

Abstract

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Selective image encryption based on multi-level 2d-dwt and multi-map chaotic partial encryption

In this paper, a Selective (Partial) Encryption (SE) algorithm based on Multi-Level two dimension Discrete Wavelet Transform (M-L 2D DWT) and Multi-Map Orbit Hopping Chaotic Encryption (MMOH-CE) is proposed. The multi-chaotic logistic maps used a "Chaotic Polynomial interleaver" to generate hopping pattern of random numbers used in the encryption process. In the proposed Selective multi-level wavelet encryption, the low-low wavelet sub-band is only encrypted and the other wavelet sub-bands can be chosen to be scrambled. The chaotic interleaved number pattern is bitwise XOR with the multi-level low low wavelet decomposition sub-band. In this paper, one and two level (twodimension) wavelet decomposition has been studied. A security analysis for the proposed M-L 2D DWT MMOH-CE is performed and presented. The proposed system appears to have a much strong security and its performance characteristic remains excellent.