



# Digital watermarking techniques for image security: a review

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Received: 9 April 2019 / Accepted: 12 September 2019 / Published online: 20 September 2019  
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## Abstract

Multimedia technology usages is increasing day by day and to provide authorized data and protecting the secret information from unauthorized use is highly difficult and involves a complex process. By using the watermarking technique, only authorized user can use the data. Digital watermarking is a widely used technology for the protection of digital data. Digital watermarking deals with the embedding of secret data into actual information. Digital watermarking techniques are classified into three major categories, and they were based on domain, type of document (text, image, music or video) and human perception. Performance of the watermarked images is analysed using Peak signal to noise ratio, mean square error and bit error rate. Watermarking of images has been researched profoundly for its specialized and modern achievability in all media applications such as copyrights protection, medical reports (MRI scan and X-ray), annotation and privacy control. This paper reviews the watermarking technique and its merits and demerits.

**Keywords** Watermarking · LSB · DCT · DWT · SVD · Fragile watermarking · Robust watermarking · Hybrid watermarking · PSNR · MSE · BER

## 1 Introduction

Digital watermarking innovation began as early in 1282 at Italy, where paper watermarks were utilized to represent the brand. After the watermark creation, the strategy rapidly spread over to Italy and Europe. Further, the watermarking technique was improved to incorporate the paper configuration, quality and quantity. In the eighteenth century, the

strategy was initially used for introducing hostile to forging measures on cash and in different archives. Today the watermarking techniques were still broadly used as security components in part of the cash.

The main watermark, which was the base of today's innovation was the patent recorded in 1954 by Emil Hem Brooke for distinguishing musical works. After 1995, enthusiasm for digital watermarking expanded and a few associations started incorporating watermarking innovation in various forms. The Secure Digital Music Initiative (SDMI 1999) received watermarking as a focal segment to its music assurance frame- work. The Copy Protection Technical Working Group (CPTWG) (Bell 1999) considered watermarking innovation for video content insurance on DVDs. The International Organization for Standardization (ISO) demonstrated an enthusiasm for watermarking to plan MPEG principles Cox et al. (2007). The term “computerized watermarking” appeared after 1988 and was authored by Komatsu and Tominaga (1988). From that point, there has been a colossal enthusiasm for the field of computerized watermarking. Despite the fact that watermarks can be incorporated with any computerized content, this exploration concentrates on image water- marking. The computerized watermarking process could be understood from Figs. 1, 2, 3, 4. The secret image was hidden inside the cover image

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