

A Comparative Review on Non-chaotic and Chaotic Image Encryption Techniques



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Abstract In the new era, multimedia technology is used extensively. Multimedia data transfers over the Internet are not adequately stable. Data protection is needed for digital images transfer to avoid unauthorized entities. Many encryption strategies have been established for multimedia data over a medium that is not stable. This paper aims to compare the techniques used in encoding multimedia content. This paper explains the process for assessment for chaos image encryption algorithm. The chaos-based image encryption algorithm is used mainly because of its high protection and efficiency. Parameters such as MSC, encryption quality and avalanche effect check the image's quality. This paper presents a comparative review of non-chaotic and chaotic image encryption techniques.

Keywords Image encryption · Chaotic · Non-chaotic · CBES · CFES

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S.-L. Peng et al. (eds.), *Intelligent Computing and Innovation on Data Science*,

Lecture Notes in Networks and Systems 248,

https://doi.org/10.1007/978-981-16-3153-5_49



Fig. 4 Encryption and decryption of image using non-chaotic scheme

Table 1 Comparison analysis

Quality measure	Chaotic scheme	Non-chaotic scheme
MSC	39.7	35.23
Encryption quality	4.86	4.12
Avalanche effect	99.7 (NPCR) 27.9 (UACI)	80.7 (NPCR) 14.99 (UACI)

4 Conclusion

This paper presented a comparative analysis of chaotic (CBES) and non-chaotic (CFES) schemes. If there is being dysfunctional, it tends to be particularly resistant to the original state. I outlined a variety of assessment requirements for these image encryption algorithms. Multiple comparisons were conducted to determine the efficiency of the PAC program. For example, correlation coefficient, data entropy tests, compressiveness, maximum variance, abnormal deviation, standardized histogram deviation, avalanche influence, NPCRs, UACIs, and the primary spatial analysis are presented.

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