A SURVEY ON INVISIBLE WATERMARKING IN DIGITAL IMAGES USING DWT

S.D.Heeba[*1], A.Kowshika[2], H.Ananda Kumar[3], B.Anuradha[4]
[*1] PG Scholar, Department of Information Technology, SNS College of Engineering, Coimbatore, India
[2,3] Assistant Professor,Dept of Information Technology,SNS College of Engineering,Coimbatore,India
[3]Associate Professor,Dept of Information Technology,SNS College of Engineering,Coimbatore,India

Abstract— **The steganography and digital watermarking employs a steganographic techniques, where the steganography aims for imperceptibility to human senses and digital watermarking tries to control the robustness. The important aspects of the any image based steganographic system are to provide the quality of the stego image. In the existing work, the semi honest adversary model is used where they may fails to protect the private data sometimes. For embedding the secret messages in the frequency domain, a lossless data hiding scheme is used based on the quantized coefficients of DWT. The proposed work mainly include the embedding of secret messages in the image and then extracting the secret messages from the image using DWT.After the extraction, the original image had been recovered losslessly. The security and the robustness of the DWT is higher than the DCT. The visual quality of the watermarked images has been measured with PSNR and SSIM parameters. The future work focuses on the development in their security features**.

Keywords: Invisible watermarking, DWT, Lossless Data hiding, Embedding and Extracting.

I. INTRODUCTION

The technology which has been used in our day to day life is internet .Internet has been used in several applications in our daily lives. In our day life we are using the internet for acquiring information and exchanging the information with others in an easier manner. Some of the unauthorized operations like digital copying can be performed relevantly easily. As a result, there is the need to secure the digital images using authentication techniques .Digital watermarking is the process of embedding information into a digital signal and it is difficult to remove. The signal may be in any form such as audio, video or pictures. Data protection, security, intellectual properties are the major concerns where the digital watermarking technology is mainly being used. The major applications of digital watermarking are copyright protection, content authentication and metadata tagging. The major aspects of digital watermarking are to provide robustness against the various attacks and provides us the security. There are two types of watermarking techniques visible watermarking and invisible watermarking. The data which is embedded in the image that cannot be visible to the human are known as invisible watermarking. The data which is embedded in the image can be visible to the user are known a visible watermarking. The invisible digital watermarking are potentially useful for identifying the owner or authorized consumer of a document or for an images. Hence the main objective is to provide permanently and unalterably mark the image so that the credit or assignment is beyond in dispute.
In general the robust watermark and fragile watermark are the other catagories.Robust watermark is difficult to remove from the objects in which it is embedded and the fragile watermark is destroyed if any body tried to tamper with the objects in which it is embedded and these watermarks are very sensitive to attacks. Several methods have been proposed in literature[1][2].

In general, there are two categories of digital watermarking algorithm are the spatial domain technique and frequency domain technique [3]. The frequency domain technique transforms an image into a set of frequency domain coefficient .The transformation adopted may be DCT,DFT and DWT.Once the transformation is applied ,then the watermarking is embedded in the transformed coefficients of the image such that watermark is not visible. Then finally the watermarked image can be obtained by acquiring their inverse transformation of the coefficients. This paper proposes a novel frequency domain based robust watermarking scheme, in which their watermarking is constructed from the spatial domain and embedded in high frequency band and then daubauchies filters are applied to it and then extraction is done.

The following paper is framed in such a way that the section II describe about the related work done for study of the paper. The section III brings out the proposed model for the work. The section IV is given to describe the result and thus the paper is concluding with section V.

II. RELATED WORKS

The applications of watermarking for the multimedia content protection in realistic scenario posses several security issues as customer's right problem, system scalability and untrusted verifiers [4]. In our proposed work the problem such as system scalability and untrusted verifiers can be solved by using the invisible watermark technique and to improve the system. For identifying the information which is imperceptibly embedded into the original work by desirable to convince a verifier and to improve the system. For identifying the information which is imperceptibly and to

improve the system. For identifying the information which is imperceptibly of the presence of watermarking technique, for solving these issues zero-knowledge proof protocol is used and for embedding the content DCT concept is used[5].To satisfy the security requirements of watermarking technique, two approach have been used such as Asymmetric watermarking and the zero knowledge protocols, Zero knowledge detector uses the zero knowledge proofs these produces an increase in computational complexity[6]. The main idea behind the legend watermark is added to the host signal and transform will be linear robustness and may not suitable for the image and video[7].

