTRODUCTION

A data or information security is now a very important day for the world. And everybody, a good secure network that transmits information to a secure network, data hacking is also a chance, but it is also the most treacherous of online banks and other organizations where data security is important and safe. So we need more high security data safe environment. Mosaic materials, such stone, glass, tile, etc. is a type of artwork created by composing small piece invented in ancient times, and they are still used in many applications. This includes data hiding that hides a secret message into a cover image so that no one can realize the existence of the secret data, in which the data type of the secret message investigated in this paper is an image. Which transforms a secret image into a meaningful mosaic image with the same size and looking like a preselected target image. Image mosaicing is the process of merging split images to produce a single and complete image of the document. For this technique two input images are required one is secret image and second is target image. By merging these two a new image is made called as mosaic image. So the creation of mosaic image and lossless recovery of secret input image for question paper security is presented in this paper. The transformation process is controlled by a secret key, and only with the key can a person recover the secret image nearly losslessly from the mosaic image.

In this system our secret image is question paper and it is covered with target image to form mosaic image which looks like exactly similar to target image. This mosaic image is sent to the receiver. At the receiver side the mosaic image is recovered by decryption key only. If the person with no correct key or wrong key is unable image from the mosaic image. Thus the original question paper is separated from mosaic image with correct password only. Mosaic of coloured glass, stone, or other materials to create images together pieces of art. It is a technique or interior decoration. The mosaics of small, flat, are made in different colours, pieces of glass around the square, known as the stone or tessera; But some, especially the floor mosaics, and stone can be small circular pieces, and called mosaics".

### II. RELATED WORK

Moses mosaic image has been proposed by the secret-volume-visible image of the original idea of new computer and his art, the application of information hiding by Lai and Tsai you can see all the pieces of the mosaic image of a source image such monitoring, but the small size of the pieces of the inspector is not able to figure out what looks like a source image and a random position. So when the source image resulting mosaic pieces are visible for all private inspector can be called embedded images. And this is the reason why the resulting mosaic image is the name of the secret-visible-

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break. This consists of two phases. First phase shows the concept of mosaic images formed using source images and target dataset. The second phase includes the construction of the original latent image on the image of Moses is the first phase of the mosaic image decrypted. In this section we have focused on the implementation of the various applications of this author proposed system. Soumi C.G, Joon George, Janahanlal Stephen, “Genetic Algorithm based Mosaic Image Steganography for Enhanced Security” ACEEE Int. J. on Signal and Image Processing, Vol. 5, No. 1, January 2014 in this paper authors used this mosaic image method and Genetic Algorithm for enhanced security and robustness (Soumi et al., 2014). Tom Botterill, Steven Mills, Richard Green, “Real-time aerial image mosaicing”, IEEE Trans.2010 in this paper scheme for real-time mosaicing of aerial images is described (Tom Botterill et al., 2010).

### III. PROPOSED ALGORITHM

The proposed methodology is implemented using MATLAB programming. It has mainly two phases. In the encryption phase, first we select our secret image which is question paper and then arbitrarily select target image.

- Mosaic image Creation
- Secret Image Recovery

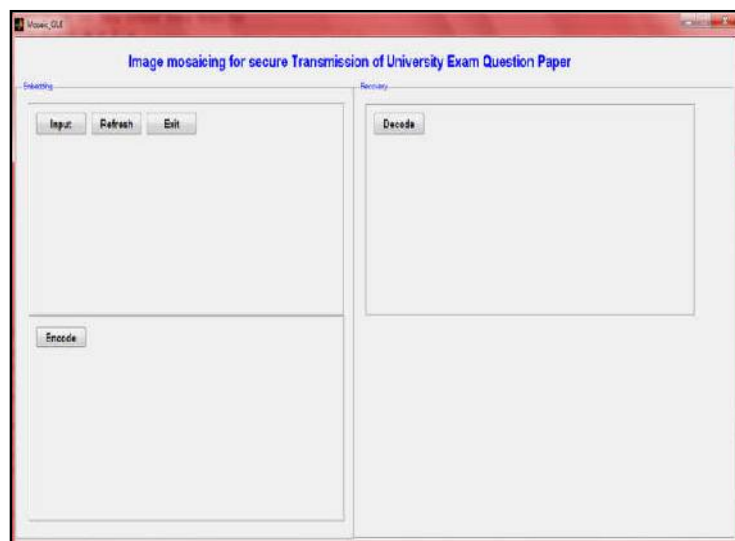


Figure3.1: GUI of proposed method

Figure 3.1 gives the GUI design or outline of the actual system. GUI is the graphical user interface, from this GUI it is clear that we can refresh the system or we can exit from the system at any instant of time. It is a very novel, systematic and sophisticated system GUIDE provides several templates that you can modify to create own GUIs. The templates are fully functional GUIs; they are already programmed. GUIs are pictorial interface of the user and the system. It provides visual information if the system and allows user to operate the system with multiple option.

