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# Video Mosaic Image Creation for Secure Image Transmission.

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**ABSTRACT**

Mosaic is a picture or a decorative design created by setting together small pieces of color. It can also be defined as one composite picture created out of overlapping pictures, photos, and so on. Images taken from various sources are being used frequently and get transmitted over the web for serving several purposes such as classified undertaking documents, depository storing frameworks, medicinal picture frameworks, and military picture databases. Such images may consist of secretive or mysterious data and hence need to be secured from spilling in the middle of transmission. A proper procedure is required for securing transmission of images. This approach must be capable of changing any mystery picture into a vital Concealed fragment Mosaic image having similar size and resembling the looks of the pre-chosen target image. We propose a new approach for securing transmission of image, which converts a target image as a mosaic image of same appearance and also having similar size as that of certain target image that has been pre-selected. A secret key controls the process of transmission, and it will be possible for any person to restore secret image only by making use of the key. With the key, secret image gets recovered nearly in a lossless form out of the mosaic image. In particular, once an intended image has been arbitrarily selected, the particular given secret image gets divided first into rectangular pieces known as tile images then tile image converted in to 4x4 matrices that are then fitted into resembling blocks in target image, knows as target blocks, in accordance with a resemblance criterion founded on color deviations. After this, the color quality of every single tile image gets converted into that pertaining to the respective target block within target image, thus resulting as a particular mosaic image that appears just similar to target image. Relevant systems have also been proposed for conducting almost lossless restoration of the authentic secret image out of the mosaic image that results. The introduced strategy is new because it involves creating one valid mosaic image against image encryption approach which just produces noise images that are meaningless. This apart, the suggested approach is capable of transforming secret image as disguising mosaic image, not requiring compression, whereas any method of data hiding requires hiding a greatly compressed variant of the secret image in the form of some cover image in the event of cover image and secret image having exactly the same volume of data.

**Keywords:** Mosaic image, Secret key, Target image, Tile image.

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## INTRODUCTION

These days, it becomes essential to use images drawn from different sources and transmit the same over the Internet related to different applications like file storage systems, classified undertaking depositories, military databases of images, and medical systems of imaging [1]. Such images normally include classified or private information and hence they necessitate protection from spillage at the time of transmission. Of late, there have been many techniques proposed with regard to securing transmission of images, two of the common methods being data concealing and image encryption. The previous strategies mostly utilize the innate characteristics of the given image like strong spatial relationship and high redundancy for getting a secret image [4]. Secret image happens to be meaningless and that may lead to arousal of attention to third parties because of the random information during the transmission process. Data hiding is one more approach for securing transmission of image which conceals a confidential being into one cover image in such a way that no third party will be able to find the secret entities presence. The trouble with data hiding technique is that embedding huge volume of the confidential body into one single picture involves difficulty [5]. In case someone wishes to conceal a confidential entity into one cover image, then this confidential entity should be greatly compressed in advance. At the time of retrieving, this may cause the confidential entities disruption. This study suggests restoring the secret image that has been embedded on to the mosaic image through some scheme of data concealing with the assistance of a key. Now, we introduce a method that allows transformation of secret image as valid mosaic image having the very same size [6]. Mosaic image is similar in appearance to the target image. Secret key controls the process of transformation and the receiver is able to restore secret image by using the key. This technique is known as confidential-piece-perceptible mosaic image. In this, our primary aim is transforming secret image into mosaic image which will be similar to the target image short of any help from some database and select the actual time images. Without compression as involved in the data hiding method, this method converts the secret image to a mosaic image. One prime drawback in the methods involving data hiding happens to be the difficulty with implanting a huge volume of message inside the single image. Furthermore, in case someone needs to hide secret image inside cover image having same size, then the picture needs to get greatly compressed prior to usage. Nevertheless, in case of several applications like transmission of military pictures, medical pictures, legal documents, and others which happen to be valuable and offer no serious distortion possibility like data compression functions, become impractical normally [13]. A new method has been proposed in this study toward safe image conversion via videos that converts any secret image as valid mosaic image having identical size and appears similar to a previously chosen target image relevant to video frames available. A secret key controls the process for security. The said key must be used for recovering a secret image with lossless nature out of the video and is otherwise called the target image. In the said method, first step is selecting three images, namely, target image, mosaic image, and secret image. Having selected target image, the particular secret image gets first split into a several rectangular pieces known as tile images that are then fitted into the similar blocks inside target image, named target blocks, in accordance with a contrast of color conversion. After that, color quality of every tile image gets converted to varied colors, ending in the mosaic image that appears identical to target image. Suitable systems have also been put forward for conducting near lossless restoration of the authentic secret image form such mosaic image that results [7].

