

## ROBUST BLIND VIDEO WATERMARKING WITH ADAPTIVE EMBEDDING MECHANISM

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**ABSTRACT.** *In this paper, a novel adaptive approach to spatial domain video watermarking is presented. It takes full advantage of both intra-frame and inter-frame information of video content to guarantee the perceptual invisibility and robustness of the watermark. An effective block classifier is delicately designed based on motion information and region complexity. Meanwhile, the idea of bitplane replacement is introduced in the embedding procedure. A major advantage of this technique is that the watermark can be extracted without referring to the original video while embedded adaptively in accordance with the human visual system and signal characteristics. The multi-frame based extraction strategy ensures that the watermark can be correctly recovered from a very short segment of video. Individual frames extracted from the video also contain watermark information. Experimental results show that the watermarked video appears visually indistinguishable from the original video, and the proposed watermarking technique is robust enough to common video attacks.*

**Keywords:** Copyright protection, Digital watermarking, Video watermarking, Adaptive algorithm

**1. Introduction.** The great development of multimedia technology and computer network undoubtedly facilitates the creation and distribution of digital content, but at the same time it introduces a new set of challenging problems regarding intellectual property rights. Conventional cryptographic systems permit only valid keyholders access to encrypted data, but once such data is decrypted there is no way to track its reproduction or retransmission [1]. Over the last decade, digital watermarking technology has been proposed as an effective solution to the copyright protection problem of multimedia data.