

A Robust Video Steganography using DWTDM

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Though security is nothing new, the way that security has become a part of our daily life is unprecedented. Attacks, misuse or unauthorized access of information is of great concern today which makes the protection of documents through digital media is a priority problem. This urges the researcher's to devise new data hiding techniques through steganography principle to protect and secure the data of vital significance. This paper proposes a novel video steganography technique for data hiding. In this approach, data hiding operations are executed entirely in the transform domain which has used our developed image steganographic technique DWTDM in order to enlarge the capacity of the hidden secret information and provide an imperceptible stego-frame/stego-video for human vision. In DWTDM secret data is embedded in adjacent DWT coefficient differences, which results an efficient and robust steganographic technique which can avoid various image attacks and works perfectly well for both uncompressed and compressed domain. Experimental results demonstrate that the proposed algorithm has high imperceptibility and capacity and produces satisfactory results in terms of security of the hidden data.

Keywords : Cover Image, Cover Video, DWTDM (DWT Difference Modulation), Steganography, Stego Image, Stego Video.

1. INTRODUCTION

To protect secret message from being stolen during transmission, there are two ways to solve this problem in general. One way is encryption, which refers to the process of encoding secret information in such a way that only the right person with a right key can decode and recover the original information successfully. Another way is steganography. Steganography is a technique to hide a text in a manner that is both invisible and undetectable. The majority of today's steganographic system uses multimedia objects like image, audio, video *etc.*, as cover media [1]. Among them image steganography is the most popular one due its high degree of redundancy. In this method the secret message is embedded into an image in such a way which makes no visible difference between the original and the changed one [2-4]. In video steganogra-

phy, same method may be used to embed a message [5-7]. Audio steganography embeds the message into a cover audio file as noise at a frequency out of human hearing range [8]. One major category, perhaps the most difficult kind of steganography is text steganography or linguistic steganography because due to the lack of redundant information in a text compared to an image or audio [9,10]. The text steganography is a method of using written natural language to conceal a secret message as defined by Chapman *et al.* [11]. For a more thorough knowledge of steganography methodology the reader may see [10,12]. Some steganographic model with high security features has been presented in [13-15] and [16].

1.1. Image Steganography System

A block diagram of a generic image steganographic system is given in Figure 1.

method on it. The performance of the steganographic algorithm is studied and experimental results conclude that this scheme can be applied to produce any compressed stego video with no noticeable degradation in visual quality.

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