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Video Steganography Using Encrypted Payload for Communication

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ABSTRACT: Steganography could be a method for human action secret knowledge victimisation acceptable multimedia carrier such as image, audio, and video files. It is use to hide the secret information within the cover image. The word steganography means “covered“ and graph means “writing”, therefore it used to write the secret data on cover image, audio. The steganography Algorithm conceals the source texture image and embeds secret messages through the process of texture synthesis. [1] We weave the texture synthesis process into steganography to conceal secret message that allows extracting secret images and source texture synthesis from the steganography synthetic structure. In video, texture synthesis is the process of providing continuous and infinitely varying stream of frames. Embedding is a process to embed the secret images into cover images. Images data hiding is a technique for increasing the embedding efficiently .In the existing method, secret information is hidden in cover image. In this project, steganalytic algorithm using reversible texture synthesis method is used to resample the smaller texture image and which synthesis a new texture image with a similar local appearance and arbitrary size. However, it still remains a challenging drawback to generate high-quality synthesis results. It is difficult to find the continuous changing frames in video texture synthesis. [5]

Keywords: Cryptography, Encryption, Decryption, Connected component labelling.

I. INTRODUCTION

Steganography truly means secured written work. Its will probably shroud the way that correspondence is occurring. This is regularly accomplished by utilizing a (fairly extensive) spread document and implanting the (somewhat short) mystery message into this record.[2] The outcome is a harmless looking record (the stegofile) that contains the mystery message. Presently, it is increasing new ubiquity with the momentum business requests for advanced watermarking and fingerprinting of sound and feature Steganography has seen exponential use following the 1990s. Stenography algorithm downloads are currently accessible on the Internet as shareware. Governments, military, organizations, and private subjects everywhere throughout the world now utilize steganography for security and protection reason. [5] The music and film commercial enterprises ceaselessly devise new material control techniques, for example, reserving early conveyance of motion picture screenings through steganography.

“The goal of IADS is to integrate all these Data Security and Authentication techniques for secured communication of two parties and maintain secrecy”. Our Moto is to secure communication over geographically distributed area and avoid cybercrime. Video is collection of still frame images and also consists audio, we choose it as a carrier media for data transmission. [6] Suitable algorithm such as 4LSB is used for image steganography and Phase coding algorithm for audio steganography. As addition we introduced FZDH (Forbidden zone data hiding algorithm) to avoid alteration of data during process of data hiding and also cropping attack. With this proposed system and use of FZDH can upload video file with any format (such as .4mp, .3gp, .avi) as a cover file. Security parameters and authentication like histogram, PSNR can be obtained at receiver and transmitter side which are exactly identical, thus increasing data security.

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In this digital world the data security and data communication is changing and advancing day by day. [3] the most excited thing is to know that advancement in these fields had led to the improvement in secure data transmission. Broad band internet connections almost an errorless transmission of data helps people to distribute large multimedia files and makes identical data copies of them. Sending sensitive messages over internet are transmitted in an unsecured form but everyone has got something to keep in secret. [2]The aim of steganography is to hide secret data inside the cover medium without changing the overall quality of cover medium. In steganography actual information is not maintained in its original format but converted in way that can be hidden inside multimedia file e.g. image, video, audio. The current industries mainly demands for digital watermarking and finger printing of audio and video steganography. The music and movie industries are continually searching for new methods for steganography. In “broadcast monitoring” broadcast detectors are used to extract the watermark of given file or medium and report to the broadcasting events to notify the owner or distributor of broadcast status (medium played, time and date), since internet is now the major medium for communication and data transfer purpose it become necessary for each nation to make some counter measures to prevent the foul use of internet. [1] The steganography remains intact under transmission and transformation allowing us to protect our secret data. For this the image is converted into bit stream and this bit stream is then embedded in the changing frame. The cybercrimes are also reporting rapidly nowadays hence the stenographic methods should be that much effective and secure so that crimes can be minimized for that cryptography should be combined with steganography for security of the data come information.

II. LITERATURE SURVEY

1. Exploring steganography: Seeing the unseen

AUTHORS: N. F. Johnson and S. Jajodia,
Steganography is the art of hiding information in ways that prevent the detection of hidden messages. It includes a vast array of secret communications methods that conceal the message's very existence. These methods include invisible inks, microdots, character arrangement, digital signatures, covert channels, and spread spectrum communications. Steganography and cryptography are cousins in the spy craft family: cryptography scrambles a message so it cannot be understood while steganography hides the message so it cannot be seen. In this article the authors discuss image files and how to hide information in them, and discuss results obtained from evaluating available steganography software. They argue that steganography by itself does not ensure secrecy, but neither does simple encryption. If these methods are combined, however, stronger encryption methods result. If an encrypted message is intercepted, the interceptor knows the text is an encrypted message. But with steganography, the interceptor may not know that a hidden message even exists. For a brief look at how steganography evolved, there is included a sidebar titled "Steganography: Some History."

