# Review of Digital Image Colour Water Marking

Ayushi Potfode [1], Deepak Kourav[2]

[1]*M.Tech Scholar, NIRT, Bhopal (RGPV), ayushipotfode@gmail.com, India;*
[2]*Assis.Prof. NIRT, Bhopal (RGPV), deep.kourav@gmail.com, India;*

***Abstract*** *– Now-a-days internet play a big role and used for carrying information from one place to another. And this information may be images, audio, and also video. Strikes on the digital data are very simple and easily monitored in the internet. And in this way watermarking process is used for the purpose of authentication. And in the grayscale image watermarking process is used for the process of embedding and detection. Wavelet multi-resolution is also used in the watermarking process. Wavelet means the small signal which work simultaneously in time and frequency. During the embedding process, spread spectrum technique is used. And the influence of watermark is adjusted according the cover image or the original form of image. The DCT (Discrete Cosine Transform) and DWT (Discrete Wavelet Transform) method are used. And this method is not more resistant against the different types of strikes, different forms of noise and JPEG compression because non-blind watermarking algorithm is used in that case. In this paper we purposed a new method and technique which is more resistive against the different types of attacks, different types of noises and JPEG compression. We have use DWPT (Discrete Wavelet Packet Transform) and also the blind detection technique. The meaning of Blind detection is that, we cannot use the original or the cover image information during its extraction process. And for the point of view of security we also have to implant the confidential key. And this confidential key is prepared by using the different kinds of image or the text image. And this method is basically used for the purpose of copyright verification.*

***Keywords****: Colour, JPEG compression, DWPT, wavelet, watermark.*

## I. Introduction

With the appearance of internet and the extremely good growth in the field of Digital technology ,large number of applications in the area of multimedia communications, multimedia networking have been growing rapidly over the years. The essential and efficient purpose is security , safety and the protection of image from the other people .And these people influence our Digital image, audios and videos. So to remove the problem of this manipulation the new technology is developing is known as Digital Watermarking technique. And this is develop for providing safety for multimedia data such as images, audio and videos. The meaning of Digital watermarking defines that the technique in which we have to add some information in the Cover image or multimedia form of data and sometime a confidential key is also embedded in the cover image or multimedia data. And the process of watermarking image processing which is generally done for the image only. And this image is known as watermarked image. And this watermarking technique is attracted by lots of attention. Digital watermarking generally falls into the category of visible watermarking technology and hidden watermarking technology [6]. In addition, according to the process of watermarking embedding process can be divided into two categories, one kind of algorithm directly changes some pixels of image, grey value to join watermarking spatial domain, such as, Least significant bits and spread spectrum method [7, 8], etc. Another type of method is used to make one transform of image and then add to Watermarking transformation domain, such as DWT, Radon transform moments [9].

The general idea is that we have to decompose the image with multi-resolution decomposition technology, and the image will be decomposed into several different spaces and also into the different frequency sub-images. Watermarking has two main and most important properties: transparency and resistiveness . For the image

watermarking, the invisibleness is defined that carrier image is not significantly degraded after the embedding system. The resistiveness refers to the ability that the watermark will not lose after a kind of common signal processing operations.

A watermark can be considered as to be some type of information that is embedded into fundamental form of data for tamper detection, localization, ownership evidence, and/or regenerate tracing purposes. Watermarking techniques is also applicable to various types of host content. Digital watermarking is changing an image in this way, such that you can see some text or background image without actually corrupting or editing the image. Watermarking is used for the identification and authentication of the owner of a digital image. It is a process in which the information provides verification; the owner is embedded into the digital image or signal. These signals could be either videos or pictures and images or audios. For example, famous artists watermark their pictures and images and if somebody tries to copy the image, the watermark is also copied along with the image.
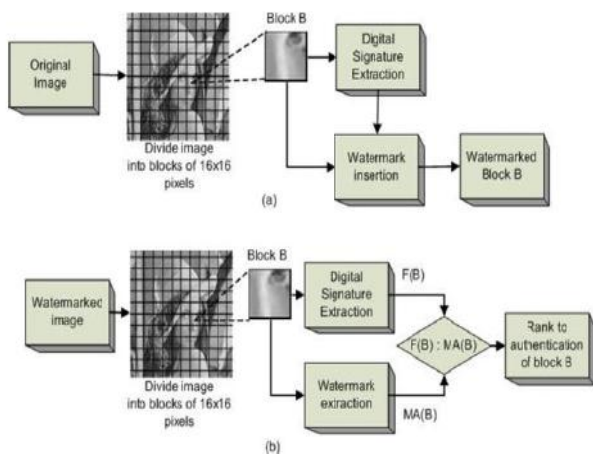


Fig 1- Watermarking

## II. Theory and Method

The main work is to the implementation of the super-resolution reconstruction of image scattered representation on processing carrier images and choose a kind of super resolution reconstruction technique whose original image is first reduced and then enlarged. In the amplification process, the filling of the pixel information greatly eliminates the connection among the original image pixel which can enhance the resistiveness of the watermark.

