

Audio and Video Steganography using Blowfish and 4 LSB Technique

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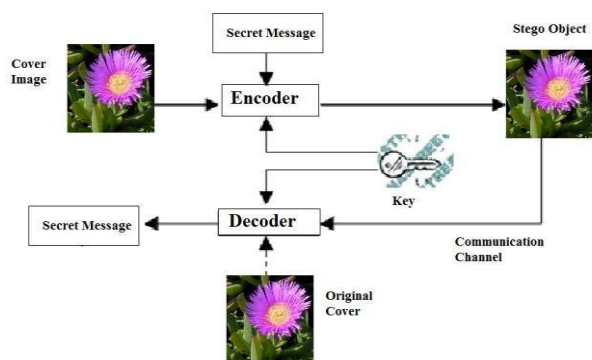
Abstract- Security is most essential issue in advanced correspondence. Information security implies defensive computerized security measures that are connected to forestall unapproved access to PCs, immense databases and online information it is likewise shields information from defilement. Security is most vital issue in computerized correspondence. Cryptography and steganography are two prominent techniques accessible to give security. Steganography centers around concealing data such that the message is imperceptible for pariahs and just appears to the sender and expected beneficiary. It is valuable instrument that permits secret transmission of data again and again interchanges channel. Steganography is a method which is utilized to conceal the message and keep the identification of shrouded message. Different present day methods of steganography are: a) Video Steganography b) Audio Steganography

Audio Video steganography is a cutting edge steganography of concealing data in a way that the undesirable individuals may not get to the data.

Keywords—*Steganography, Audio Steganography, Video Steganography*

I. Introduction

Steganography centers around concealing data such that the message is imperceptible for untouchables and just appears to the sender and proposed beneficiary. It is valuable instrument that permits clandestine transmission of data again and again interchanges channel. Steganography is a method which is utilized to shroud the message and keep the recognition of concealed message. Audio Video steganography is a cutting edge method for concealing data in a way that the undesirable individuals may not get to the data. The propose strategy is to shroud mystery data and picture behind the audio and video record individually.



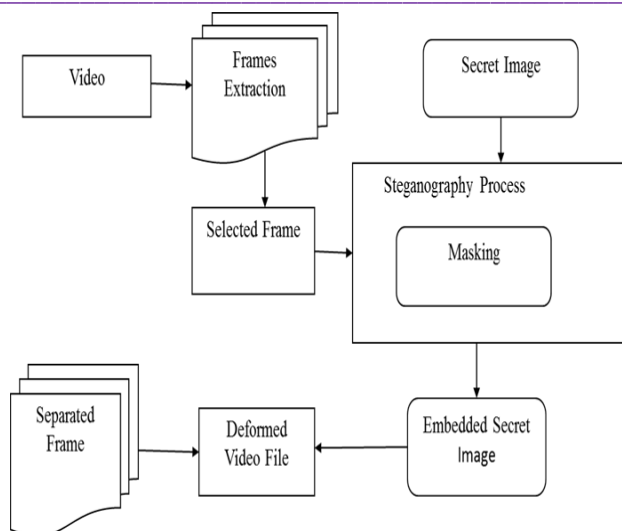
Audio Steganography

The fundamental model of Audio steganography comprises of Carrier (Audio document), Message and Password. Bearer is otherwise called a cover-record, which covers the

mystery data. Encoding mystery messages in audio is the most difficult method in light of the fact that the human sound-related framework (HAS) has such a dynamic range, to the point that it can tune in finished. Audio records are generally packed for capacity or quicker transmission. Audio documents can be sent in short remain solitary fragments. There are different composes and procedure of information stowing away in audio like Least Significant Bit Encoding and Phase coding. Implanting mystery messages in audio document is more troublesome than inserting messages in computerized picture.

II. Video Steganography

Video is an electronic medium for the recording, copying and broadcasting of moving visual images. Video Steganography is a technique to hide any kind of files into a carrying Video file. The use of the video based Steganography can be more eligible than other multimedia files, because of its size and memory requirements. Videos are the set of images. The number of still pictures per unit of time of video ranges from six to eight frames per second. In video steganography data hides behind the video using different techniques. Basically there are three embedding techniques for images in practice, namely Least Significant Bit (LSB), Transform based and Masking and filtering. The best technique is that to hide secret message without affecting the quality of video, structure and content of video. After hiding a secret data in video create “stego” video file which is send to the receiver.



