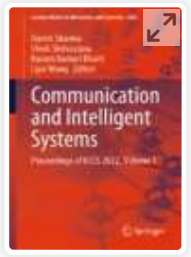

International Conference on Communication and Intelligent Systems

ICCIS 2022: **Communication and Intelligent Systems** pp 615–628

Color Image Encryption Using Hybrid Three-Scroll Unified Chaotic Attractor and 6D Hyperchaotic System

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Conference paper | First Online: 25 July 2023

Part of the Lecture Notes in Networks and Systems book series (LNNS,volume 686)

Abstract

This paper proposes a hybrid encryption algorithm using the three-scroll unified chaotic attractor (TSUCA) and 6D hyperchaotic systems.With the help of a 32-character key, six highly sensitive initial conditions have been generated. Out of these six initial conditions, the first three have been used in TSUCA, and all six initial conditions have been used in the 6D hyperchaotic system along with the

image information for generating the chaotic sequences. The proposed algorithm involves pixel confusion and pixel shuffling to acquire a high security level. Two-level encryption using chaotic sequences generated from TUSCA and 6D hyperchaotic systems are used in the encryption algorithm. To check the efficacy of the suggested algorithm, standard security tests like key space and key sensitivity, histogram analysis, correlation analysis, NPCR, UACI, entropy, noise effect, etc., have been performed. The suggested cryptosystem has shown promising results compared to other methods, as mentioned in this paper.

Keywords

Encryption **Decryption** **Cryptosystem**

Chaotic attractors **Hyperchaotic system**

Lyapunov exponent

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About this paper

Cite this paper

Pal, S., Pathak, A., Mahanty, A., Mondal, H., Mandal, M.K. (2023). Color Image Encryption Using Hybrid Three-Scroll Unified Chaotic Attractor and 6D Hyperchaotic System. In: Sharma, H., Shrivastava, V., Bharti, K.K., Wang, L. (eds) Communication and Intelligent Systems. ICCIS 2022. Lecture Notes in Networks and Systems, vol 686. Springer, Singapore. https://doi.org/10.1007/978-981-99-2100-3_48

.RIS .ENW .BIB

DOI	Published	Publisher Name
https://doi.org/10.1007/978-981-99-2100-3_48	25 July 2023	Springer, Singapore

Print ISBN	Online ISBN	eBook Packages
978-981-99-2099-0	978-981-99-2100-3	Intelligent Technologies and Robotics Intelligent Technologies and Robotics (R0)