Enforcement of Color Image Copyright Using the Frequency Domain

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Abstract:

The advent of the Internet has resulted in many new opportunities for the creation and delivery of content in digital form. Applications include electronic advertising, real time video and audio delivery, digital repositories, libraries, and Web publishing.

An important issue that arises in these applications is the protection of the rights of digital data. One such effort that has been attracting increasing interest is based on *digital watermarking* techniques.

The watermark techniques are divided into two types, spatial domain and frequency domain techniques. The frequency domain techniques are more stronger than the spatial domain techniques. The proposed algorithm is used with Discrete Cosine transform (DCT). Several experiments were given to illustrates the performance of the proposed scheme. This research focuses on the frequency domain and deals with the images by choosing the best locations to embed the watermark to ensure the digital watermarking requirements.

Keywords: Image, watermark, spatial domain, frequency domain.

1. Introduction:

The development of the World Wide Web (WWW), the possibility of sharing this information by many users all over the world, and the development of software and hardware led to the ability of sending and receiving many data through the network, now it became possible to send and receive different types of animated, static images, and different types of digital media [1].

The digital media such as (images, audio, video) that can be got easily, copied, and distributed with other person's names all these led to the needs of the authentication or copyright. There are many methods to protect the copyright of these media. The important ones of these techniques are the watermark technique [2].

2. Aim of Research:

The research proposed a new technique to embed digital watermarking in the color images, to get an image that contains a digital watermarking. This technique has the ability to safe the watermark against attacks, and at the same time to keep the good quality of the reconstructed image. So, the resultant image can not be recognized by the Human Visual System (HVS).

3. Basic Concepts:
3.1 Digital Watermark:

It refers to embedding a message or digital watermark into another digital media. The purpose behind is the authenticity or copyright of this digital media. The digital watermark must be very difficult to remove, or destruct from the media by the attacks [3].

3.2 Structure of the Digital Watermark:

The structure of a digital watermark composes from two stages: the first stage is the watermark embedding, and the second is the watermark detection and extraction. Figure (1) shows the embedding and the extraction operations.

The digital media that contains the digital watermark is called the carrier. The watermarking is not