



# DIGITAL WATERMARKING

Sneha N<sup>1,a)</sup>, Samyukthaa V G<sup>1,b)</sup>, Tini j mercy<sup>1,c)</sup>, Brindh S<sup>1,d)</sup> \*K. Karunkuzhali

<sup>a)</sup>Assistant Professor <sup>1</sup>Department of Information Technology, Panimalar Engineering College, Chennai, India

<sup>1</sup>Department of Information Technology, Panimalar Engineering College, Chennai, India. <sup>a)</sup>karunkuzhalidanassou@gmail.com  
<sup>a)</sup>snehaqueen17@mail.com <sup>b)</sup>samukthaagunasekaran@gmail.com <sup>c)</sup>tinijmercy2001@gmail.com <sup>d)</sup>brindhaselvan1231@gmail.com

**Abstract:** In this paper, a perspective to multimedia data into digital watermark is proposed. The kernel of the methodology is to embed the noise-tolerant signals to hide information in a carrier signals. Digital watermarking method have been applied to address copyright issue. The discrete wave transform(DWT) and singular wave decomposition(SVC) methods were used to analyse various types of attacks. The DWT approach was used to embed the host image in four extent; this level was processed using SVD. Also, the two major dimensional complex spectrum is built the basis of the binary sequence, which favours as a primary watermark used in the process of verification. Via digital watermarking methodology the problems eventuate copyright protection, content management on social networks, fraud and tamper detection. It is shown that the field noise- like watermark can be imperceptibly embedded into the spatial domain of the safe guarded image using the tactics of additive watermarking.

**KEYWORDS:** Digital watermarking, Multimedia, Copyright protection, Additive watermarking.

## I. INTRODUCTION

A process of embedding a noise- tolerant signal namely image, audio, video data. The motive of this method is to identify the ownership of the copyright of such signals. “watermarking” is the methodology used for hiding digital information in a carrier signal, digital watermarks conceivably used to verify the integrity of the carrier signal. It is conspicuously used for shadowing copyright infringements and for bank note authentication. Like traditional physical watermarks, the digital watermarks are frequently only sensible under certain conditions. For instance, after the usage of some algorithms. Basically watermarks are the identification mark produce during the paper making process. The signals where the watermark is to be embedded is called the host signal. Predominately water marking system is usually detached into three types embedding attack and detection. In embedding an algorithm welcomes the host and the data to be embedded and generates the water marked signal. If the signal of digital watermarking is transmitted or stored to another person usually. If that person makes a change is called an attack. While the change may not be malicious, the term attack arrives from copyright protection application. Where the digital water marking will be removed while third party may attempt to change. There are many possible modifications, for instance: lossy compression of the data, creeping on image or video.

## II. LITERATURE SURVEY

| TITLE & AUTHOR  | YEAR | FINDINGS  |
|---|------|---|
| Research and development of copyright registration and monitoring system based on digital watermarking and fingerprint technology | 2021 | Registration of a copyright is done to protect the work |
| Circuit blockchain: blockchain -based homomorphic for IP circuit protection   |      | A blockchain based IP copyright protection              |

|  |      |   |
|--|------|---|
|  | 2021 | algorithm   |
| Method for image copyright protection based on construction of highly robust watermarks        | 2020 | A watermark on an image is a clear sign that the image is copyrighted                       |
| Usage of deep learning and blockchain in compilation and copyright protection of digital music | 2020 | Digitization of content has had a profound impact on copyright law                          |
| Digital watermarking current status and key issues   | 2013 | Key issues- visible watermarks, invisible watermarks, public watermarks, fragile watermarks |
| The copyright protection problem: challenges and suggestions                                   | 2009 | Various issues and solution come to copyright plagiarism                                    |

### III. PROPOSED SYSTEM

The information to be embedded in a signal is called a digital watermark, although in some aspects the phrase digital watermark defines the difference between the watermarked signals and the cover signal. A digital watermark is named **robust** with respect to amendment if the information embedded may be detected or found reliably from the marked signal, even if debased by any number of transformations predominantly image abasements are JPEG compression, rotation, cropping, quantization and additive noise.

For video context, temporal modifications and MPEG compressions are frequently added to the list. A digital watermark is called imperceptible. If the contents in watermark is equivalent to the original, it is easy to create robust watermarks. The creation of robust and imperceptible watermarks has proven and quite challenging. The protection of digital content has been robust imperceptible watermarks using this as a tool. For instance, as an embedded no-copy-allowed flag in professional video content.

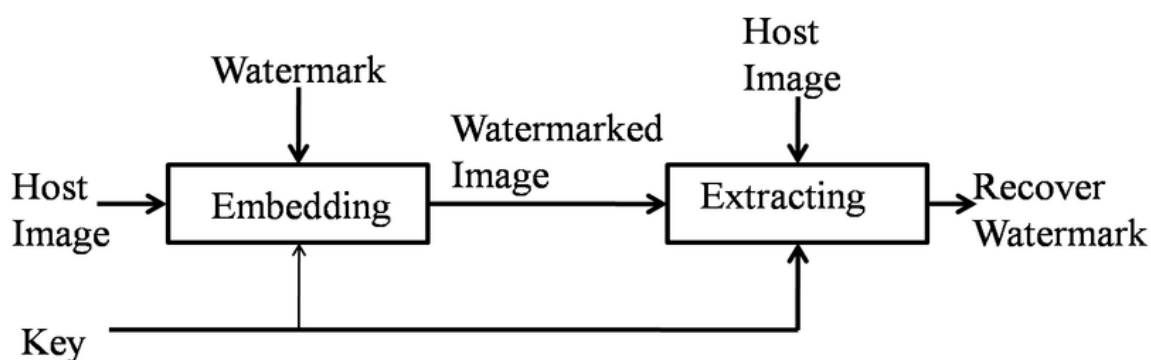


Fig:1 schematic representation of digital watermarking

There are several watermarking techniques,

### ROBUSTNESS:

A Digital watermark is named “**fragile**” if it meets the failure after the detection of slightest modification. The bottom line of fragile is the detection of tamper. The original work’s modifications are clearly noticeable, commonly they are not referred to as watermark, but the generalized barcodes.

