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A Review Paper on Multimedia communication Security with Fused Encryption and Visual Cryptography

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ABSTRACT

The combination of cryptography and steganography will be used for the higher security has gained a lot of importance. Cryptography refers to the study of science and art for achieving security by encodes the messages to make them the data is not readable. When communication occurs through images, the images can either be confidential or not. But when we want to transmit an image that has to be known only to the sender and the receiver it becomes complicated. Steganography is the technique that gives the skill hide the massages that is to be kept secret inside other messages. Another way we can say that the art and science of writing hidden messages in such a way that no one can access, this information expect sender and receiver. This project deals with the higher level of security for hide the information or secret video by using development of system for video based encryption by using different algorithm technique. For this we use the technique for the original image so that it is encrypted at the sender site and can be decrypted only at the receiver site

Keywords: cryptography, steganography, encryption, decryption, Data Encryption standard, Advance Encryption standard.

1. INTRODUCTION

Information and communication technology are developing at a faster pace, and huge data is transmitted over communication medium, which needs high security. Even personal data or secret data should always be kept safe and secure from being misused. Several applications like information storage, information management, client information security, satellite image security, confidential video conferencing, telemedicine, military information security and many other applications, require information security in their corresponding areas. The art and science of keeping messages secure is cryptography, and it is practiced by cryptographers. Cryptanalysts are practitioners of cryptanalysis, the art and science of breaking cipher text; that is seeing through the disguise. The branch of mathematics encompassing both cryptography and cryptanalysis is cryptology and its practitioners are cryptologists. Modern cryptologists are generally trained in theoretical mathematics below figure shows the cryptographic operation.

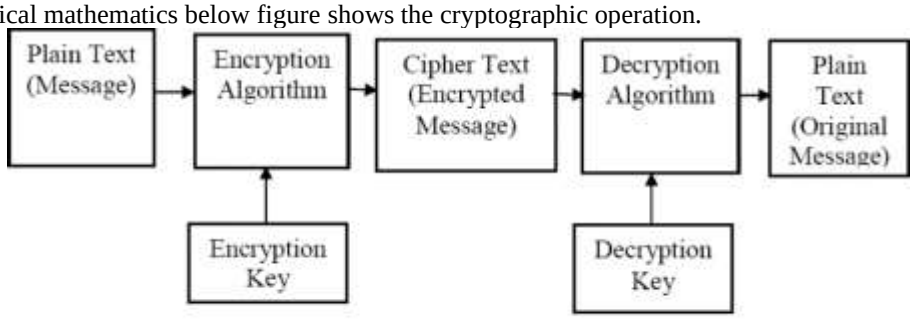

Fig.1.1: The Schematic of Cryptography Operation

Steganography is the technique of hiding confidential information within any media. Steganlysis is process to detect of presence of steganography. The objective of steganography is to hide a secret message within a cover media in such a way that others cannot discern the presence of the hidden message this is shown in below figure. Technically in simple words “steganography means hiding one piece of data with another”. And again we describe in bellow the difference between Cryptography and Steganography.

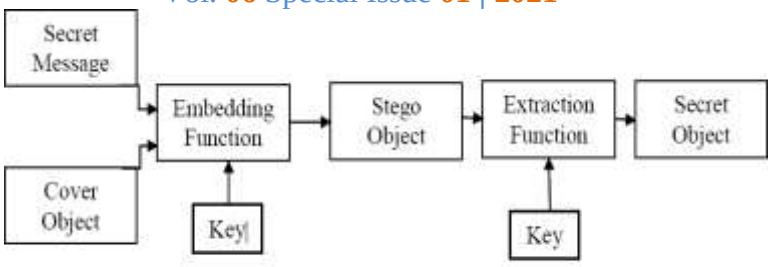

Fig. 1.2: The Schematic of steganography operation

In both Steganography and Cryptography Techniques basic difference given are as follows first one we describe the basic definition of Steganography and Cryptography are as follows, Cryptography means the secret writing and Steganography means the cover writing next difference is objective of the two techniques Steganography focuses on keeping existence of a message secret and Cryptography focuses on keeping contents of a message secret. Another one difference are the key, key use is in cryptography is necessary and key use in steganography is optional.

2. LITERATURE SURVEY

Cryptography hides the information and it can be transformed into an unintelligible form. It is used in advanced technology application such as ATM card, passwords and etc. This all thing depend on cryptography. Steganography is the method that can used for the hide the messages in such way that avoid the detection of hidden messages [7].

The Author Dhawal Seth, et al. [3] Offer the grouping of Cryptography and Steganography to improve the security of the data. The text message that is plain text is first encrypted by using Data Encryption standard (DES) with a key produces Codified Text that is cipher text. Added Cipher text is hide by using cover image fused with embedding algorithm i.e. LSB technique using a steganography key, crops Steganography Image. This Steganography Image is lastly sent to the receiver. Then next if we want original text or plain text then decoding anddecryption operation perform by using proper key we get original plain text. This paper Author used Data Encryption Standard (DES) that is Symmetric key Encryption Algorithm and then LSB Algorithm.