## RELATED WORK

In their analysis, Ya-Lin Lee suggests [1] a method for transmission of secret image in secure and lossless manner. This technique converts a secret image as mosaic tile picture with same size as that of a target image that has been previously chosen out of some database. The color conversion is being controlled while secret image can be restored in lossless manner from mosaic tile picture by making use of the derived related information produced for the purpose of image restoration. In their research, W.H.Tsai and I.J.Lai put forward [2] one keyless method to encryption techniques that may be used for encrypting images. We have used this study for applying keyless method in the method suggested by us. It has been done by producing relevant data using certain RMSE value that helps rotating tile images by some angle. In this, W.B.Pennebaker attempts [3] explaining that the primary barrier found in several applications happens to be the volume of data that is needed to portray an electronic image. A standard of image compression is required for this, for maintaining the images quality after compression. In order to meet all these requirements, the JPEG benchmark for compression of images involves two basic techniques that have got different modes of operation: a DCT technique toward lossy consolidation and another, a predictive technique toward lossless consolidation. In this study, Roorkee attempts [3] to show one keyless method toward encryption techniques

can be used for encrypting images. We have made use of the said study for applying keyless technique in the method suggested. This has been done by producing related information using certain RMSE value that helps in rotating the tile pictures to some angle. JPEG: W.B.Pneebaker attempts [4] explaining that the primary barrier related to many applications happens to be the volume of data needed for representing an electronic image. For that purpose, we require a image consolidation standard for maintaining the images quality after consolidation. To be able to cater to all the requirements, the JPEG benchmark for compression of images involves two fundamental techniques with different modes of operation: a DCT technique toward lossy consolidation and one predictive technique toward lossless consolidation. In their paper, Tsai [8] and I.J. Lai put forward a new kind of computer-based art image known as secret-piece-perceptible mosaic picture that can automatically be produced through arranging small pieces of any given picture in the mosaic form, then implanting the particular secret image on to the mosaic image that results. Such kind of an information hiding proves useful in the case of clandestine communication and safe keeping of secret images. B. Yang, X.Li, et al. suggested a [9] prediction-fault expansion, an important method related to reversible watermarking that is capable of embedding a huge payload into a digital picture without much distortion. This method happens to be one among the most important ones. Choice of Pixel permits us selecting the pixels pertaining to smooth region for data implanting through reducing the maximum alteration to values of pixels. Because of this, we are able to obtain further sharply-spread prediction-fault histogram as well as improved visual standard of the watermark image when compared to traditional prediction-fault expansion. In this analysis, L.M.Cheng and C.K.Chan attempt [10] a technique in which the database is being used for selecting target image. Then, after selecting, the target image and secret image get pre-processed and splintered into blocks and tiles. Tiles pertaining to secret image can be rendered to be fit into target blocks for creating mosaic image. One disadvantage in this technique is the fact of having to use the database for selecting the target image, which necessitates additional memory for storing mosaic image.

3. Concealing data inside images through simple LSB interchange. In this study, T.Kalker, C.D.Yoo, and S.Less attempt [11] a technique in which vital data get embedded inside a cover picture for protecting the authentic data from any illegal access. Data is hidden by making use of genetic algorithm in the rightmost k LSBs pertaining to cover picture. The hindrance found is that upon increasing the storing messages size, the quality pertaining to cover image gradually degraded.

