A Fragile Video Watermarking Algorithm for Content Authentication based on Block Mean and Modulation Factor

International Journal of Computer Applications
© 2013 by IJCA Journal

Volume 80 - Number 4
Year of Publication: 2013

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10.5120/13850-1684

Abstract

Most watermarking algorithms are either robust watermarking for copyright protection or fragile watermarking for tamper detection. This paper proposes a fragile video watermarking algorithm that has the ability to detect tamper in spatial domains. The original video frame is converted from RGB color space into YCbCr color space, then the chrominance component Cb is partitioned into non-overlapping blocks of pixels according to the number of bits of the original watermark. The watermark bits are embedded using a mathematical rule for each block separately. A detailed study for the applicability of this algorithm to content authentication is conducted. Experimental results reveal that the proposed algorithm achieves a low computation cost and high detection rate against a wide range of tampering attacks such as Filtering, Non-Geometric Transformation and Geometric Transformation.

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Index Terms

Computer Science

Security

Keywords

Content Authentication Fragile Video Watermarking Tampering Attacks Modulation Factor.