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A novel steganography process using LSB technique with decoded text and speech output

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Abstract
Data and Information safety is an act of shielding records and information systems from unauthorized access, use, disclosure, disruption, change or destruction. Currently, aside from the army and institutional records safety, man or woman records safety is very essential. If person data safety is neglected, it can reason intangible harm and monetary loss. In this take a look at, a novel technique which include photo primarily based data hiding at the side of textual content to speech conversion gadget application has been evolved and examined to decorate records safety. This software is intended to provide a extra relaxed way of verbal exchange for emails which play an essential function in personal facts switch.
Text hiding in Image is the exercise of concealing a report, message, picture, or video within some other report, message, photograph, or video. It benefits from the reality that the incidence of a few neighborhood features within the photo demonstrates terrific patterns for figuring out the payload of the duvet photo sub-regions based on Human Visual System (HVS). In this project we have proposed a novel technique for the secure data transmission for Military use and Police use with the help of steganography and social media or email. We have encoded secret data and sent it through Whatsapp and similar with facebook uploads, while at the remote receiver end we have decoded the image to get the original data. Similarly we have added the text to speech conversion process along with the decoder portion where the decoded message can be converted into speech for ease of access of the data and for emergency notification.

Keywords: steganography, LSB technique, text to speech, image hiding, encryption, decryption

1. Introduction
Steganography has involved lots of attention throughout latest years. Steganography is the manner of hiding a mystery message. Someone can not realize the presence or contents of the hidden message. The cause of Steganography is to preserve mystery verbal exchange among events. The word steganography comes from the Greek Steganos, which means that covered or mystery and graphy way writing or drawing i.E. Steganography way literally protected writing [1]
The primary goal of this paper specializes in growing a novel adaptive steganography scheme for hiding a mystery photograph inside the gray-scale photos that may growth the visual first-rate of the stego-image with providing a suitable embedding payload [2]. The advantage and energy of the proposed scheme is efficient algorithm and the output layout which comes in both textual content and audio layout. Due to the fact that changes in complex regions of an photo are extra tough to be detected, first three nearby capabilities, which includes texture, side, and brightness are extracted from the every block of the photograph [3]. Then, the extracted features are feed as the input values to the FIS to decide the payload of each picture block because the output, adaptively. All blocks are categorised into five different sorts in which greater secret bits are embedded into the pixel values placed into the complex blocks. Finally, the LSB substitution method is used to cover the secret image into the quilt picture pixels [4].

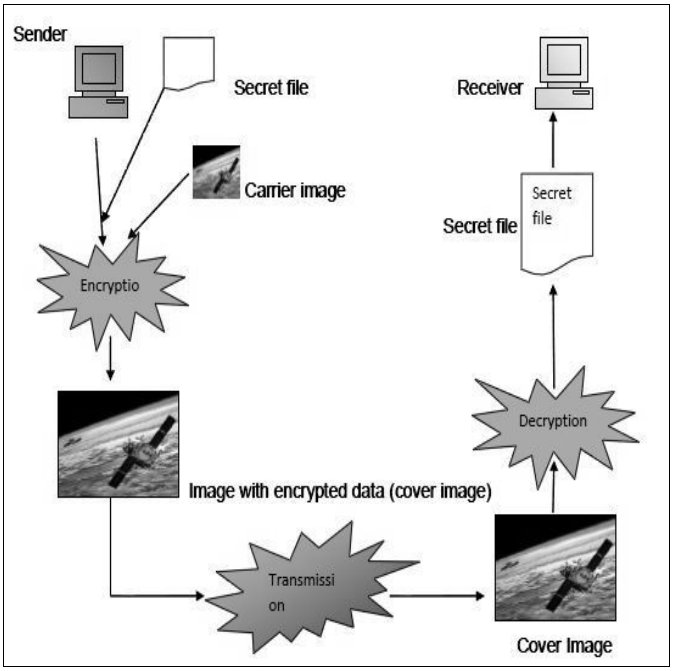

Fig 1

Hossain, Ket.al in their paper "Secured transmission of sensitive images of skin diseases using steganography and

cryptography" [1] presented LSB encoding that uses DCT,pixel flipping techniques to find the stego-image. Stego code generation method was also used to validate the authorized receiver during decryption process. Similarly Ng, K. H et.al in 2018 in their paper "Colour Image Steganography Using SHA-512 and Lossless Compression" used Hash function in their Stego image and its value in host image for further checking. They have used Lossless image compression technique in addition to the system.

The methods used by the above authors in their paper are nor efficient in terms of space and time complexity. We needed a faster executable algorithm for efficient and accurate data analysis. Due to time complexity and faster execution time, we moved for better algorithm and in our work we have implemented a faster LSB technique and fed its output to a speech synthesizer code for audio output of the deciphered text.