4. Reversible picture watermarking founded on integer-on-integer transforms of wavelet
In this study, N. Yu, X. Hu, X. Li, and E. Zhang attempt [12] propose a method in which the input picture is split into blocks of non-overlap, and watermarks with high recurrence wavelet coefficients get implanted. The disadvantage in this is that the payload must be implanted each time for implanting watermark and implanting watermarks initiates irreversible deformity that may not be suitable with regard to multimedia exercises.

5. Recursive Histogram Alteration: Securing equality between data compression in lossless manner and reversible data concealing.

**PROPOSED WORK**

In our study, we introduce a new approach which is capable of transforming any secret image as a concealed piece-perceptible mosaic image having identical size and with visual looks of any randomly chosen target image short of help from any database. User is able to select a video which may be derived into several frames which can be utilized as target image. The target image converted in to 4x4 matrices from that matrices choose a tile image. Particular secret image selected by user first gets split into rectangular pieces of tile images that get then fitted into similar looking blocks inside target image, known as target blocks, in accordance with some similarity standard founded on color diversion. Regarding color conversion and color diversions between the blocks, we need the following calculations RGB C-avenue values pertaining to pixels, value of standard deviation, and value of mean. For computing the authentic pixel value, one needs to restore picture element channel value. Then the color quality of every tile picture is converted to that of equivalent target block inside target image, finally resulting as a mosaic image appearing identical to target image. In the end, we reorganize the casing and take out concealed video alongside the mosaic image.

