Abstract

Digital video is becoming popular more than ever due to the widespread of video-based applications. However, a byproduct of such popularity is the worldwide unauthorized copying and distribution of digital video. Digital watermarking has been proposed in the last decade as a solution to prevent unlawful and malicious copying and distribution of digital media by embedding unnoticeable information (called watermark) into the media content. In this study, a robust and heuristic algorithm based on DWT for video watermarking is presented. With the aim of providing the security of the proposed method, the watermark is encrypted first, then the color video is partitioned into units of fixed length. Embedding process is followed by detecting the key-frames in each shot. In order to make the watermark imperceptible, RGB video stream is converted into YCbCr color space. The luminance layers are chosen to embed the watermark and the chrominance layers are left unchanged. Eventually, by using a multiplicative hiding method, watermark image is embedded into frequency components of frames. Using this method a large amount of data can be hidden in a video. Furthermore, the presented method maintains a good transparency of video stream meanwhile resists the watermark against a variety of attacks including geometric attacks such as rescaling, rotation, and non-geometric attacks like Gaussian noise, salt & pepper noise, speckle noise, median & low-pass filtering, blurring, JPEG and MJPEG compression.
A High Capacity Digital Watermarking Scheme for Copyright Protection of Video Data based on YCbCr Color Channels Invariant to Geometric and Non-geometric Attacks

References

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Index Terms

Computer Science
Multimedia And Security

Keywords

Image Scrambling  YCbCr Color Channel  Copyright Protection  Capacity
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