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CRIME INFORMATION TRANSMISSION USING STEGANOGRAPHY

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Abstract – Steganography is the method of hiding information of any type, using some type of cover medium. The type of information can be text, audio or video. Image steganography is the process when the cover medium used is an image. The proposed algorithm is a modulation of the standard Least Significant Bit Algorithm (LSB). In the proposed algorithm the information to be hidden is considered to be text. This text is taken and first encrypted using the Data Encryption Standard Algorithm (DES) with the help of a key. This key to encrypt the data is then encrypted using the RSA algorithm. This encrypted text is then hidden in an image using the standard LSB algorithm and then the image is sent. To decrypt the data, first the key has to be decrypted using RSA algorithm. Next, using that key the rest of the data is extracted out by decryption using DES algorithm. This provides a dual layer of security, by first encrypting the text using DES and then encrypting the key for DES using RSA. This ensures high reliability of the algorithm. The Steganography is based on Morphology associative memory. Often, steganalysis methods are created to detect steganography algorithms using Discrete Cosine Transform (DCT) and Discrete Wavelet Transform (DWT). In this paper, cover images are mapped to morphological representation by using morphology transform containing morphological coefficients, and each bit of secret message is inserted in the least significant bit of morphological coefficients.

Index Terms – Steganography, RSA Algorithm, Discrete Cosine Transform.

I. INTRODUCTION

Cryptography is a science and act of manipulating messages to make them secure. At first, Cipher used simple encrypting technique to secure his military messages. To encrypt messages, one simply used to succeed third alphabet in place of actual alphabet. For example, if one wanted to send “attack”; one sent “dwwdfn”. The receivers knew the key, so they decrypted the message and in case any unauthorized person got the message he could not understand it. DES (Data Encryption Standard) is one of the cryptographic algorithms.

An original message to be transformed is called plain text and resulting message after transformation is called cipher text. The process of converting plain text to cipher text is called encryption. The reverse process is called decryption. Encryption and decryption requires the use of secret key. The art of secret writing is called Steganography. It is the art and science of invisible communication. This is accomplished through hiding information in other information, thus hiding the existence of the communicated information. The word Steganography is derived from the Greek words “stegos” meaning “cover” and “grafia” meaning “writing” defining it as

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"covered writing". In image Steganography the information is hidden exclusively in images. It includes hiding messages in other messages like text or picture and which can be decoded by person knowing the key. In this project it proposes the AES (Advanced Encryption Standard) algorithm for secure data communication. And after cryptography, the steganography is applied using the jpeg image.

II. PROPOSED WORK

Garbage collection:

Garbage Collection is another new feature in Visual C#.NET. The .NET Framework monitors allocated resources, such as objects and variables. In addition, the .NET Framework automatically releases memory for reuse by destroying objects that are no longer in use. In Visual C#.NET, the garbage collector checks for the objects that are not currently in use by applications. When the garbage collector comes across an object that is marked for garbage collection, it releases the memory occupied by the object.

Overloading:

Overloading is another feature in Visual C#.NET. Overloading enables us to define multiple procedures with the same name, where each procedure has a different set of arguments. Besides using overloading for procedures, it can use it for constructors and properties in a class.

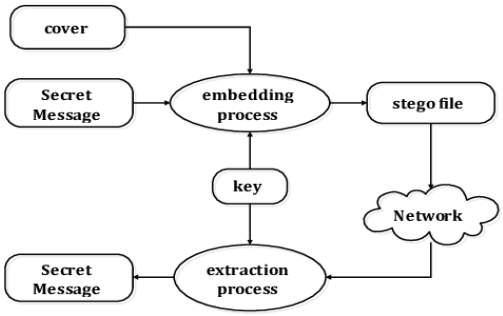
Multithreading:

Visual C#.NET also supports multithreading. An application that supports multithreading can handle multiple tasks simultaneously, it can use multithreading to decrease the time taken by an application to respond to user interaction. To decrease the time taken by an application to respond to user interaction, it must ensure that a separate thread in the application handles user interaction.