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## OVERALL ARCHITECTURE

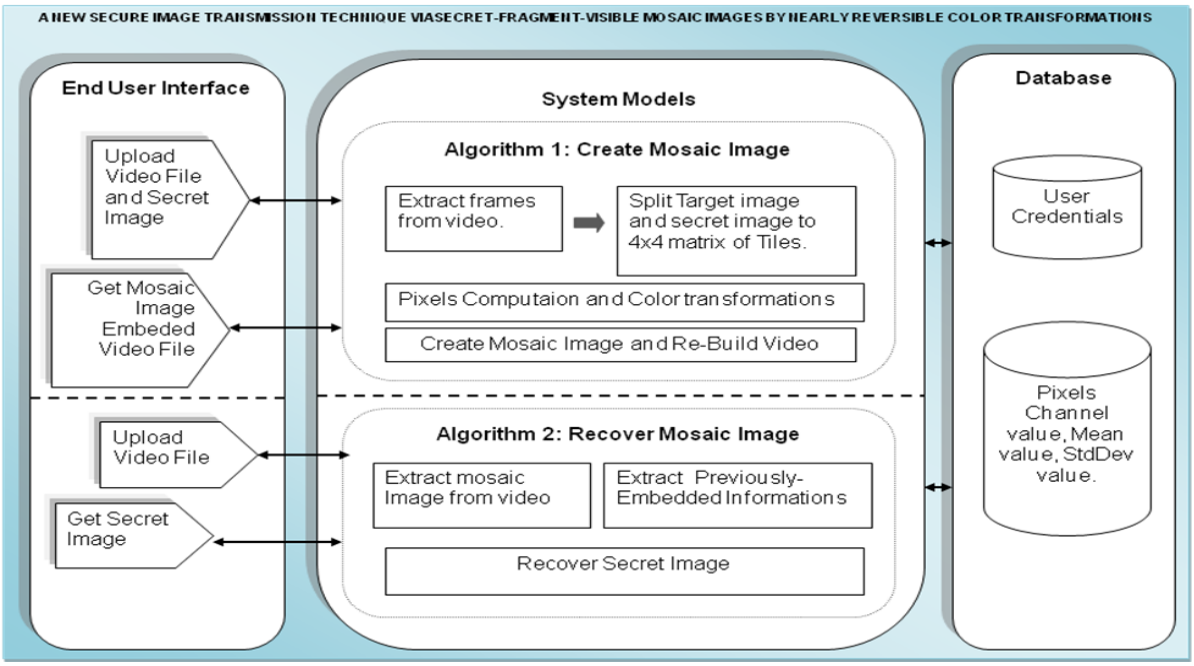


**Figure 1 Overall Architecture**

## PROPOSED METHODOLOGY

The suggested technique involves two primary phases 10 Creation of Mosaic Image 2) Recovery of Secret Image. In the initial phase, one mosaic image will be produced and it includes pieces of the inward secret image along with color modifications in accordance with given similarity criterion founded on color diversions in the video. This phase consists of four levels: 1) Matching tile pictures of secret image as a previously chosen target images target blocks; 2) converting the color quality of every tile picture inside secret image as being consistent with corresponding block of target inside the target image; 3) Revolving every tile picture into some direction with minimum value of RMSE with reference to the matching target batch; and 4) implanting related data into the generated mosaic image in relation to future restoration of secret image. And in the next phase, the implanted data gets extracted for restoring almost losslessly the particular secret image out of the created mosaic image. The said stage consists of two levels: 1) extraction of the implanted data recovery of secret image out of the mosaic image, then 2) restoring secret image by making use of derived information.

## ALGORITHM

### Algorithm 1 Flourish of Mosaic Image in Video

**Input**: secret image S, target image T from video , and secret key K .
**Output**: fragment secret mosaic image F
**Step 1.** Image_Size (T≠S), then Define Image_Size (T=S) Make partition, S= { T1 , T2 , ... , T n}, T={ B1 , B2 , ... ,Bn }
**Step 2.** Calculate $\mu$ and $\sigma$ for tile_image and target_image and apply RGB
**Step 3.** According to $\mu$ and $\sigma$ sort the tile and target image Stile = {T1 , T2 , ... , T n }and Starget = {B1 , B2 , ... , Bn }
**Step 4.** Consider 4x4 matrices tile and target image
**Step 5.** Choose any 4x4 matrices tile from target image
**Step 6.** Calculate RMSE value of RGB and change diagonal of image
**Step 6.** Make mosaic_image by fitting tile and target image

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**Algorithm 2 Video ambiguous image recovery**

**Input:** mosaic image F with n tile images ={T1 , T2 , ... , T n } and secret key K .
**Output:** secret image S.
**Steps:**
**Step 1.** Extract the secret image
**Step 2.** Extract the target image
**Step 3.** Separate the secret image from target image
**Step 4.** recover the secret image

