

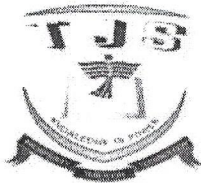
**A novel color image encryption scheme based on a new dynamic
compound chaotic map and S-box**

A PROJECT REPORT

Submitted by

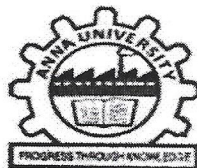
112818104044 M.Praveen Kumar
112818104021 V.Jeeva
112818104009 K.Bharathi Raja

in partial fulfillment for the award of the degree
of
BACHELOR OF ENGINEERING
IN
COMPUTER SCIENCE AND ENGINEERING



T.J.S ENGINEERING COLLEGE
PERUVOYAL (NEAR KAVARAIPETTAI)
GUMMIDIPOONDI TALUK
THIRUVALLUR DISTRICT – 601206

Approved by AICTE and Affiliated to Anna University, Chennai



ANNA UNIVERSITY::CHENNAI 600 025



J. Praveen
PRINCIPAL

T.J.S. ENGINEERING COLLEGE
Peruvoyal, Kavaraipeetai,
Gummidipoondi Taluk,
Thiruvallur Dist - 601 206.

ANNA UNIVERSITY : CHENNAI 600025

BONAFIDE CERTIFICATE

Certified that this project report "A novel color image encryption scheme based on a new dynamic compound chaotic map and S-box" is the bonafide work of the following students

112818104044

M.Praveen Kumar

112818104021

V.Jeeva

112818104009

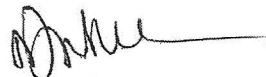
K.Bharathi Raja

who carried out the project work under my supervision.


SIGNATURE

Mr.Senthil Kumar
SUPERVISOR

DEPARTMENT OF COMPUTER SCIENCE
AND ENGINEERING
T.J.S. ENGINEERING COLLEGE




SIGNATURE
Department of CSE
T.J.S. Engineering College
Peruvoyal, Kavaraipeetai

Dr.S.Anbu,M.E.,Ph.D.,
HEAD OF THE DEPARTMENT
DEPARTMENT OF COMPUTER SCIENCE
AND ENGINEERING
T.J.S. ENGINEERING COLLEGE

Submitted for the viva voce examination held on 22/06/2022 at T.J.S Engineering College, Peruvoyal.


INTERNAL EXAMINER




EXTERNAL EXAMINER

PRINCIPAL
T.J.S. ENGINEERING COLLEGE
Peruvoyal, Kavaraipeetai,
Gummidipoondi Taluk,
Thiruvallur Dist - 601 206.

Abstract

Data security is the science of protecting data in information technology, including authentication, data encryption, data decryption, data recovery, and user protection. To protect data from unauthorized disclosure and modification, a secure algorithm should be used. Many techniques have been proposed to encrypt text to an image. Most past studies used RGB layers to encrypt text to an image. In this paper, a Text-to-Image Encryption-Decryption algorithm is proposed to improve security, capacity, and processing time. Digital image encryption is widely used for secure image transmission over the internet.

Therefore, this thesis provides a brief background and discussion about digital image encryption, analyzing existing literature on different digital image encryption algorithms. Moreover, a three-layer image encryption scheme for digital art using logistic map, S-box and Tan logistic map is proposed in this paper. Subsequently, the proposed scheme is evaluated by conducting multiple performance metrics, which resulted in a good performance when compared to the literature.

The method therefore simultaneously owns both image encryption and lossless compression abilities. The given image is first partitioned into non-overlapping fixed-size sub images, and each sub image will then have its own base value. These sub images are then encoded and encrypted one by one according to the base values. By choosing the function to encrypt the base value, there are $(128!)^t$ (or $(128!)^{3t}$) possible ways to encrypt a gray-scaled (color) image if t layers are used in the encryption system. The theoretical analysis needed to build up the proposed encryption method is provided, and the experimental results are also presented.

In modern technological era image encryption has become an attractive and interesting field for researchers. They work for improving the security of image data from unauthorized sources. Chaos theory, due to its randomness and unpredictable behaviors, is considered favorite for the purpose of image encryption.

This paper proposes a diffusion based image encryption algorithm by using chaotic maps. Firstly a chaotic map (piecewise linear chaotic map) is used for the generation of S-box, then it is used for the pixel values modification to generate element of non-linearity. After this these modified values are further diffused with another random sequence, generated by tent logistic chaoticmap.



PRINCIPAL
T.J.S. ENGINEERING COLLEGE
Peruvoyal, Kavaraipeetai,
Gummidipoondi Taluk,
Thiruvallur Dist - 601 206.