Mr. Vinod Saroha, et al. [4] This Author Paper innumerable attacks are possible on together asymmetric and symmetric cryptographic techniques such as Brute force attack, Man in the middle attack, linear cryptanalysis and etc. Thus From this paper observation we conclude that using only cryptography algorithm/function for data cannot deliver the necessary security. Because hacker access date very easily it cannot be get the guaranty about data. Again Author shows in that paper various cryptanalysis techniques.

In this paper R. P. Kumar, et al. [5] implanted vast quantity of secret information using LSB technique (Steganography).To reach first of all this secret information is compacted using wavelet transforms. Then compression is done the bits are encoding using an alterable or reversible quantum gate.

In this paper the authors Thomas Leontin Philjon, et al. [6] Defined and studied the numerous research works that has to be done in the path of text encryption and text decryption in the block cipher. Hear proposed system is combined the steganography and cryptography and generate a new technique that is metamorphic cryptography.

Furthermore Cryptography and Steganography reach the same objective in different means. In that paper combines the two techniques (cryptography and steganography).

We can say that this technique paradox between them. In that paper paradox for encryption and paradox for decryption flow chart given from message to final image and final image to original message respectively. Shortly its procedure is as follows, firstly message is to be encrypted in cover image by using encryption paradox method, it's secure in cipher image again in intermediate text and finally we get the final image or output in hidden form. Then we want the original message the procedure is reverse that is decrypted intermediate text and then cipher image using the decryption paradox method lastly we get the decrypted original message. This method is strong as compare to other because it's provide two times greater security, in that message hide in image by using steganography.

In this paper [8] the authors H. C. Wu, et al. suggests image steganography scheme, this scheme based on the Least Significant Bit by using replacement method and difference the pixel value. In this proposed method Statistical method hear used in that paper the procedure are as follows encoding the information by varying numerous statistical properties of a cover image and uses a premise testing in the withdrawal process. The overhead process is reached by modify the cover and transforming the cover in that way some statistical characteristics changeexpressively for example if "1" is transmitted then cover is changed or else it is left as remaining same.

3. PROPOSED SYSTEM

The grouping of Cryptography and Steganography to improve the security of the data. The text messages that is plain text is first encrypted by using Data Encryption standard (DES) with a key produces Codified Text that is cipher text. Added Cipher text is hide by using cover image fused with embedding algorithm i.e. LSB technique using a steganography key, crops Steganography Image. This Steganography Image is lastly sent to the receiver. Then next if we want original text or plain text then decoding and decryption operation perform by using proper key we get original plain text. This paper Author used Data Encryption Standard (DES) that is Symmetric key Encryption Algorithm and then LSB Algorithm. The proposed model is shown as bellow figure

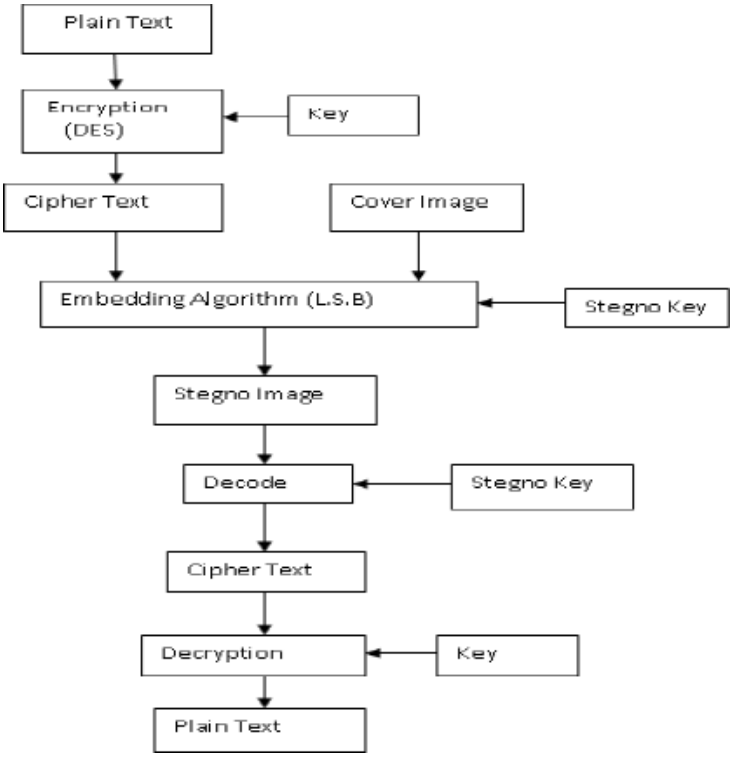

Fig.3.1: Combining cryptography and stegnography by using DES Algorithm

This proposed system does not tamper with the original size of the file even after encoding and also suitable for any type of audio file format. The encryption and decryption techniques used with this system make its security more robust. The Proposed model is as follows this is shown in figure.

