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## Abstract

Chaotic based image permutation and DNA encoding methods are used extensively in the area of the image encryption. This paper presents a hybrid approach of chaos and DNA encoding methods for image encryption. Chaos sequence is used for permutation and DNA Encoding is used for the diffusion process. Index based chaotic sequence is generated using 1D logistic map for permutation; and DNA sequence matrix is obtained by encoding the permuted image and index based chaotic sequence using DNA encoding rule. The DNA matrices are added using DNA addition operation to generate a new matrix. The generated matrix is decoded using DNA decoding rule and encrypted the image is produced. The proposed approach has two unique characteristics: (i) the way integer sequence is generated from the real valued chaotic logistic sequence; and (ii) the formation of the encoded DNA key matrix. The simulation results indicate that the proposed algorithm is highly secure, is resistant to statistical attacks, and has a larger key space.

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## Index Terms

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## Keywords

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