

H.264 VIDEO AUTHENTICATION BASED ON SEMI-FRAGILE WATERMARKING

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ABSTRACT. *The applications of video become very popular. However, the digital data is easy to be illegally altered. Digital video watermarking, that prevented the data to be illegally used, has attracted a great deal of research interest in the past few years. H.264 is a new advanced video compressed standard, but up to the present, very few watermarking schemes have been developed for this purpose. In this article, the authors propose a system, watermark authentication code, which introduces Block Sub-band Index and Coefficient Modulation embedded into the quantized AC coefficient of I Frame. The proposed algorithm used the numbers of Block corresponding to reach video data authentication. The experimental results show that the proposed system can efficiently detect the area of altered illegally. Additionally, results show that watermark embedding preserves the perceptual quality of the video completely.*

Keywords: H.264, Block sub-band index, Coefficient modulation

1. Introduction. The traditional video surveillance devices have been used in supervising system for a long time. Since the digital video technologies are more and more mature, these kinds of surveillance devices are being replaced by the Digital Video Recorder (DVR) in recent years. The H.264 is a new advanced standard for video compression that is developed by the ITU-T Video Coding Experts Group (VCEG) together with the ISO/IEC Moving Picture Experts Group (MPEG) as the product of a partnership effort known as the Joint Video Team (JVT) [1].

Even the computer security techniques promote the DVR systems into a safer environment, however, there still are many tricks to steal or tamper which stored in the security databases. To prevent the data to be illegally used or tampered is one of the most important issues we faced.

In this article, a video watermarking algorithm mode for the H.264 that exploits the specific feature of this new standard was proposed. This method combined the H.264 video watermarking and the DVR together to ensure the security of the video content. A chart of the DVR with Video Watermarking is illustrated in Figure 1, in which, the watermark is embedded in the quantized AC coefficients of Intra frames (I Frame).

In order to ensure the video recording automatically, the authors proposed a new system which adopted the H.264 video compressed and the semi-fragile video watermarking technique. In this research, the watermark was embedded into a 4×4 block of luminance. As a result, the experimental result shows the proposed method could be used on the