III. Literature Survey

Arup Kumar Bhaumik, Minkyu Choi et.al, [1] there are three principle necessities of any information concealing framework i.e. security, limit and heartiness. Every one of these variables are conversely relative to each other and along these lines, it is exceptionally hard to accomplish them together. Here, the creators have concentrated on expanding the two components, security and limit of information concealing technique. This information concealing plan utilizes a high determination computerized video as a cover flag that implies a video is implanted behind a video and they have likewise utilized a picture for confirmation. Therefore, they have utilized vast payloads like video in video and a picture in video as a cover media. The target of stowing away such information relies upon the application and the necessities of the client of that computerized media.

Sunil K. Moon, Rajshree D. Raut, [3] in this work creator has expected to shroud mystery data behind picture and audio of video document. By installing content behind audio record and a verification picture is implanted behind casings of video document. As video is the utilization of numerous still casings of audio and picture (i.e. picture), any casing can be chosen from video and signs from the audio for concealing mystery information. Creators have utilized 4LSB strategy for picture steganography though Phase Coding calculation for audio steganography. They have attempted to expand the security of information by utilizing reasonable parameter of security and verifications, for example, PSNR and histogram that can be acquire at transmitter and collector side

Burate D. J., M. R. Dixit, [4] utilized another method for concealing content in discourse in commotion free condition. They have worked in the computerized space to conceal the content data inside discourse flag utilizing audio steganography procedure. Information concealing rate can be expanded because of this technique. They have kept up the

inventiveness of the discourse transporter motions by implanting the mystery message as opposed to performing substitution task on it. They have consolidated steganography with cryptography to expand security of the framework, however as opposed to utilizing any of the cryptography procedure, they have utilized coding strategies in this technique. Because of this approach the strength of the cover flag is kept up and a higher concealing limit with respect to various audio and discourse flag inspected at various frequencies is accomplished and additionally perused at various piece rates. So this strategy gives higher concealing limit when contrasted with different systems.

IV. Proposed System

Working of Sender side

We are combining cryptography and steganography for hiding data behind audio and image behind video in audio-video file. For hiding image behind video we used LSB replacement technique and for hiding data behind the audio used Parity coding algorithm. Data is encrypted for more security purpose.

Sender selects any one audio-video file. This audio-video file separate using in build software. Now sender will select a secret image which will be transmitted to the receiver. In next step select the video file. Video is nothing but a collection of multiple frames. The number of still pictures per unit of time of video ranges from six to eight frames per second. The algorithm of video steganography is based on the fact that each pixel represented by 3 bytes where each byte representing the intensity of 3 primary colors that is RGB Red, Green and Blue) Size of image file is directly related to number of pixels and granularity of color definition. Sender selects the more than one frame and using LSB algorithm embedded the secret image into the frame. The part of LSB of secret image embedded in one frame and MSB in another frame. The selection of frames is depend on the user or sender. He can be selecting each time new frames.

The system asked for passkey for the user. The user entered the passkey to the system in a number. This passkey number internal selects the frame number . Suppose selected frame no 15 of video then next selected frame is selected automatically.

Now the part of LSB of secret image hide in first frame and MSB part of image hide in next frame.

For hiding secret message behind audio select the audio file and select the secret message. This message first encrypted and then apply the parity algorithm to it. The message will be hide according to odd or even parity.

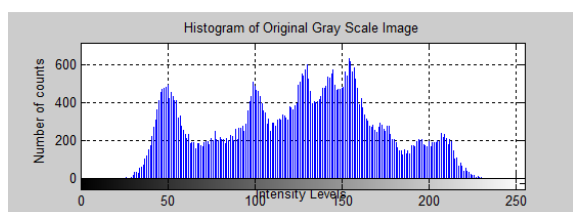
V. Working of Receiver side

The receiver will now perform extraction of key and image from the output video received by the transmitter. The receiver gives the output video as input to the system. The system separates the stego audio-video file (i.e. the received video) into stego audio signals and stego frames using matlab function “vision.VideoFileReader ()”. Then the embedded image is being extracted from the audio signals and the key is being extracted from the video frame. This extracted key is then matched with the 16 byte key. If the keys are matched then the key is provided to the extracted encrypted image, for its decryption and thus, the secret image is finally received by the receiver. And if the keys do not match the system get to know that the user is an unauthenticated user and thus, it displays a “Keys do not match” message and stops the system. Thus if any unauthorized user tries to extract the secret image from the stego audio-video file, the system will decline the process and will not show the embedded image to the user in any condition. Thus, a secret image is securely transmitted from one user to another by informing the username and password to receiver end privately. Pixels and granularity of color definition. Sender selects the more than one frame and using LSB algorithm embedded the secret image into the frame. The part of LSB of secret image embedded in one frame and MSB in another frame. The selection of frames is depending on the user or sender. He can be selecting each time new frames.

