

1. An efficient video watermark method using blockchain

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Abstract: Nowadays, one of the most common approaches for video watermarking is to use singular value decomposition in the discrete wavelet transform domain. In our prior work, we formulated a video watermarking problem to achieve the maximum peak signal to noise ratio as an optimization problem. It chooses wavelet coefficient points in key frames with minimum distortion cost. Yet the existing solution has two drawbacks (1) it requires to store a large number of coordinates depending on the watermark size; (2) it is vulnerable to video frame attacks on the video frame texture area. To avoid them, this paper proposes a blockchain-based approach. Its main concept is to choose wavelet coefficient blocks in key frames and leverage blockchain to connect all the blocks. Our experimental results show that this approach is memory efficient because it only requires to store a single key for a key frame, which is independent of the watermark size; and the overall robustness is greatly improved due to the randomness of the hash function used in the blockchain. Hence, this work had made novel and significant contributions to the field of video watermarking. © 2022 Elsevier B.V.

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