And the mixed form of error correcting coder can be added more redundancy among codes and increases the error correcting capability of decoder. Finally, block the image and the watermarking which is encoded with mixed error-correcting code is embedded in the low frequency band of the Discrete Wavelet Transform (DWT) repeatedly. This result shows that our image watermarking arrangement with SRIR is more better than the traditional one.
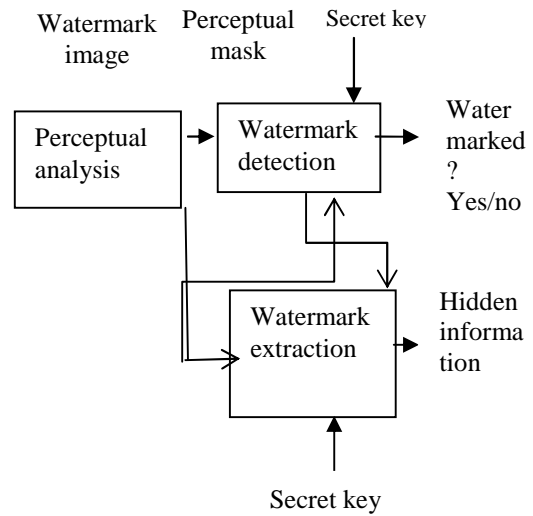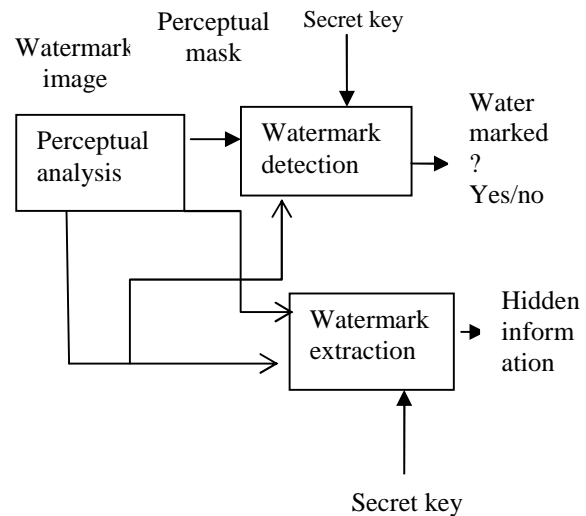


Fig 2 -Watermark Embedding Unit



Fig 3 -Watermark Detection Unit

## III. Literature Review

Qing Liu et al [1] proposed Literature Review "Grayscale Image Digital Watermarking Technology Based on Wavelet Analysis". The aim at the grayscale image, watermarking embedding and detection, on the basis of introduction of digital watermarking principle and wavelet multi-resolution analysis, flexible blind

grayscale image watermarking algorithm that was based on wavelet analysis is put ahead. Firstly, the embedded watermarking signal is processed by spread spectrum technology. Secondly the location of the embedded watermarking and strength is to be automatically adjusted according to the characteristics of the original image, and watermarking is modifying added to the grayscale images and finally the watermarking signal is blindly extracted without the information of the original image. Experimental result shows that the suggested algorithms enhances the anti- attack capability and the hidden nature of the image, improve the security of the watermarking detection, and has higher resistiveness to the random noise attack, cutting and JPEG compression Due to which an adaptive wavelet grayscale image watermarking algorithm is brought ahead. In order to improve the resistiveness of the watermarking, the spread spectrum principle is introduced in the watermarking embedding and detection. Under the assumption of image quality, this algorithm can perceive the blind watermarking extraction and detection, and has a good robustness to random noise strike, cutting, noise pollution and JPEG compression.

Anamitra Makur et al [2] recommended "Tamper-Proof Image Watermarking using Self Embedding". A delicate watermarking with self-embedding for recovery of tampered image, that does not use authentication bits. They use a resistive spread spectrum, based on watermarking pattern using block based embedding, DCT based compression, and other improvements. Simulation results showing recovery performance are presented and find out the Conclusion, that we develop a novel algorithm for interfere detection and recovery of images using no authentication bit and robust watermarking. Here, the watermark is not only used for interfere detection, but it also carries enough information regarding the cover images such that it can help in recovering the tampered parts of the received image. They have used a DCT based image compression scheme, spread spectrum image Stenography to implant the watermark, many error correction schemes (both in the encoder as well as decoder) to enhance the watermark extraction, and careful selection of global and local MSE gateway, to achieve about 90% restoration of the tampered image.