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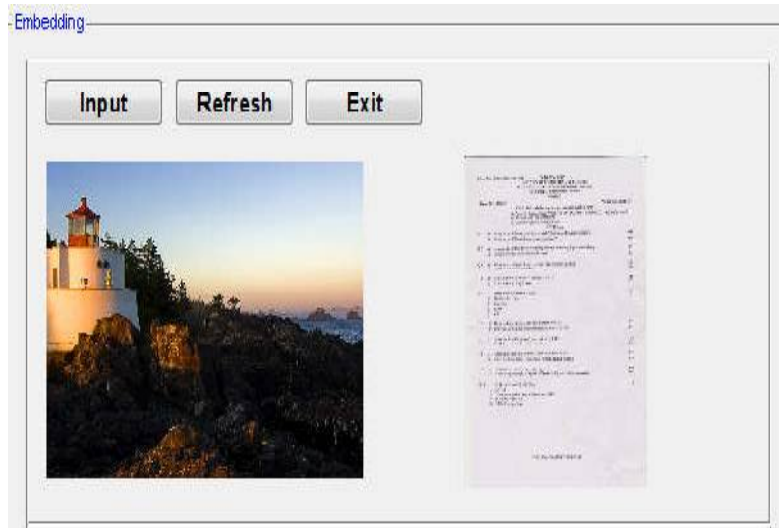


Figure3.2 Selection of secret image & target image

- Mosaic image Creation (Encode)

Figure 3.2 shows the selection of secret image and target image. The first Step of mosaic image creation is selection of target image. The method proposed by I-Jen Lai and Wen Hsiang Tsai required that the target image should be selected from database and it should match some similarity criteria to be selected as target image and finally it should be double in size to that of secret image, to remove this drawbacks the proposed method allow user to select any image of their choice and of any size as target image. But to allow the mosaic image with little quality drop lose but not more it is suggested that the target image selected should be of same background as that of secret image. Next step is to divide both secret image and target image into fragments such that both images contain same number of blocks and that is too of same size, to assure this the target image and secret image are required to be of same size. To assure this the proposed method will first check whether secret image is of same size as of target image or not if not it will resize it to make it of the same size as that of target image. Then to split secret image and target image into same number of blocks same splitting criteria is used to split them After splitting the main problem and question is how to find out or get perfect position where each tiles of secret image is to be placed.

To find the best fit block of target image for each tiles of secret image the standard deviation of each tiles is used as a similarity measure criteria. That is standard deviation for each blocks of target image and for each tiles of secret image is calculated. Then all the tiles of secret image are arranged in ascending order and also blocks of target image in ascending order according to their standard deviation. Then the first tile image in a sequential order is placed at a position of first block in a sorted sequence of target image, and also 2nd block in sorted sequence of tile image is placed at a position of second block in a sorted sequence of target image. Similarly the same step is repeated for rest of tiles block to create final mosaic image called as secret fragment visible mosaic image

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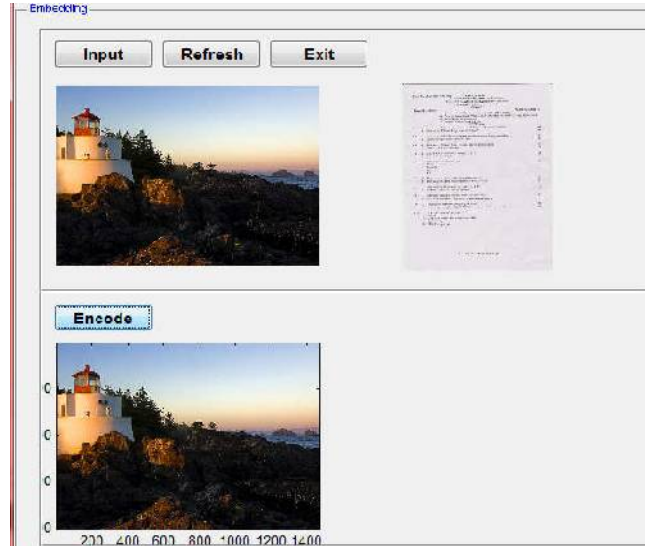


Figure 3.3 Generation of encoded mosaic image

Figure 3.3 shows the generation of encoded mosaic image by clicking on encode button both target and secret images are encoded together to form a mosaic image which looks exactly similar to the target image.

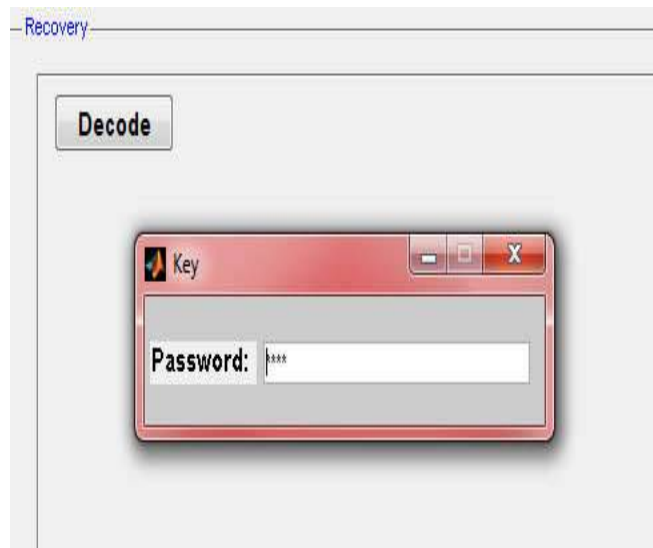


Figure 3.4 Enter the decryption key i.e. password

The task 2 is to be done at the receiver side. As we covered our secret image of question paper with target image and transmitted successfully that covered image to receiver. Now at the receiver the user has to separate the hidden question paper from covered mosaic image. For this decoding the system asks the user to enter a password as shown in the above figure 3.4

