

Secure Image Encryption via Enhanced Fractional Order Chaotic Map

Authors : Ismail Haddad, Djamel Herbadji, Aissa Belmeguenai, Selma Boumerdassi

Abstract : in this paper, we provide a novel approach for image encryption that employs the Fibonacci matrix and an enhanced fractional order chaotic map. The enhanced map overcomes the drawbacks of the classical map, especially the limited chaotic range and non-uniform distribution of chaotic sequences, resulting in a larger encryption key space. As a result, this strategy improves the encryption system's security. Our experimental results demonstrate that our proposed algorithm effectively encrypts grayscale images with exceptional efficiency. Furthermore, our technique is resistant to a wide range of potential attacks, including statistical and entropy attacks.

Keywords : image encryption, logistic map, fibonacci matrix, grayscale images

Conference Title : ICKSE 2023 : International Conference on Knowledge Security and Encryption

Conference Location : Istanbul, Türkiye

Conference Dates : December 18-19, 2023