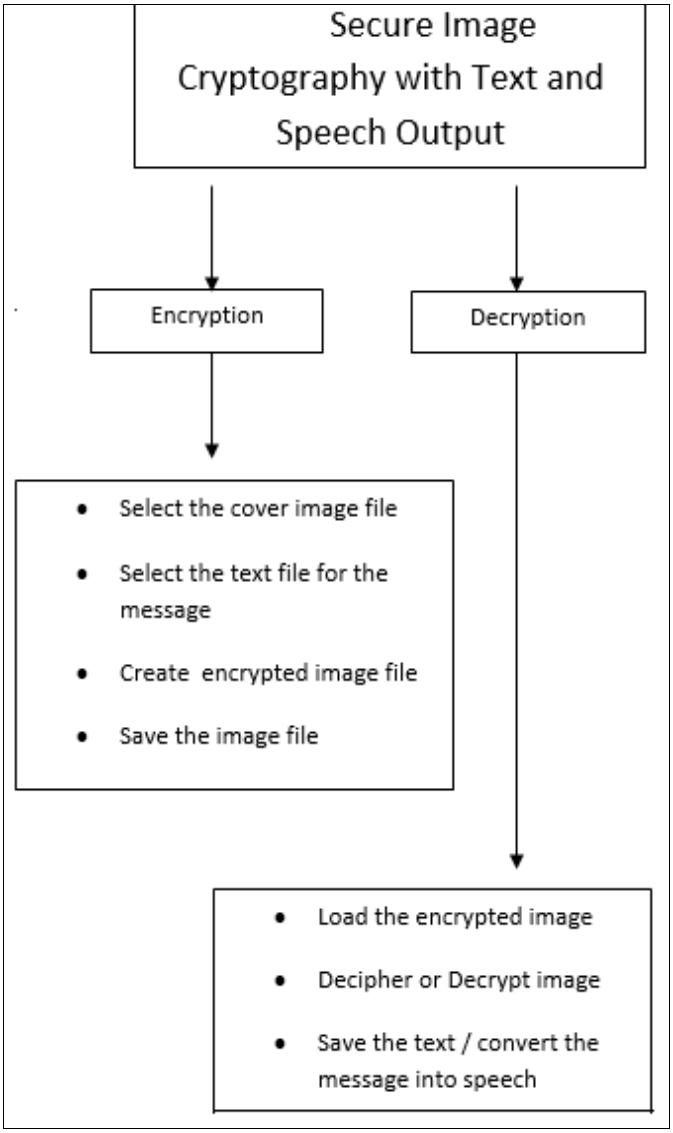

Fig 2: Block diagram for the project

2. LSB Algorithm

Step 1: Convert the hidden records (message) from decimal to binary.
Step 2: Read Cover Image
Step 3: Convert the Input or Cover Image from decimal to binary.
Step 4: Change the byte to be hidden into bits.
Step 5: Take first eight byte of authentic records from the original cover Image.
Step 6: Replace the LSB (least full significant bits) with the aid of one little bit of the data to be hidden.
Let us consider below 8 pixels:-
0 (00000000) 2 (00000010) 4 (00000100) 6 (00000110)
8(00001000) 10(00001010) 12(00001100) 14(00001110)
After LSB method the values of pixels will be changed to:-
1 (00000001) 3 (00000011) 4 (00000100) 6 (00000110)
9 (00001001) 10(00001010) 13(0000110**1**) 14(0000111**0**)

3. Results

Input Image

Fig 3: Input Image

Above figure shows the input cover image for the process.

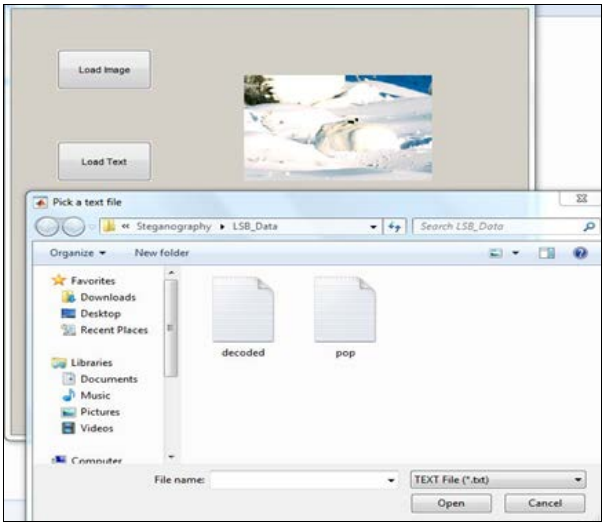

Fig 4: Loading secret data to the Input Image

Above figure shows loading process of the secret data into input cover image. The Input message has been stored in a text file and it is directly encoded into the image through LSB technique.