In this paper, a specific secret-key image based data hiding model has been proposed which uses an image as the cover object and secret information is embedded into the cover image to form the stego image. Stego image is encrypted in the next step. From the encrypted image recovery of the original image and extraction of the secret data operations are performed.

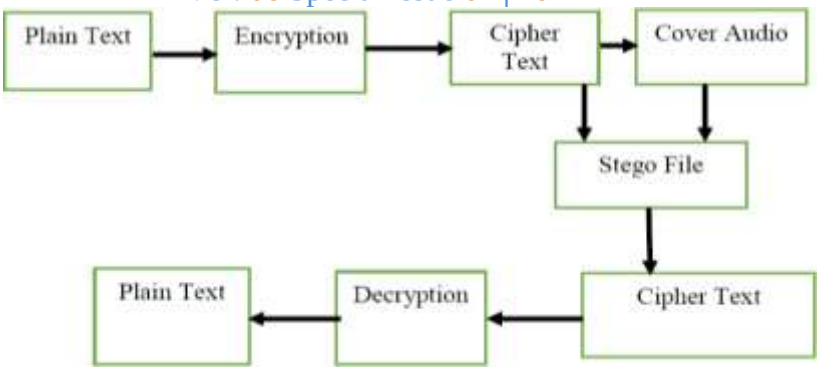

Fig3.2: Combining cryptography and steganography by using audio file

In this paper, author proposed the combination of Image Steganography and cryptography has been achieved by using the LSB technique and AES algorithm. LSB technique is used to hide the secret data into an image and AES isused to encrypt the stego image. From the encrypted image, recovery of the original image and extraction of the hidden data operations are performed. The proposed model is as shown in below figure.

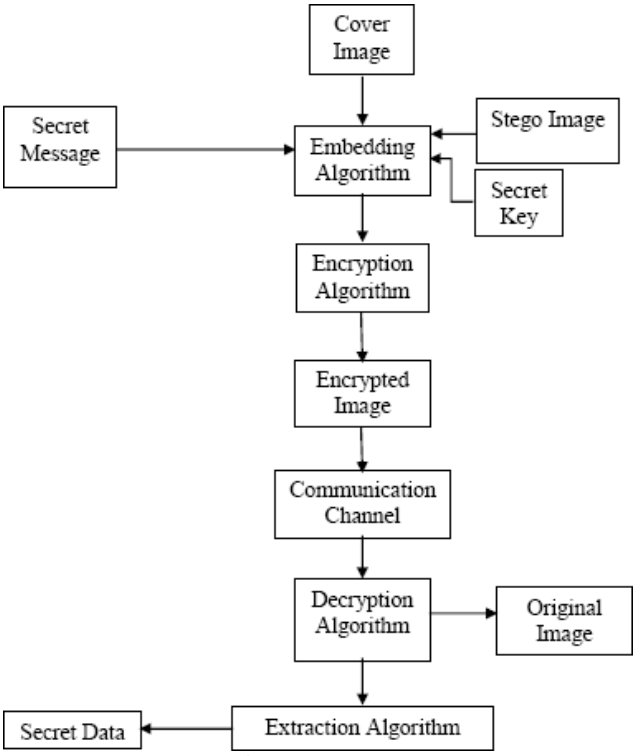

Fig.3.3: Process of Image Stegnography with Cryptography

Proposed an idea that by matching data to an image, there is less chance of an attacker being able to use steganalysis to recover data. Before hiding the data in an image the application first encrypts it. In this model of Image Steganography using Least Significant Bit (LSB) and Cryptography.

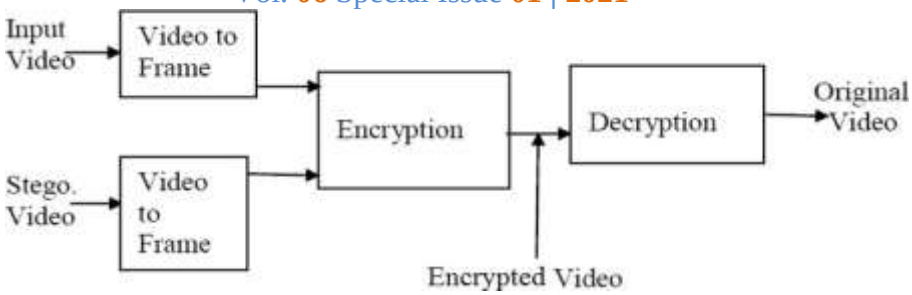

Fig.3.4: Proposed Model

Firstly this plain text suckled to Encryption method, this encrypted data by using key produced the cipher text, then this getting cipher text and cover image apply to embedding algorithm by using stego key there is Least Significant Bit technique use here, next this will be produced final secure steganography image and if we want original plain text reverse the procedure that is decoding and decryption we get first of all cipher text and by applying the key we get original plain text.

4. CONCLUSION

In this paper we presented a way of hiding the secret data inside the cover medium such as video. The proposed system for data hiding uses AES for encryption and decryption which generating public key, which results in more secure technique for data hiding.

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