

## **A Review on Robust Watermarking with its Applications and Comparative Analysis**

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### **Abstract**

*Due to improvement in imaging skill and the ease with which digital content can be imitated and operated there is a strong requirement for a digital patent device to be put in place. It requires for authentication of the content as well as the owner. Digital Watermarking is present as a potential key to this problem. Till date several watermarking techniques have been proposed. This paper proposed a comprehensive survey of the current schemes that have been developed and their effectiveness.*

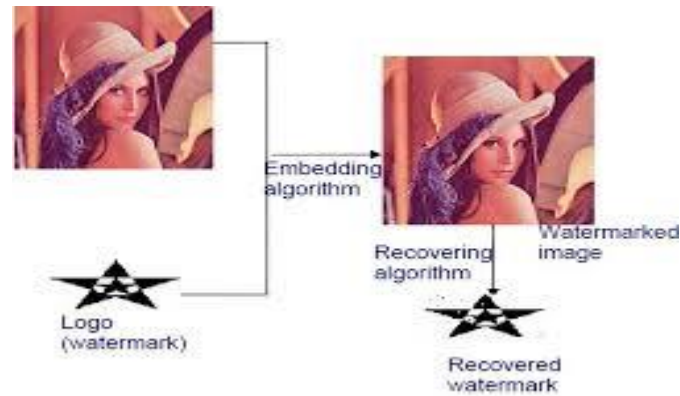
**Keywords:** *Applications, Transforms, Watermarking, Attacks, DCT, DFT, DWT*

### **1. Introduction**

In recent years, as digital media [2] are gaining wider popularity, their security related issues are becoming greater concern. Digital watermarking is a technique which allows an individual to add copyright notices or other verification messages to digital media. Image authentication is one of the applications of digital watermarking, which is used for authenticating the digital images. The objective is not to protect the contents from being copied or stolen, but is to provide a method to authenticate the image and assure the integrity of the image. The major drawback of digital signature is that it can detect if an image has been modified, but it cannot locate the regions where the image has been modified. To solve this problem, many researchers have proposed watermarking based schemes for image authentication.

#### **Watermarking Principle**

A watermarking mechanism is divided into three different steps-embedding, attack and detection. In embedding process, an algorithm takes the host and the data to be embedded and obtains secreted signals. The secreted signal is then communicated, usually communicated to another person. If this person creates a modification, this is called an attack. There are several possible attacks such as noise, blurring, etc. Detection is an algorithm which is applied to the attacked signal to try to extract the watermark from it. If the signal was not modified during transmission, then the watermark is still present and it can be extracted. If the signal is imitative, then the information is also carried in the copy. The embedding takes place by working the content of the digital data, which means the info is not embedded in the frame around the data, it is carried with the signal itself. The original image and the desired watermark are embedded using one of the various schemes that are currently available. The obtained watermarked image is passed through a decoder in which usually a reverse process to that employed during the embedding stage is applied to retrieve the watermark. The different techniques differ in the way in which it embeds the watermark on to the cover object. A secret key is used during the embedding and the extraction process in order to prevent illegal access to the watermark.



**(General Overview of Watermarking Process)**

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- The word “data” is plural, not singular.
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Use 8 point Times New Roman for figure labels. Use words rather than symbols or abbreviations when writing figure-axis labels to avoid confusing the reader. As an example, write the quantity "Magnetization", or "Magnetization, M", not just "M".

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#### H. Footnotes

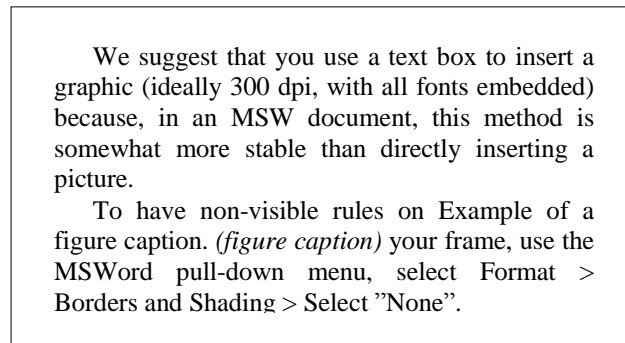
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To help your readers, avoid using footnotes altogether and include necessary peripheral observations in the text (within parentheses, if you prefer, as in this sentence).

Number footnotes separately from reference numbers, and in superscripts. Do not put footnotes in the reference list. Use letters for table footnotes.

**Table 1. Table Type Styles**

Table Head	Table Column Head		
	Table column subhead	Subhead	Subhead
copy	More table copy <sup>a</sup>		



a. Sample of a table footnote. (*table footnote*)

**Figure 1. Example of a Figure Caption; (*figure caption*)**

## 5. Conclusion

In this paper, we provide a comprehensive survey on various digital watermarking techniques, their requirements, their properties, types and applications. Digital watermarking research has commonly concerned on two types of watermarks, fragile and robust. Robust watermarks are made to be detected even after attempts are made to remove them. Fragile watermarks are used for verification purposes and are capable of detecting even minute variations of the watermarked content. But neither type of watermark is ideal when considering "information preserving" transformations which reserve the sense or expression of the content and "information altering" transformations which change the look of the content. To solve this difficulty a semi fragile watermark for still images that can detect information altering transformations even after the watermarked content is subjected to information preserving alterations has to be used.

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