## RESULT AND DISCUSSION

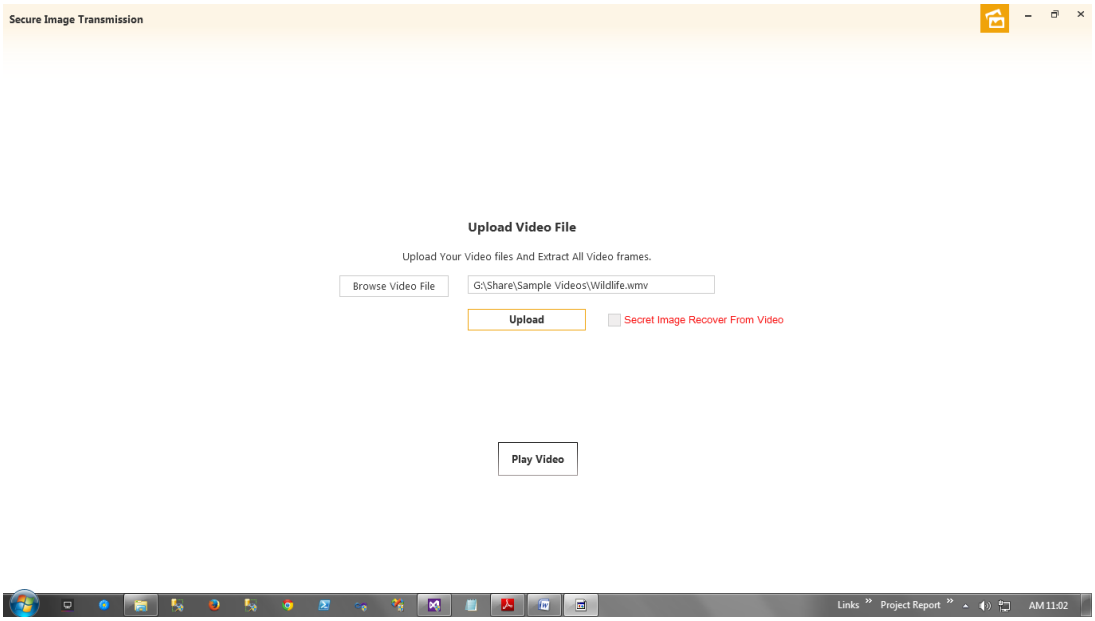


**Figure 2 Upload Video File**

Figure 2 shows uploading video file. The target video is selected by the user after uploading the target video frames will be extracted.

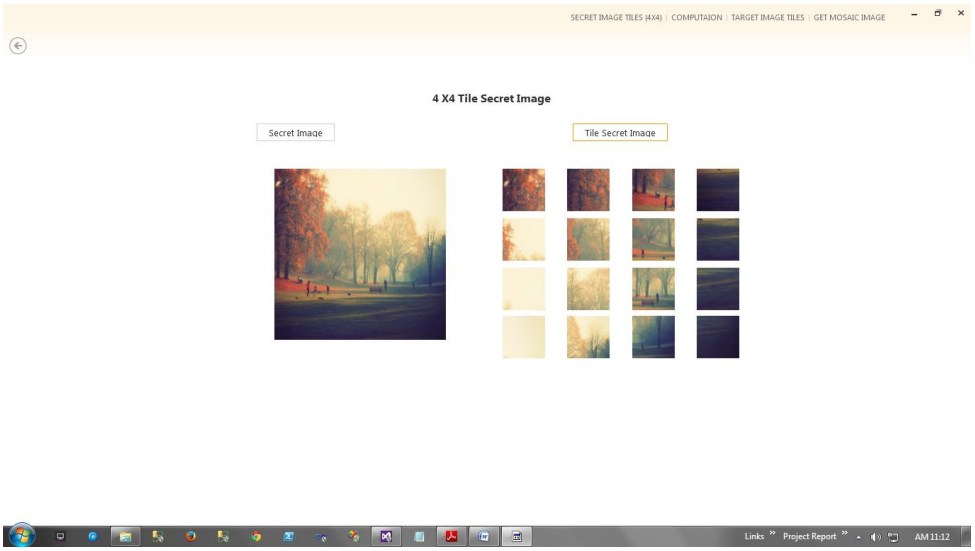


**Figure 3 Secret Image**

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Figure 3 shows the secret image. The secret image will be splitted in to 4x4 tile secret image before fitting in to the target image.