A. V. Subramanyam et. al [3] proposed "Robust Watermarking of Compressed and Encrypted JPEG2000 Images". An acompressed-encrypted domain jpeg2000 image watermarking "gives the concept about Digital rights management (DRM) systems, digital media is often distributed by multiple levels of distributors in a compressed and encrypted pattern. The distributors in the chain face the problem of embedding and their watermark in compressed, encrypted domain for copyright infraction detection purpose. Here, they propose a resistive watermark embedding technique for JPEG2000 compressed and encrypted images. While the proposed method implants watermark in the compressed encrypted domain, the extraction of watermark can be done either in encrypted decrypted domain or in decrypted domain and found out the Conclusion that a technique to implant a resistive watermark in the JPEG2000 compressed encrypted images. The algorithm is simpler and easier to implement as it is directly performed on the compressed-encrypted domain that is,it does not require decrypting or partial decompression of the content.

Xiangbin Feng et al [4] proposed "Digital Image Watermarking Based on Super-Resolution Image Reconstruction". This algorithm is based on the Super-Resolution Image Reconstruction (SRIR) and they use arrangement recognition technique to optimize the performance of digital watermarking. Firstly, the binary watermarking is scanned to one dimension arrangement before embedding and at the same time ,they choose a combined error-correcting code—(3,1,2) convolution code and (3,1) repetition code to encode the original watermarking, and the pattern is placed as input into the (3,1,2) convolution encoder and (3,1) repetition encoder frame by frame. The output result of sequence is scanned in the form of some matrixes as the watermarking information. Second ,the super-resolution reconstruction of image scarse representation is implemented on carrier image and finally a novel resistiveness watermarking that is based on the SRIR, is recommended. This method is basically applicable for the SRIR to the initial process of the original image. The connection among pixels of original will be reduced. Meanwhile, encode the watermark with (3,1,2) convolution encoder and (3,1) repetition encoder before embedding. It also contain the result of tests that is to be performed showing the high resistiveness of the algorithm against the stikes of JPEG dropping compression and salt-and pepper noise, multiplicative noise, center cutting.

Bin Zhang et al [5] proposed "A Near Reversible Image Watermarking Algorithm". The alongside reversible watermarking algorithm based on the LSB replacement. It can not only retrieve the original data to a high extent, but also have strong resistiveness and low calculating complexity. Being a novel category of watermarking arrangement, changeable watermarking algorithms were developed in the current years. As it can retrieve the watermarked data back to the original host signal, changeable watermarking algorithms are the most suitable for medical, military and other special fields. However, these algorithms have their own imperfections, for example :weak robustness, low embedding capacity and high calculating complication.

## IV.   Conclusion

A digital image watermarking arrangement, which implant watermark in the wavelet domain of an image

by using the discrete wavelet packet transform in short DWPT and quantization of the selected dominant coefficients, that was proposed in this paper. In addition to this, blind observation of the watermark is applicable in this method. It saves the time and space for transferring the original image as well as saving the original image, respectively. The parameter of quantization of the watermark, used in the algorithm is a user-defined. It requires a large number of experiments to decide a proper and accurate value. Moreover, the potential, which is an important part of digital watermarking, will also be developed in our future work.

## REFERENCES

[1]. Qing Liu ,TianshuiGrayscale Image Digital Watermarking Technology Based on Wavelet Analysis 2012 IEEE Symposium on Electrical & Electronics Engineering (EEESYM).

[2]. AnamitraMakur, Nikhil Narayan S."Tamper-Proof Image Watermarking using Self Embedding" Electrical & ElectronicNanyang Technological University, Singapore, acm-2012.

[3]. V. Subramanyam, Sabu Emmanuel and Mohan S. Kankanhalli "Robust Watermarking of Compressed and Encrypted JPEG2000 Images" Member, Ieee Transactions On Multimedia, Vol. 14, No. 3, June 2012.

[4]. XiangbinFeng ,Yonghong Chen. Digital Image Watermarking Based on Super-Resolution Image Reconstruction9th International Conference on Fuzzy Systems and Knowledge Discovery (FSKD 2012),978-1-4673-0024-7/10, IEEE-2012.

[5]. Bin Zhang, Yang Xin, Xin-XinNiu, Kai-Guo Yuan, Hui-Bai Jiang,"A Near Reversible Image Watermarking Algorithm" Proceedings Of The Ninth International Conference On Machine Learning And Cybernetics, Qingdao, 11-14 July 2010.

[6]. ME Haroutunian, S.A Tonoyan, "Random coding bound of information hiding E-capacity," Proc. IEEE Symp. International Symposium on Information Theory, IEEE Press,Jun. 2008: 536.

[7]. A Menezes, P. Orschot, S. Vanstone. "Handbook of Applied Cryptography," London: CRC Press, pp.454 - 4591996.

[8]. D. Johnson, A Menezes, S. Vanstone, "The elliptic curve digital signature algorithm (ECDSA)," International Journal of Information Security, voL I, pp. 36-63, 200 I.

[9]. B. He, "A Digital Watermarking Algorithm Based on Radon Transform Invariant Moments and Wavelet Lifting," Computer & Digital Engineering, vol. 39, pp.124-128, 2011