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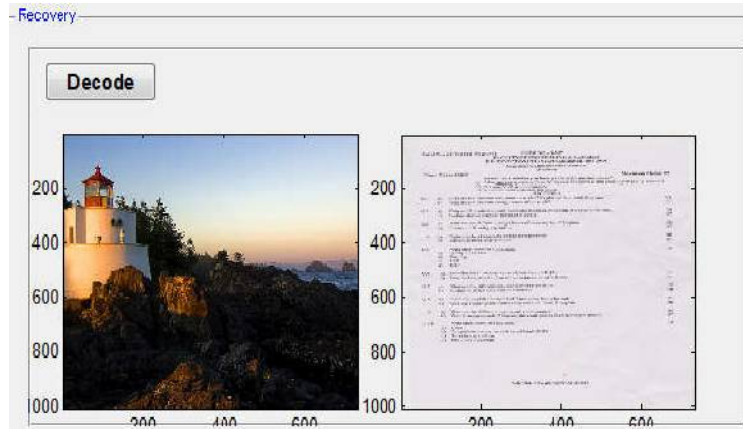


Figure 3.5 Recovery of original secret question paper

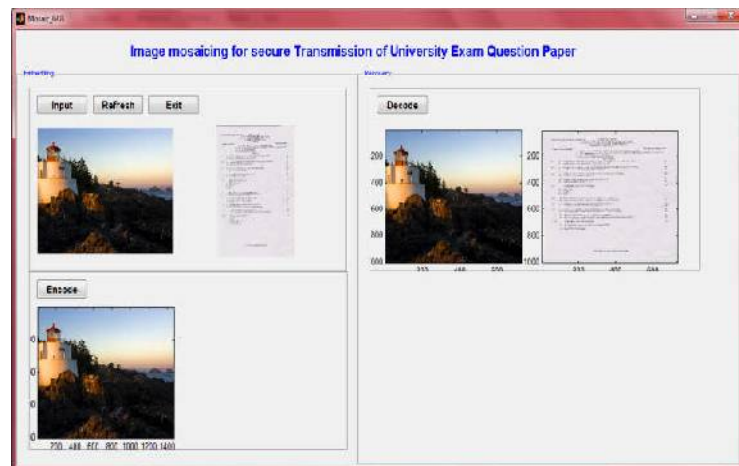


Figure 3.6 Complete systems which represents generation of recovery of mosaic image

Figure 3.5 shows the Recovery of original secret question paper from mosaic image For recovery of secret image, first the recovery file that contains information for secret image recovery is reconstructed from the input decompressed image. To read the contents of recovery file it is needed to decrypt the content of file by using the decryption algorithm with the same key with which encryption is performed. After decrypting the file by using AES decryption algorithm that contain information such as optimal rotation angle, the means of S and T and the standard deviation quotients of all color channels along with current and original position of each every tile blocks. By using this value first each tile images of mosaic image is rotated in reverse direction by using extracted optimal rotation angle and then the color of secret image is recreated by using inverse of color transformation by using formula and by using extracted mean and standard deviation value of secret and target image. After recreating color the final step is to place each and every tile images at their proper position to get final secret image for this the content of recovery file is used to know image original position and then each tile block is placed at their original position to get the final secret image. If the password entered in above step is correct then original secret question paper is recovered completely else the access is denied. That means if the user will fail to recover the secret image. Thus the secret question paper is successfully transmitted securely and again it is recovered from mosaic image but for the recovery of original secret paper at the receiver side the user need to enter correct password otherwise the paper will never recovered successfully. That means if the user has correct password for decoding then only the secret paper recovered. Thus our system is



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novel so that the question paper is totally and completely secured. Figure 3.6 shows the complete system which represents generation of recovery of mosaic image.

## IV. CONCLUSION

The security of question paper and to prevent the leakage of question paper is the main target objective and goal of every colleges in each universities in our country. In order to successful conduction of examinations the system presented in this paper helps completely. In this work the secret question paper is hide by a keeping another same size target image. The resultant image which is formed by overlapping the secret image with target image is encoded called as a mosaic image. The system is very novel such that the mosaic image is similar to target image by visual appearance that no one can distinguish between the mosaic image and target image. At the receiver side or at college side this mosaic image is decrypted by correct password only. Unless and until the person has correct decryption key he is unable to recover the question paper from mosaic image

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