2. Hide and seek: an introduction to steganography,

AUTHORS: N. Provo’s and P. Honeyman
Although people have hidden secrets in plain sight-now called steganography-throughout the ages, the recent growth in computational power and technology has propelled it to the forefront of today's security techniques. Essentially, the information-hiding process in a steganography system starts by identifying a cover medium's redundant bits (those that can be modified without destroying that medium's integrity). The embedding process creates a steganography medium by replacing these redundant bits with data from the hidden message. This article discusses existing steganography systems and presents recent research in detecting them via statistical steganalysis. Here, we present recent research and discuss the practical application of detection algorithms and the mechanisms for getting around them.

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3. Information hiding-a survey

AUTHORS: F. A. P. Petit colas, R. J. Anderson, and M. G. Kuhn,
Information-hiding techniques have recently become important in a number of application areas. Digital audio, video, and pictures are increasingly furnished with distinguishing but imperceptible marks, which may contain a hidden copyright notice or serial number or even help to prevent unauthorized copying directly. Military communications systems make increasing use of traffic security techniques which, rather than merely concealing the content of a message using encryption, seek to conceal its sender, its receiver, or its very existence. Similar techniques are used in some mobile phone systems and schemes proposed for digital elections. Criminals try to use whatever traffic security properties are provided intentionally or otherwise in the available communications systems, and police forces try to restrict their use. However, many of the techniques proposed in this young and rapidly evolving field can trace their history back to antiquity, and many of them are surprisingly easy to circumvent. In this article, we try to give an overview of the field, of what we know, what works, what does not, and what are the interesting topics for research

4. A high-capacity steganography approach for 3D polygonal meshes,

AUTHORS: Y.-M. Cheng and C.-M. Wang,
We present a high-capacity steganography approach for three-dimensional (3D) polygonal meshes. We first use the representation information of a 3D model to embed messages. Our approach successfully combines both the spatial domain and the representation domain for steganography. In the spatial domain, every vertex of 3D polygonal mesh can be represented by at least three bits using a modified multi-level embeds procedure (MMLEP). In the representation domain, the representation order of vertices and polygons and even the topology information of polygons can be represented with an average of six bits per vertex using the proposed representation rearrangement procedure (RRP). Experimental results show that the proposed technique is efficient and secure, has high capacity and low distortion, and is robust against affine transformations. Our technique is a feasible alternative to other steganography approaches.

Comparative Study

Sir No	Paper name	Year, Author name	Description	advantages	disadvantages
1	Exploring steganography: Seeing the unseen	2011 N. F. Johnson and S. Jajodia	Steganography is the art of hiding information in ways that prevent the detection of hidden messages. It includes a vast array of secret communications methods that conceal the message's very existence.	How to hide information in them, and discuss results obtained from evaluating available steganography software.	Less accuracy.
2	Hide and seek: an introduction to steganography,	2015, N. Provos and P. Honeyman	Although people have hidden secrets in plain sight-now called steganography-throughout the	The embedding process creates a stegno medium by replacing these redundant bits with data	Presents recent research in detecting them via statistical steganalysis.

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			ages, the recent growth in computational power and technology has propelled it to the forefront of today's security techniques. background	from the hidden message.	
3	Information hiding-a survey	2011, N. Provos and P. Honeyman	Although people have hidden secrets in plain sight-now called steganography-throughout the ages, the recent growth in computational power and technology has propelled it to the forefront of today's security techniques.	We present recent research and discuss the practical application of detection algorithms and the mechanisms for getting around them.	embedding process creates a stegno medium by replacing these redundant bits with data from the hidden message
4	A high-capacity steganography approach for 3D polygonal meshes,	2015, Y.-M. Cheng and C.-M. Wang	We present a high-capacity steganography approach for three-dimensional (3D) polygonal meshes. We first use the representation information of a 3D model to embed messages.	Our approach successfully combines both the spatial domain and the representation domain for steganography.	Low distortion, and is robust against affine transformations.
5	Line-based cubism-like image—A new type of art image and its application to lossless data hiding	2015, S.-C. Liu and W.-H. Tsai	a new type of computer art, called line-based Cubism-like image, which keeps a characteristic of the Cubism art-abstraction by prominent lines and regions from multiple	Data hiding to enhance the camouflage effect for various information-hiding applications is proposed.	Shifting the pixels' colours for the minimum amount of ±1 while keeping the average colours of the regions unchanged.