VI. Result Analysis

In the proposed method image hiding behind the video and text behind the audio and after embedding secret image and data we merge the stego audio and sego video file. The proposed method improve the embedding capability of audio and video also increase the quality of cover media after hiding the secret data as well as decrease the distortion rate of cover file.

Histogram of original gray image from video



Histogram of Recovered Gray Scale image from video

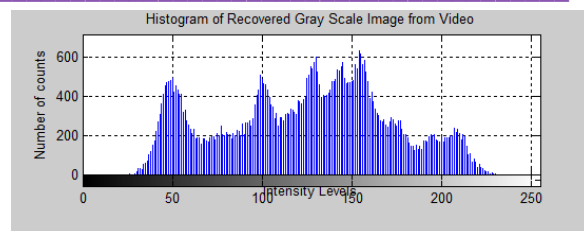


Figure: Histogram for original gray image and extracted gray Image

Audio Amplitude before and after hiding data

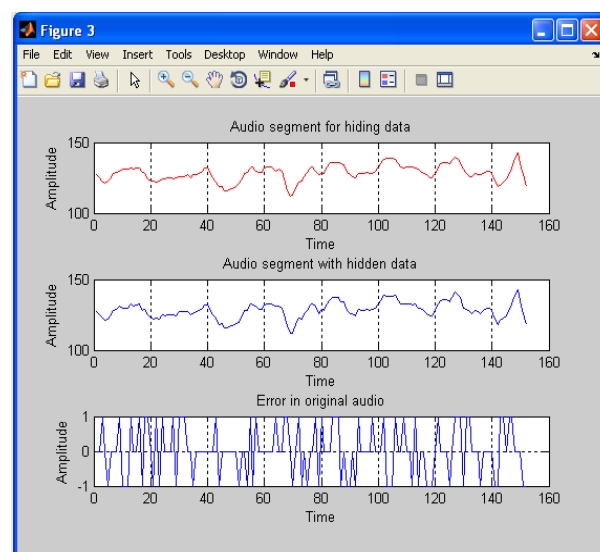
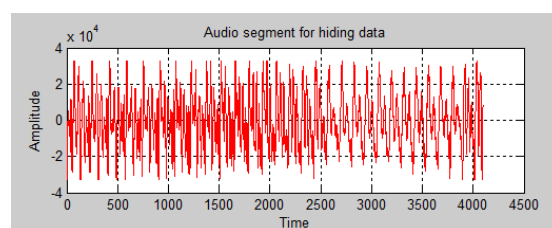
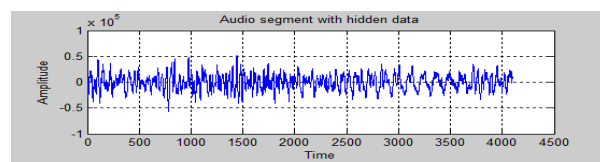


Figure: Audio Amplitude before and after hiding data



Audio segment after hiding data by using existing system



Audio segment after hiding data by proposed system

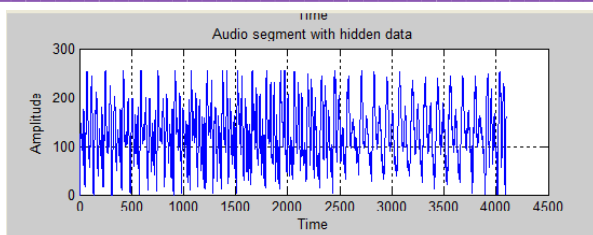


Figure: Audio Steganography graph

VII. Conclusion

Securing the secret data by embedding it in audio-video file with an appropriate steganographic technique provides high security. We are hiding an encrypted secret image behind audio signals of the audio-video file and the encryption key behind a video frame using LSB (Least Significant Bit) replacement technique. Satisfactory results are obtained in both audio and video steganography. The use of LSB substitution technique for steganography and encryption has made it possible to maintain the integrity of the secret image. Here, a robust method of imperceptible data hiding is introduced. The system provides a good and efficient method for hiding the data from hackers and sent to the destination in a safe manner. This method do not compromise with the quality of the data sent, exact image is recovered at the receiver side. Thus we conclude that audiovideo data hiding techniques can be used for a number of purposes other than covert communication or deniable data storage, information tracing and finger printing, tamper detection. As the sky is not limit so is not for the development. Man is now pushing away its own boundaries to make every thought possible. So similarly these operations described above can be further modified as it is in the world of Information Technology.

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