

Multimedia Encryption, Transmission and Authentication

Edited by

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Chapter 22

Applications of Digital Watermarking: Current and Future Trends

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22.1 Introduction

A digital watermark is a secret key dependant signal inserted into digital data (images, sound, texts) and which can be later detected/extracted in order to make an assertion about the data. Technically, the digital watermark is represented as a kind of 'natural' noise. The identification information is encoded into the original unwatermarked data by adding more 'natural' noise and/or rearranging existing noise. The locations for embedding the watermark as well as the value of the watermark are determined by secret elements.

Digital watermarking is associated with a wide range of applications. The common ones include owner identification, copy protection, content authentication, fingerprinting, broadcast monitoring and medical applications. However, the list is extensive because different digital watermarking systems could be applied differently. Some systems are designed for collective applications while some are meant for only one specific application.

- A visible watermark is commonly used in applications such as photograph catalogs, allowing the viewer to see what the image is like before ordering a good copy. A visible logo or label is placed at the corner of the image or overlays a transparent pattern over the image. This renders the viewed image useless for reproduction or commercial use.

- Invisible watermarks are used in public information settings such as digital images libraries, museums and art galleries. The location of watermark embedding determines two kinds of methods:

- The spatial domain methods embed watermark information directly into images pixels.

- The frequency domain methods embed watermark information in the transform domain.

The general approach used in these methods is to divide the image into blocks. Each block is