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			viewpoints-is proposed. In the creation process with an input source image, prominent line segments in the image are detected and rearranged to form an abstract region-type art image of the .		

III.RELATED WORK

Most picture steganography calculations embrace a current picture as a spread medium. The cost of inserting mystery messages into this spread picture is the picture mutilation experienced in the stegno picture. This prompts two disadvantages. In the first place, subsequent to the measure of the spread picture is settled, the more mystery messages which are installed take into consideration more picture twisting. [7] Hence, a trade off must come between the implanting limit and the picture quality which brings about the constrained limit gave in any particular spread picture. Review that picture steganalysis is a methodology used to distinguish mystery messages covered up in the stegno picture. A stegno picture contains some bending, and paying little heed to how minute it is, this will meddle with the characteristic components of the spread picture. [6] This prompts the second downside on the grounds that it is still conceivable that a picture steganalytic calculation can overcome the picture steganography and hence uncover that a concealed message is being passed on in a stegno picture.

IV. APPLICATIONS

Detect frauds at crowded areas such as

- Banking System
- Company
- Government Sector

V. EXISTING SYSTEM

Texture synthesis has received heaps of attention recently in laptop vision and computer graphics. The most recent work has focused on texture synthesis by example, in which a source texture image is re-sampled using either pixel-based or patch-based algorithms to produce a brand new synthesized texture image with similar local appearance and arbitrary size. [4] Pixel-based algorithms generate the synthesized image pixel by pixel and use spatial neighbourhood comparisons to choose the most similar pixel in a sample texture as the output pixel. Since each output component is determined by the already synthesized pixels, any wrongly synthesized pixels during the process influence the rest of the result causing propagation of errors.[2] Tori and Koriyama pioneered the work of combining data cryptography with pixel-based texture synthesis. Secret messages to be concealed square measure encoded into collared dotted patterns and they are directly painted on a blank image. A pixel-based algorithm coats the remainder of the pixels

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exploitation the pixel-based texture synthesis technique, thus camouflaging the existence of dotted patterns. [6]The capacity provided by the method of Otori and Koriyama depends on the amount of the dotted patterns. However, their methodology had a small error rate of the message extraction.

Disadvantages of Existing System:

1) Each output pixel is determined by the already synthesized pixels, any wrongly synthesized pixels during the process influence the rest of the result causing propagation of errors.
2) To extract messages the output of the stegnography synthesized texture image is photographed before applying the data-detecting mechanism. The capacity provided by the method depends on the number of the dotted patterns. However, their methodology had a small error rate of the message extraction.

VI. PROPOSE SYSYTEM

Experimental results have verified that our project.We proposed an image reversible data hiding algorithm which can recover the cover image without any distortion from the stenography image after the hidden data have been extracted. We illustrate our proposed method in this section. First, we will define some basic nomenclature to be used in our algorithm. The basic unit used for our stenography texture synthesis is referred to as a “patch.” The three fundamental differences between our proposed message-oriented texture synthesis and the conventional patch-based texture synthesis are described. The first difference is that the shape of the overlapped space. We believe our proposed scheme offers substantial benefits and provides an opportunity to extend stenography applications.

Advantages of Proposed System

Our approach offers three distinct advantages.
1. Our scheme offers the embedding capacity that is proportional to the size of the stage texture image.
2. A pillarcryptography algorithm is not likely to defeat our steganography approach.
3. The reversible capability inherited from our scheme provides functionality which allows recovery of the source texture.

VII. SOFTWARE RESOURCES

There has to be required packages, software’s etc. to interact with system.

- Operating system : Windows XP Professional/7.
- Coding language : java

VIII. HARDWARE RESOURCES

There should be required devices to interact with software.

- System : Pentium IV 2.4 GHz.
- Hard Disk : 40 GB.
- Monitor : 15 VGA Colour.
- Mouse : Logitech.
- Ram : 256 Mb.