Structured exception handling:

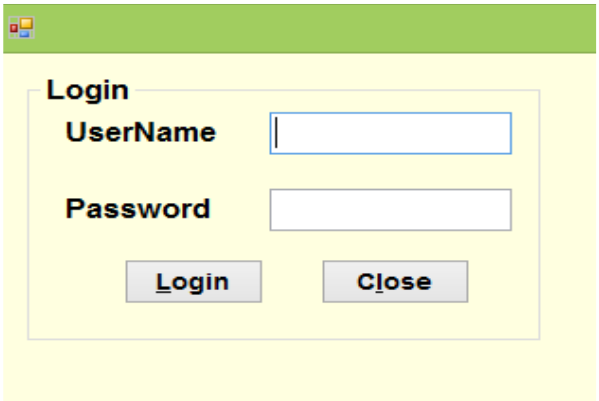
Visual C#.NET supports structured handling, which enables us to detect and remove errors at runtime. In Visual C#.NET, it needs to use Try…Catch…Finally statements to create exception handlers. Using Try…Catch…Finally statements, it can create robust and effective exception handlers to improve the performance of our application.

Proposed work Diagram



III. EXPERIMENTAL RESULTS

Login Form



Sender Page

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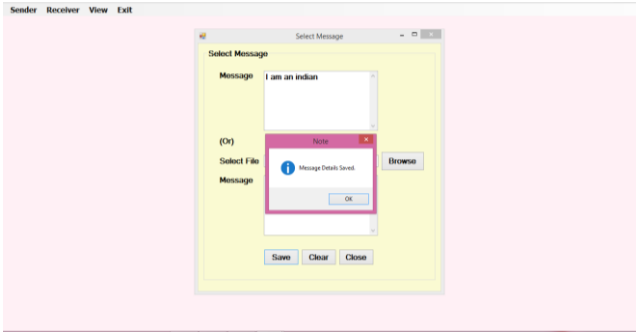
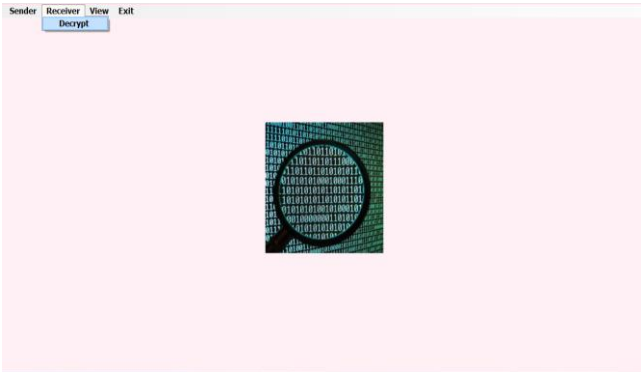
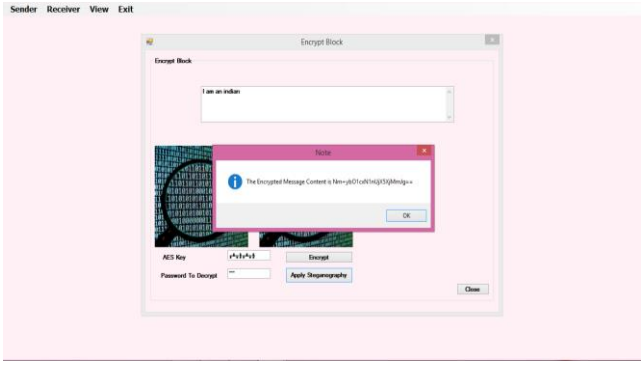


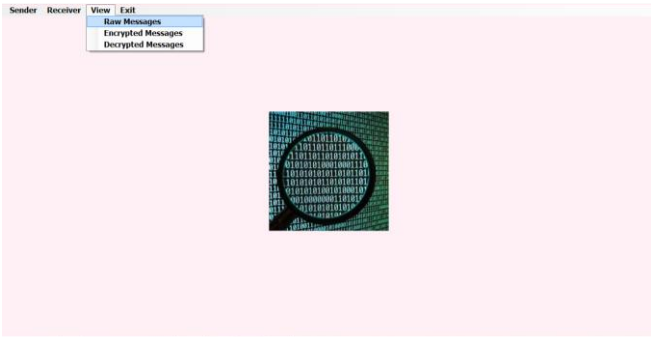
Receiver Page

Encrypted Message Form





View Messages



Save the Message

IV. CONCLUSION

In this project, we measure the quality of the cover image after embedding by comparing with other image transformed steganography algorithms such as discrete cosine and Wavelet transforms. The quality of steno has considerably improved in comparison with the state-of-art methods. In the other experimentation, we test the robustness of our proposed method by using Wavelet and Block-based steganalysis methods. The results show a high level of robustness of our algorithm respect to other steganography algorithm.

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