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Review on Copyright protection in Data Hiding in an Image

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Abstract:

Cryptography is where security engineering meets mathematics.The field of studyrelated to encoded information comes from Greek word for "secret writing" is cryptography.The art and science of hiding information by embedding it in some otherdata is Steganography. The secret communication is carried through many sourceslike image, audio and video files. This technique mainly proposes data hiding by embeddingthe message of interest using geometric style of cryptographic algorithm,thus providing high security. Wavelet transform algorithms are used to perform preprocessing of images.

Keywords —**Cryptography, Steganography, Geometrical way of embedding, Wavelet transforms,DCT**

I. INTRODUCTION

Idea of the project is to hide data in an image using Stegonography with the help of encryption. Data is to be hidded in the image for security of the data. After hiding the data in the image it is sent to the receiver. Receiver has to decrypt the data from the image by using the key which will be sent to the receiver by a close network and the image will be sent by a open network. Both the image and the key should be received to decrypt the data from the image.Cryptography is where security engineering meets mathematics.The field of study

related to encoded information comes from Greek word for "secret writing" is cryptography. The art and science of hiding information by embedding it in some other data is Steganography. The secret communication is carried through many sources like image, audio and video files. This technique mainly proposes data hiding by embedding the message of interest using geometric style of cryptographic algorithm, thus providing high security.

Wavelet and curvelet transform algorithms are used to perform preprocessing of images.Even if the image carrying embedded data i.e., Stego image undergoes a reverseoperation and data cannot be extracted if the receiver is unaware of the exact coordinates of the geometric shape. Hence retrieving secret image for an attacker becomes a hardtask.Steganography and Cryptography combinely

provides better security. In the area of information ,billions of bits of data is created in every fraction of a second and multimedia services on the internet leads to exponential growth of multimedia traffic (image, text, audio, video, etc). With the ease of editing and perfect reproduction in digital domain, the protection of ownership and the prevention of unauthorized tam-pering of multimedia data become important concerns. Steganographic techniques can be used to hide the information within digital audio,images and video files which is perceptually and statistically undetectable. The method of embedding secret message (which can be plain text, cipher text, or evenimages) is usually based on replacing bits of useless or unused data in the source cover(can be audio files, sound, text, Disk space, hidden partition, network packets, digitalimages, software, or circuitry).

Stego and crypto way shows new way of embeddingthe data, especially in Multiresolution analysis, there aredifferent ways of getting Multiresolution. Wavelet transforms are used for getting multiresolutions. Steganography is to create secrete communication, inaddition to this crypto way of embedding gives us higher end

of security. Even if the person gets both stego and cove imagehe needs key to retrieve the data, without the key one can'trecover the data. Thus additional security is incorporated tothe normal Steganography technique.

II. Data Hiding

Today an Internet provides communication between billions of people all around the world. When communication is ascending, security becomes key factor todeal with it. Since Internet communication is entirelydigital, the security can be provided in two ways, one isCryptography and the other is Steganograph**y**.Cryptography is considered to the area of both Mathematicsand Computer Science. Cryptography is a method of sending an enciphered content so that nobody except thereceiver can decipher it. Steganography on the other hand is akin to Cryptography. Though Steganography is an ancientmethod, modern computer technology has given a new lifeto it. A combination of both Cryptography and Steganography provides a very high security

III. THE BASED TECHNIQUES

A. **Wavelet Transform**

Wavelet change has been recognized as a powerful tool in awiderange of applications, includingimage/video processing, number-based analysis, and telecommunication. The advantage of wavelet is that wavelet performs anMRAofasignal with localization in both time and frequency .In addition to this, functions with discontinuities and functions with sharps pikes require fewer wavelet basis vector sin the wavelet domain than sine cosine basis vectorsto(accomplish or gain with effort)a similar close guess. Wavelet operates by convolving the target function with wavelet kernels to get wavelet coefficients representingthe(things that are given/work that's done)inthefunctionatdifferentscalesandorientations. Waveletor Multi resolution explanation (of why something works or happens the way it does)canbe used next to seg mentation approaches, creating new systems which can provide asegmentation of superior quality to those segmentation approaches figured out/calculatedonlywithinthe(related to space or existing in space)domain. Separatewaveletchange (DWT) canbeput into useasasetofhigh-passandlow-passfilterbanks.Instandardwaveletrotting [13], theoutputfrom thelow-

