International Journal of Advanced Trends in Computer Applications
www.ijatca.com

Digital Watermarking Techniques

Gurpreet Singh[1], Naresh Kumar[2]
[1] Gurpreet Singh
M.Tech Student, C.S.E
Giani Zail Singh PTU Campus Bathinda, Punjab
gurpreet_singhit18@yahoo.com
[2] Naresh Kumar
Assistant Professor
Department of Computer Science and Engineering,
Giani Zail Singh PTU Campus Bathinda, Punjab

Abstract: *As the modern society emerged rapidly in this planet, greater the communication takes place between them and the concern regarding their data also arise in front of them. Everybody wants their data to be protected from external environment and remains secure while sending to others. Digital Watermarking is the technique to prevent the data from altering, editing by others. In this we embed the digital signal or pattern into the digital image. Digital Watermarking is chiefly used for user/owner authentication, data protection etc. Here we have present the techniques of Digital Watermarking.*

Keywords: *Digital Watermarking, Signal, Data protection, Environment.*

1. INTRODUCTION

A Digital Watermark is some kind of logo or we can say it is a hidden layer which we attach with the digital image. In this, we insert digital signal or pattern into digital image. When it is present in the unaffected copy of original image then it serves as a digital signature for the copies. The embedding of the digital watermark into the image is done by using Digital Watermarking Techniques. Sometimes it's also said the Digital Watermark is an invisible mark inserted into the digital multimedia data so that it can protect the evidence of rightful ownership. A Lot of research is take place on digital watermarking and now also going on. Digital Watermarking Techniques is used for the copyright protection for digital information. By using this we can protect the immobile images, audio and video files etc.

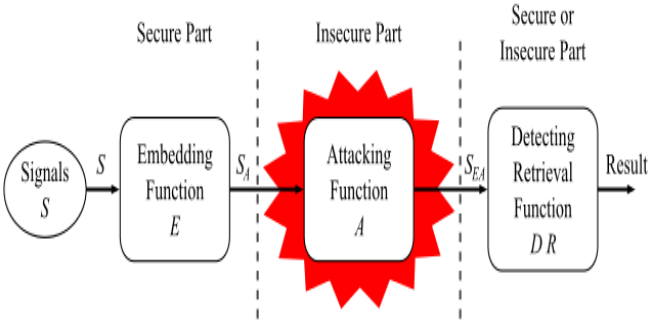

Figure 1: Digital Watermarking process [1]

Digital Watermarks are basically divided into two different types as follows:

- **Visible watermark**

  Digital watermarks which can easily be visible by human eyes are known as Visible watermarks. Mostly these types of watermarks are logo's or sometimes light grey colour text on the image.

- **Invisible Watermark**

  Invisible watermarks are those watermarks which are not visible by human eyes because data is hidden in it and we have to extract it form the image. Mostly these types of watermarks are images, audio, video files etc.

2. RELATED WORK

The various Researcher and Scholars have preformed the lot of work in this field and lot of them proposed the various different types of techniques.

In **paper [2]**, he performs its work by using algorithm based on wavelet transform algorithm. He used this algorithm to embed the Digital image into the ancient Digital Elevation Model (DEM).In this, he picks the position to embed by analyzing the slope of DEM image in the gradual terrains. By using his technique, he tries to prove the error of elevation more than 90% and slope

is fewer than 5%. He also proves that the watermark's robustness is high enough to overcome 5% random noise.

In **paper [3]**, the proposed algorithm is Discrete Wavelet Transform and Singular Value Decomposition (SVD). He firstly converts the RGB image into YCbCr and the watermark is embedded into its Y Component. He proved his method in terms of better PSNR values as compared to the existing SVD based watermarking method and also resistive over various attacks.

In **paper [4]**, he used the text document and presents the innovative technique of embedding the watermark into it where the watermark is depicted as rotation of particular letter in the text based on the proposed lookup table which is developed by using EBCDIC code. He achieved the 100% fidelity by not actual embedded data into main text, only the rotation of the words performed.

3. CLASSIFICATION OF WATERMARKING

Digital Watermarking techniques can be classified into four type's i.e.

- Text Watermarking
- Image Watermarking
- Audio Watermarking
- Video Watermarking

4. TECHNIQUES OF WATERMARKING

The different techniques are proposed so far and most of them give better results on implementation but we mainly divided the watermarking techniques into three main groups of according to the embedding domain of the container image.

- **Spatial Domain Approach**

  In this technique, least significant bits (LSB) of the image pixels are used to embed the watermark. This technique is considered as the earliest and simplest. Information hiding capacity is relatively low and can be easily lost by lossy image compression.

- **Spread Spectrum**

  This technique can work for both spatial domain and frequency domain. This technique gives advantage that we can easily extract watermark without using the original unaltered image. [5].

- **Frequency Domain Approach**

  In this, we use the approach of selectively modified middle frequency of Discrete Cosine Transform (DCT) Coefficients to embed the image watermark into it. This helps to embed more information and also provide security from external threats. Fourier Transformation is the best example of it.

5. CONCLUSION

No doubt the world has gone very far ahead in the technology and daily new inventions are going on. Everyone has its own techniques to simplify the problems of the digital watermarking. In this review paper, I discuss the different techniques i.e. how they work on embedding the digital watermark in the digital image. They try to improve the results from the various problems they face in the prior techniques. We also do so and try to formulate the new technique to improve the existing problems.

REFERENCES

[1] http://en.wikipedia.org/wiki/Digital_watermarking.

[2] He Xiang, Liu Jianjun, " A Digital Watermarking Algorithm for DEM image Based on Stationary Wavelet Transform", Fifth International Conference on Information Assurance and Security, Volume 1, Proceedings, pp. 221-224, Aug18-20,2009.

[3] Shaifali Bhatnagar, Shishir Kumar, Ashish Gupta," An Approach of Efficient and Ressistive Digital Watermark using SVD", International Conference on Advances in Computing, Communications and informatics, ISBN (Print): 978-1-4799-3078-4,pp. 2470-2475, Sept. 24-27,2014.

[4] Priyanka Verma, Rakhshan Anjum Shaikh, Ketki Deshmukh," A Novel Approach to Angle based Invisible Text Watermarking with EBCDIC Coding", International Journal of Computer Applications, ISSN: 0975-8887, Volume 61, No. 20, January 2013.

[5] Deepshikha Chopra, Preeti Gupta, Gaur Sanjay B.C., Anil Gupta," LSB Based Digital Image Watermarking For Gray Scale Image", IOSR Journal of Computer Engineering (IOSRJCE),ISSN: 2278-0661, ISBN: 2278-8727,Volume 6, Issue 1, PP 36-41, Sep-Oct. 2012.