Chapter 7
A Novel Dual Image-Based Reversible Hiding Technique Using LSB Matching-Digital World

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ABSTRACT

The term internet has become more popular these days, and the whole world is connected virtually. Most people communicate through the internet. Communicating information from one to another in network without disclosing to third party is a typical task, but tracking of information is performed when certain security measures are not taken during transmission between the real-time environment and virtual environment. Creation of virtual representation for real-time process is known for the digital world. Secret data communication is performed under the digital world concept where there is a need of security. The chapter introduces a mechanism providing security using the ISDHR technique with least significant matching and dual images for secret message communication. The results show the proposed method is high enough in providing security to the secret data under transmission.

I. INTRODUCTION

As everyone nowadays utilises the internet, protecting data has become critical. Securing the information means protecting information from unauthorized access or disruption. Staying free of threat or feeling secure are both definitions of security. Business or certain organisations take precautions to detect and prevent illegal access from outside adversaries. These days the necessity of security over network for communication has expanded as well as the value of communication security. Since a huge number of images are circulated over the internet, if any data or information is stored in it, then there is a chance of threat to this data. The image that has information embedded in it can be safe when sent from sender to receiver if it is securely encrypted. There are several methods to hide information or privately transmitting information. The technique of hiding single message inside either another message or physical item. Any computer file, text, picture, or video is hidden inside any other file, text, picture, or video in computing/electronic settings is called as Steganography. Because our images are shared and accessed via public networks, using cryptography or steganography to hide information in images and perform data security is very important. Steganography is the greatest aspect of transferring information this regard. Everything that is required for steganography would be a cover text, which is the means in which information would be hidden, a message composed of information, an algorithm that determines how to hide and retrieve Information, and, optionally, a key that will be used to randomise the set - up of both the information and, possibly, encrypt it. Because of wide number of reasons, data security is vital for both public and private sector companies. For example, businesses have a lawful duty to secure its client and customer corruption of data. Data security functions are necessary to avoid information breaches and decrease the fear of data exposure. There are a variety of approaches for hiding Information within ordinary files.

Embedded pictures are the most widely mentioned kind of steganography. It's also the type which has received the most attention and there are various other types of algorithms like LSB, DCT etc., Software can encrypt an image in the same manner that it can encrypt words. Software used for encryption modifies the values of the numbers in an uniform manner by conducting a series of mathematical operations, known as an algorithm, on the binary data that makes up an image. The internet is frequently utilised and traded for images or visual elements like video and audio files. These types of mediums are ideal for concealing messages. Secret message bits are put in a section of the cover file or carrier which won't be recognised by other party. Data hiding is concerned with hiding the presence of a secret communication, whereas cryptography is concerned with safeguarding the substance of secret data. This is classified like a data concealing and reversible data hiding method since the

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