A digital watermark is also named **semi-fragile** if it does not assure benign transformations, but it faces the failure after the detection of malignant transformations.

### PERCEPTIBILITY:

The digital watermark is named imperceptible due to the perceptual instigation of original cover signal and marked signal is noticeable.

For instance, digital on-screen graphics like a network logo, content bug, code and opaque images.

This should not muddle with *perceptual*, that is, watermarking which uses the limitations of human perception to be imperceptible.

### EMBEDDING METHOD:

A digital watermarking method is referred to as spread- spectrum if the marked signal is obtained by the additive signal. Spread -spectrum watermarks are known to be modestly robust, but also have a low information capacity due to host interference.

### EVALUATION AND BENCHMARKING:

The evaluation of digital watermarking strategy may provide elaborated information for watermark designer or for end user, therefore, different type of evaluation strategies exists often used by watermark designer is the evaluation of single properties to show, for instance, an improvement.

### TYPES OF DIGITAL WATERMARKING:

1. **VISIBLE WATERMARKS:** These watermarks are visible. For instance, company name, document type.



Fig:2 visible watermark

2. **INVISIBLE WATERMARKS:** These watermarks are embedded in the media and use steganography technique. It cannot be seen by naked eyes.



Fig:3 invisible watermark

3. **PUBLIC WATERMARKS:** It can be understood and modified by anyone using some algorithms.

4. **FRAGIL WATERMARKS:** These watermarks are destroyed by data manipulation. There should be a system which can detect all changes in the data if fragile watermarks are to be used.

## METHODS OF DIGITAL WATERMARKING:

| Method                 | parameter        |                    |            |
|------------------------|------------------|--------------------|------------|
|                        | Imperceptibility | embedding capacity | robustness |
| Histogram              | High             | Low                | High       |
| Spatial feature region | High Low         | High               |            |
| Spread spectrum        | Medium           | Medium             | Medium     |
| DCT                    | Medium           | High               | High       |

Fig:4 Different methods of watermarking with corresponding levels of parameters

## ADVANTAGES:

1. It is used in detecting copyright violation of digital content.
2. Watermarking is a very secure technique. The embedding of watermarks is done by a key.
3. The embedded version of a file is also digital in nature which can be transmitted and used easily.
4. Can hold multiple watermarks as long as they don't overlap.

## IV. CONCLUSION:

The proposed methodology is reliable and hence we formalize the digital watermarking methodology for the copyright protection, tamper protection and content protection in social networks. By using the digital watermarking algorithm, we can indisputably embed our ownership and contents in social networks. Despite the variety of algorithms developed, in the field of embedding information in digital image, this methodology can be developed into an application. So that a third person can also easily hide or protect their personal information.

## V. ACKNOWLEDGMENT

The authors would adore to thank prof. muthulakshmi K for their valuable guidance and assistance with the paper presentation.

## REFERENCE

- [1]umithra, M., Shruthi, S., Ram, S., Swathi, S., Deepika, T., "MRI image classification of brain tumor using deep neural network and deployment using web framework", *Advances in Parallel Computing*, M. Sumithra and S. Malathi, "A survey on Medical Image Segmentation Methods with Different Modalities", *International Journal of Engineering Research and Technology (IJERT)* – Vol. 6 Issue 2, Mar 2018.
- [2]B.Buvaneswari and Dr.T. KalpalathaReddy,"ELSA- A Novel Technique to Predict Parkinson's Disease in Bio-Facial",*International Journal of Advanced Trends in Computer Science and Engineering*, ISSN 2278-3091,Vol.8,No.1,Pp. 12-17,2019
- [3] K. Sridharan , and Dr. M. Chitra , Proficient Information Retrieval Using Trust Based Search On Expert And Knowledge Users Query Formulation System, *Australian Journal of Basic and Applied Sciences*, 9(23) July 2015, Pages: 755-765.
- [4]B.Buvaneswari and Dr.T. Kalpalatha Reddy, "ACPT- An Intelligent Methodology for Disease Diagnosis",*Journal of Advanced Research in Dynamical and Control Systems*,ISSN : 0974-5572,Vol.11,No.4,Pp.2187-2194,2019.
- [5]Sumithra, M., Shruthi, S., Ram, S., Swathi, S., Deepika, T., "MRI image classification of brain tumor using deep neural network and deployment using web framework", *Advances in Parallel Computing*, 2021, 38, pp. 614–617.
- [6]K. Sridharan , and Dr. M. Chitra "RSSE: A Paradigm for Proficient Information Retrieval using Semantic Web" , *Life Science Journal* 2013;10(7s), pp: 418-425
- [7]Sharanyaa, S., S. Vijayalakshmi, M. Therasa, U. Kumaran, and R. Deepika. "DCNET: A Novel Implementation of Gastric Cancer Detection System through Deep Learning Convolution Networks." In *2022 International Conference on Advanced Computing Technologies and Applications (ICACTA)*, pp. 1-5. IEEE, 2022.