In our proposed system the DWT concept is used and the information or message is embedded in the sub bands which is robustness and that can be used in the video or image compression

III. PROPOSED WOK

The main purpose of the pre-processing is to reduce the low-frequency background noise. Here the raw image is given for resizing the image and the filtering process should be done to get the enhanced image. The next process is to apply the DWT transformation in the enhanced image, based on the sub-band frequencies and the data are embedded in it which is invisible to the user. After the embedding process the extraction should be done by generating the key and hence we can separate the original image and original data in it.

There are four modules in the proposed system such as Pre-processing, DWT transformation, Embedding and Extraction. In first module, Pre-processing method is used to reduce the noise in an image and thus enhanced image was produced. If a raw image is obtained, image resizing process is to be carried down to reduce its size and then the reduced image is forwarded to the contrast adjustment process to adjust the brightness of the obtained image. Thus, the images are filtered in order to obtain the enhanced image without noise. In second module, DWT transformation method is used for partitioning the images.

Once the DWT is applied on the enhanced images, it splits the images into various subbands such as LL, LH, HH, HL. In third module, Embedding is mainly used for embedding the data by using the random number generator coefficients and finally the data will be embedded in the image as shown in figure 1. In fourth module, Extraction process is used for extracting the secret data and images separately from an invisible watermark image by providing key generation method as shown in figure 2.

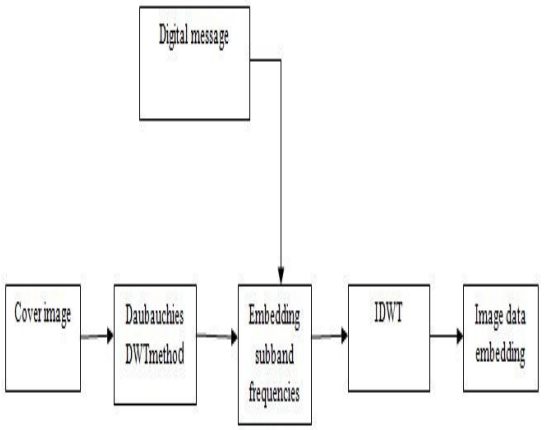

Figure 1:Embedding Process

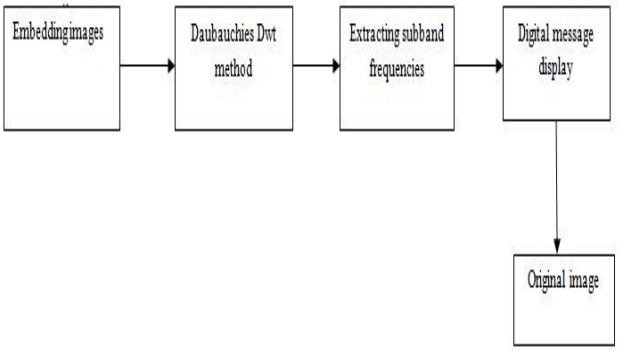

Figure 2:Extraction Process

IV. RESULT

The result that is obtained in our paper is an enhanced image, which is produced by using daubauchies filter. Using this filter the noise is removed from raw data which is given as an input. The noise that are found in the raw image are identified and removed without affecting their quality. Finally we apply the watermarking to improve the security of the images

V.CONCLUSION

The emerging of many technologies for secure transmission of data are involved using images, but there is lack of authentication. Hence we propose a system an improved invisible watermarking scheme for digital images using DWT,to improve the security and authentication. The main goal is to achieve a accuracy to improve frequency domain, avoid time delay and it also provides higher flexibility in terms of their scalability.

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