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IX. SYSTEM ARCHITECTURE

The overall system design consists of following modules:

(a) User Login
(b) Uploading message and Video
(c) Encryption process
(d) Embedding of media
(e) De-embedding of media
(f) Extracting secret message

First of all the system starts and ask the user that is log in authority for Uploading message and video to access the system. Then the system proceeds through the Encryption process and the system tasks as shown in the that is the online tasks of system begins by accessing the web content through the Embedding of media with help of De-embedding of media to identify the message related data specific to the attributes specified then after collection of this data it is stored in an unstructured database Mongo DB. After this some pre-processing tasks like cleaning the data stored in database and formatting it in the form that is suitable for input to the Classifier. [5]

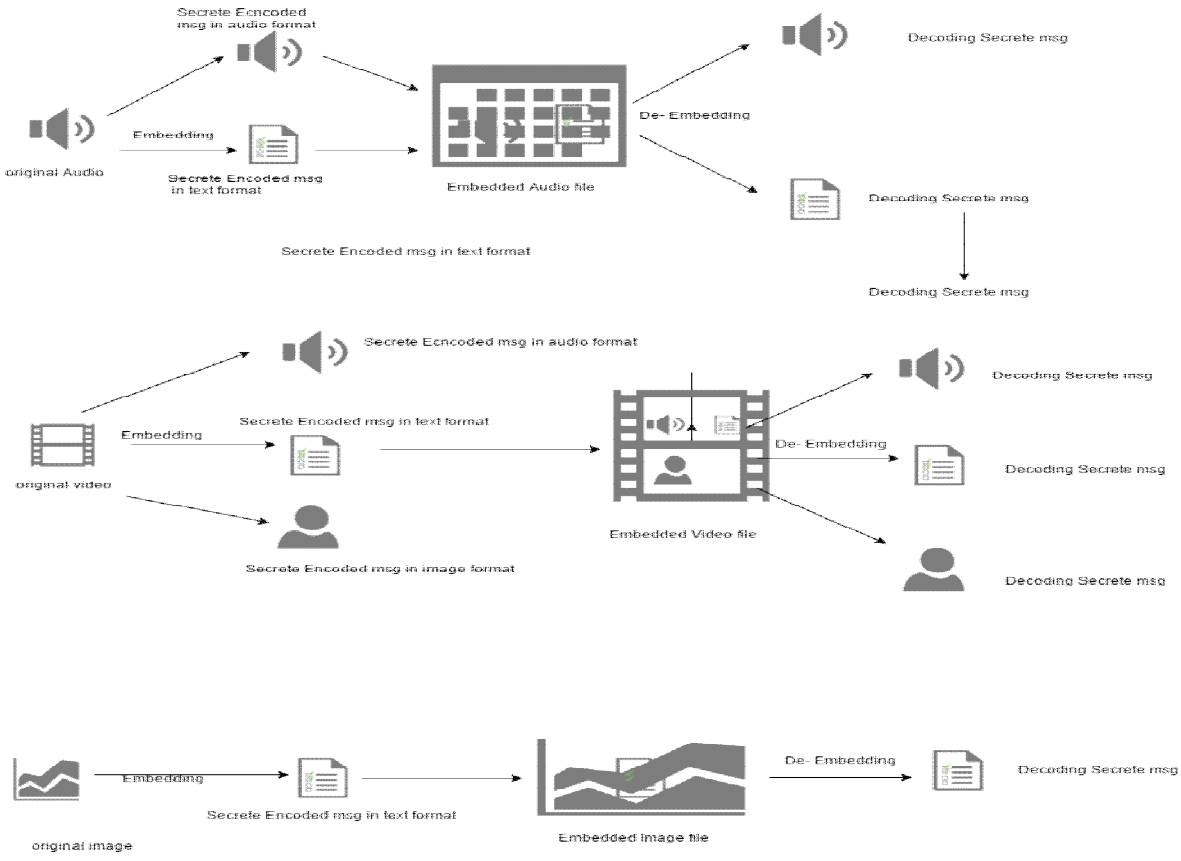

Fig. system architecture

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The classifier then uses blowfish algorithm for distribution of data collected into classes on basis of attributes like region and type of message. This is later succeeded by generation of association rules that represent message patterns and then we analyses or compare various different regions to identify those generated patterns and matching these patterns. [5] Finally we use decision trees to predict the output that is original message and type of hidden whether to use that data as per its accuracy or analyses more data.

In this paper we have introduced a robust technique of invisible audio data hiding. This system is to supply a decent, efficient technique for hiding the information from hackers and sent to the destination in an exceedingly safe manner. This proposed system will not change the dimensions of the file even after encoding and additionally suitable for any type of audio file format. Thus we conclude that audio 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 delineate above can be further modified as it is in the world of information technology. After designing any operation every developer has a thought in his mind that he could develop it by adding more features to it.

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