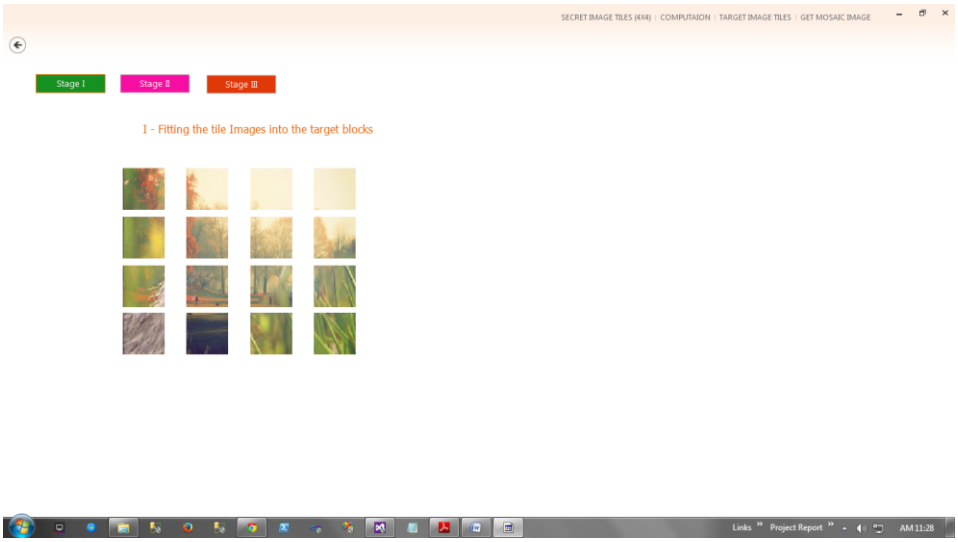


**Figure 4 Fitting Tile Image Into Target Blocks**

In figure 4 shows fitting tile image into target blocks. The 4x4 splitted tile and target image will fit one over another. In that the dignoal of an image also can change after changes send the image into receiver.

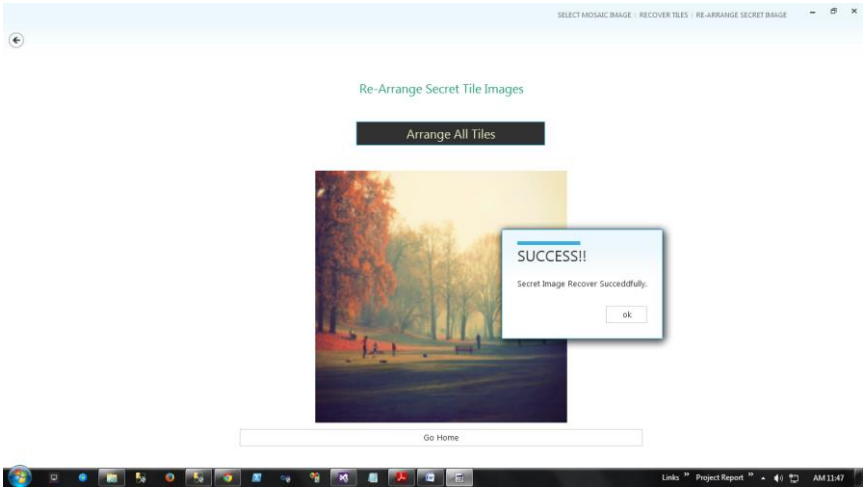


**Figure 5 Recover Secret Image**

In figure 4 shows recover secret image. Using secret key the secret image will recover before that rearrange the secret tile image.

## CONCLUTION AND FUTURE ENHANCEMENT`

One new safe image transfer via videos is proposed that is capable of not just creating valid mosaic images , also transforming secret image as mosaic image having same sized data that can be made use of as camouflage for secret image. In our study, we have proposed safe image transmission method that produces valid mosaic image along with conversion of secret image as concealed-piece-perceptible mosaic image having identical size and also has got the visual looks as that possessed by the target image that has been pre-chosen out of the database. Using this method, the user may choose her / his preferred picture to be utilized as target image, thus not requiring the assistance of a large database. Apart from this, it is possible to recover authentic secret image almost losslessly out of the created mosaic image. Also in this suggested work, the tile picture fitting data for the restoration of secret image gets implanted into arbitrarily chosen tile pictures in the mosaic

image that results, governed by one secret key. One more security-improvement feature has also been used. By using the key, further security has been assured to the scheme. The newly proposed system proves to be better than presently existing systems as the proposed system provides additional security. It also allows free selection of target image and secret image. Results of experiments have proved that the proposed technique is highly feasible. Future studies are suggested about applying the suggested technique to further color models except RGB.

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