passfiltercanbethenrottenfurther, withthe processcontinuingrecursively inthismanner. For images, 1D-DWT canbeeasilyextendedinto 2D. Instandard 2D waveletrotting, theimagerows are fullyrotten, withtheoutputbeingfullyrotten column wise. Innonstandardwaveletrotting, allthe rows arerottenbyonerottinglevelfollowedby one rottinglevelofthecolumns
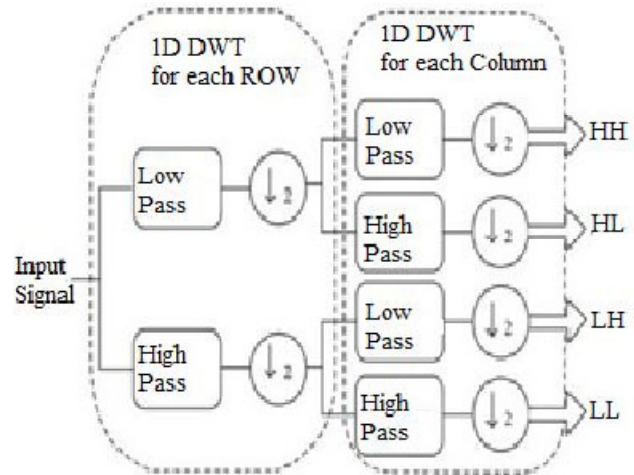
DWT Filter Structure.

B. Curvelet Transform

The curvelet transform[1] has gone through two major revisions. It was first introduced in by Candés and Donoho in 2000, which used a complex series of stepsinvolving the ridgelet analysis of the radon transform of animage. Their performance was very slow; hence, researchersdeveloped a new version which is easier to use andunderstand. In this new method, the use of the ridgelet transform as a preprocessing step of curvelet was discarded,thus reducing the amount of redundancy in the transform andincreasing the speed considerably. The newly constructed and improved version of curvelet transform is known as Fast Discrete Curvelet Transform (FDCT). This new technique is simpler, faster and less redundant than the original curvelettransform which based on ridgelets. Two implementations ofFDCT are proposed:Unequally spaced Fast Fourier transforms (USFFT),Wrapping function.Both implementations of FDCTdiffer mainly bythe choice of spatial grid that used to translate curvelets ateach scale and angle. Both

digital transformations return a table of digital curvelet coefficients indexed by a scale parameter, an orientation parameter, and a spatial locationparameter. Wrapping-based transform is based on wrapping aspecially selected Fourier samples, and it is easier implement and understand.

IV. SYSTEMTECHNIQUE

With the use of Steganographic techniques, it is possible to hide information within digital audio, images andvideo files which is perceptually and statistically undetectable.The method of embedding secret message (which can be plaintext, cipher text, or even images) is usually based on replacingbits of useless or unused data in the source cover (can be audiofiles, sound, text, Disk space, hidden partition, networkpackets, digital images, software, or circuitry). There are twocommon methods of embedding: Spatial embedding in whichmessages are inserted into the LSBs of image pixels, andTransform embedding in which a message is embedded bymodifying frequency coefficients of the cover image (result iscalled the stego-image).Transform embedding methods arefound to be in general more robust than the Spatial embeddingmethods which are susceptible to image-processingtypeof attacks.
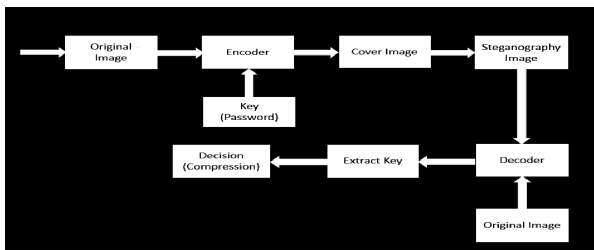

Fig.Architecture diagram

Applications:

1. Covert communication
2.Copyright protection of images
3. Image integrity protection
4.Electronic money
5.Protection of data alteration
6.Confidential communication and secret data

IV. CONCLUSIONS

The technique which is used is very efficient and more feasible. Today an Internet provides communication between billions of people all around the world. When communication is ascending, security becomes key factor to deal with it. Since Internet communication is entirely digital, the security can be provided in two ways, one is Cryptography and the other is Steganography. Cryptography is considered to the area of both Mathematics and Computer Science. Cryptography is a method of sending an enciphered content so that nobody except the receiver can decipher it. Steganography on the other hand is akin to Cryptography. Though Steganography is an ancient method, modern computer technology has given a new life to it. A combination of both Cryptography and Steganography provides a very high security. Stego and crypto way shows new way of embedding the data, especially in Multiresolution analysis, there are different ways of getting Multiresolution. Wavelet transforms are used for getting multiresolutions. Steganography is to create secrete communication, in addition to this crypto way of embedding gives us higher end of security. Even if the person gets both stego and cove image he needs key to retrieve the data, without the key one can't recover the data. Thus additional security is incorporated to the normal Steganography technique.

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