Input secret data: Secret Data Found in Bhubaneswar

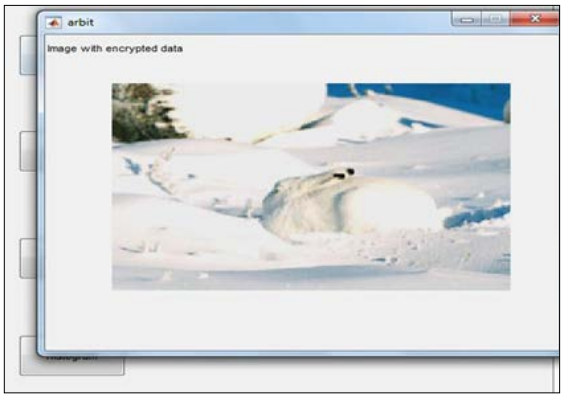

Fig 5: Encrypted input image

Above figure shows the encrypted image which can be transferred into any location through direct transfer or through email or through social media like facebook or whatsapp.

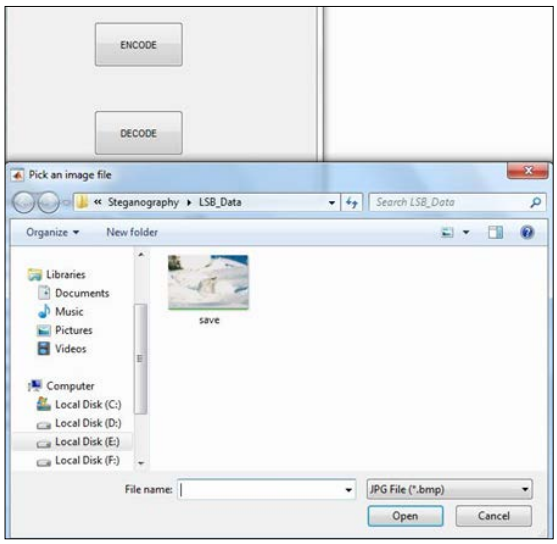

Fig 6: Decryption process

Above figure shows decryption process in which the authentic decipher of the image can be done to extract the secret text from the image.

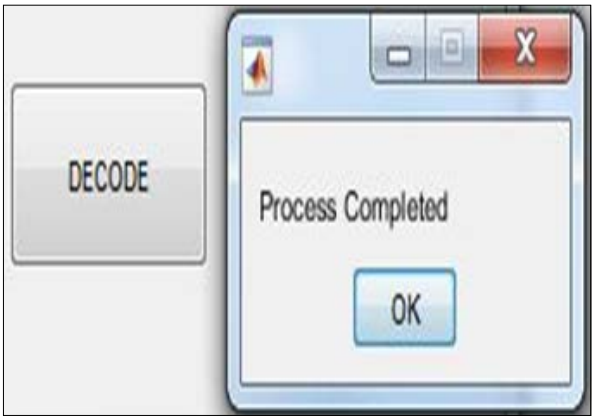

Fig 7: Process completion and text output

Output secret data: Secret data found in Bhubaneswar

Above result shows the completion of the decryption process in and text result for the secret message

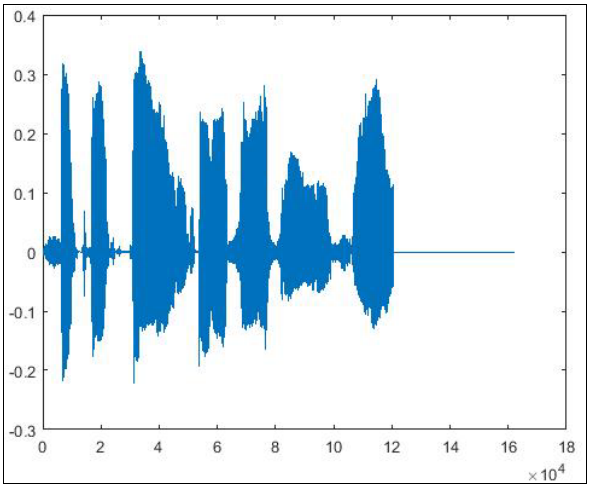

Fig 8: Text to speech output

Above result shows the text output converted into speech signal for ease of users application.

4. Conclusion

In this paper we have implemented a Novel Steganography process using LSB technique where any random image can be transferred along with our secret data encoded very efficiently. The process of transmission can be any mode of transfer of media like email or social media like facebook and whatsapp. At the receiver end the desired used can get the original message through text. Along with this we have included a text to speech conversion process hence the output can be converted into speech signal for ease of access of the users. Additionally a password based protection system has been added at the receiver end for more authenticate access of the secret image. The System has been successfully tested in MATLAB simulation environment giving satisfactory results and can be further used for personal, institutional uses and more for the police and military applications.

5. References

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