An Efficient Video Encryption Scheme in Compressed Domain for H.264/AVC

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***Abstract*— In this paper, an efficient video encryption scheme is proposed for protecting H.264 bitstream. The issues on the compressed domain video encryption have been pointed out and fully addressed. In the proposed scheme, only the most significant bits for video reconstruction in H.264 bitstream are extracted and encrypted, to optimize the trade-off between security level and computational complexity. For intra-frames, only the codewords of intra4×4 prediction mode and the sign bits of the low frequency DCT coefficient are encrypted. For inter-frames, the info_suffix of motion vector difference (MVD) are encrypted. Owing to the proposed scheme is independent of the compression process, thus does not need to modify the structure of H.264 standard codec. Experimental results show that the proposed scheme exhibits significant computational efficiency and reliable security, can resist not only perceptual attacks but also brute-force attacks. Furthermore, it adds a little memory overhead. Therefore, the proposed scheme will be well suited for real-time video applications and resource-limited systems such as smartphone and wireless sensor network.**

***Keyword*— video encryption, H.264, bitstream, compressed domain, security**

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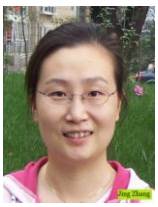

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