
Video watermarking scheme based on IDR frames using MPEG-2 structure

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Abstract: A robust, imperceptible and blind video watermarking scheme based on MPEG-2 is presented. The proposed algorithm using the DC coefficients from 8×8 block of discrete coefficient transform generated by picking candidate IDR frames based on column transposition method in order to embed the scrambled binary watermark. The watermark can only be extracted by using the secret keys, enhances the security of watermark. The robustness is evaluated by testing against spatial synchronisation attacks, temporal synchronisation attacks and re-encoding attacks by evaluating two parameters as normalized correlation and bit error rate in order to find the degree of similarity and degree of dissimilarity respectively between the original and extracted watermark. The superiority of the proposed algorithm is that the excellent robustness achieved against temporal synchronisation attacks and compression attack by comparing it with previous work and also good perceptibility obtained without changing the motion vectors during the DPCM process of MPEG-2 encoding scheme.

Keywords: discrete cosine transform; MPEG-2 video compression structure; information retrieval; information security.

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Biographical notes: Rakesh Ahuja secured his BTech in Computer Science & Engineering degree from BIET Jhansi, (U.P) India and MTech degree from Uttar Pradesh Technical University, Lucknow, India. He is having total 22 years of experience in the area of industrial, academic and administration. He is currently pursuing his PhD degree from IFTM University, Moradabad (U.P) India. His research interest includes in development schemes of cryptography, information and multimedia security including text, video and image watermarking and database management system.