ADVANCED ENCRYPTION-COMPRESSION FOR SOCIAL DATA PROTECTION: A REVIEW

Pratiksha Nagesh Bembalkar*1 and Rohini B. Late1

1.   Department of Computer Engineering, MBES'S, M. S. Bidve Engineering College, Vaswadi, Barshi Road, Latur-413 531 Dist : Latur (MS) India.
*Corresponding Author: Pratiksha Nagesh Bembalkar, kewalram.pratiksha15@gmail.com

Abstract—Systems are utilised to securely transmit images via an untrusted channel provider, and a novel grayscale-based block scrambling image encryption algorithm is created to increase EtC system security. This method is intended to improve the security of encryption-then-compression (EtC) systems. The proposed technique, in comparison to the new encryption technology, allows for smaller block sizes and a greater number of blocks. Despite the fact that the original image has three colour channels, photos encrypted using the suggested method contain less colour information because the data is encrypted using grayscale images. These features improve security against threats such as jigsaw puzzle solvers and brute-force attacks. Aside from that, despite the fact that the encrypted photos contain no colour information, it allows for colour sub-sampling, which can enhance image compression speed. In a test, encrypted images were posted to and then downloaded from social networking sites, and the results showed that by employing advanced compression algorithms, the suggested technique is successful for ETC systems while maintaining excellent compression performance.
Keywords- Event Management, image compression, non-local network, attention mechanism.

I.   INTRODUCTION

With JPEG compression, a technique of encryption followed by compression (and so on) has been developed and is currently being tested for use on social networking sites and cloud photo storage services. Because an encrypted image is a full-color image, color-based image encryption algorithms for EtC systems cannot provide the same level of resistance to colour sub-sampling as colour sub-sampling used for JPEG compression. To overcome this issue, the grey scale-based picture encryption solution, which encrypts a full-color image and converts it to a grey scale image, has been proposed. Even if grey scale-based image encryption can be used to avoid the effects of colour subsampling, colour subsampling processes cannot be considered because the grey scale-based image is created.

Furthermore, when compared to color-based picture encryption, compression performance suffers significantly. It has been proposed that the quantization table for grey scale-based images, as well as grey scale-based image encryption based on YCbCr components, give improved compression performance. However, the operation of colour sub-sampling has not been explored.

This paper discusses and considers the colour sub-sampling operation for grey scale-based image encryption as it relates to grey scale-based image encryption. Instead of generating the image from RGB components, the grey scale-based image is created by first converting a full-

color RGB image to YCbCr colour space. Colour subsampling can be used to generate greyscale images that can be printed. We also go over the situation and requirements that must be completed in order for photo encryption to work. The improvements in compression performance and robustness to colour subsampling achieved in this study are evaluated using Rate-Distortion (R-D) curves.

II.   LITERATURE SURVEY

In Intra Block Copy in HEVC Screen Content Coding Extensions Of 2017 by authors Xiaozhong Xu, Shan Liu, Tzu-Der Chuang, Yu-Wen Huang, Shaw-Min Lei,Krishnakanth Rapaka, Chao Pang, Vadim Seregin, Ye-Kui Wang, and Marta Karczewicz It can be concluded that cocluded that This tool is very efficient for coding of screen content video in that repeated patterns in text and graphics rich content occur frequently within the same picture. Having a previously reconstructed block with equal or similar pattern as a predictor can effectively reduce the prediction error and therefore improve coding efficiency.

In Conditional Probability Models for Deep Image Compression Fabian of 2018   Fabian Mentzer Eirikur Agustsson Michael Tschannen RaduTimofte Luc Van Gool In this paper, author focus on the latter challenge and propose a new technique to navigate the rate distortion trade-off for an image compression auto-encoder. The main idea is to directly model the entropy of the latent representation by using a context model: A 3D-CNN which learns a conditional probability model of the latent distribution of the auto-encoder.

In Efficient Nonlinear Transforms for Lossy Image Compression Of 2018 by author Johannes Ballé It can be concluded that Authors assess the performance of two techniques in the context of nonlinear transform coding with artificial neural networks, Sadam and GDN. Both techniques have been successfully used in state-of-the-art image compression methods, but their performance has not been individually assessed to this point. Together, the techniques stabilize the training procedure of nonlinear image transforms and increase their capacity to approximate the (unknown) rate–distortion optimal transform functions. Besides comparing their performance to established alternatives, we detail the implementation of both methods and provide open-source code along with the paper.

In Interference Reduction by Millimeter Wave Technology for 5G-Based Green Communications of 2018 by authors TIN-YU WU AND TSE CHANG It can be concluded that The primary goal of this paper is the optimization of data transmissions and connections between 5G base stations (BSs) as well as the improvement of access technologies and transmission methods in consideration of massive multi-input multi-output, a key technology in 5G networks. In order to reach an access technology supported by multiple BSs and small cells, we use 5G millimetre wave (mm Wave), due to its high directivity and sensitivity to blockage, to enhance the connection system.

In Learning Convolutional Networks for Content-weighted Image Compression of 2019 by authors Mu Li,Wangmeng Zuo,Shuhang Gu,Debin Zhao, David Zhang It can be cocluded that

In this paper, motivated by that the local information content is spatially variant in an image, we suggest that: (i) the bit rate of the different parts of the image is adapted to local content, and (ii) the content aware bit rate is allocated under the guidance of a content weighted Importance map. The sum of the importance map can thus serve as a continuous alternative of discrete entropy estimation to control compression rate.

III.   OPEN ISSUES

Lot of work has been done in this field because of its extensive usage and applications. In this section, some of the approaches which have been implemented to achieve the same purpose are mentioned. These works are majorly differentiated by the algorithm for image encryption compression systems.

The purpose of our proposed system is to ensure the confidentiality of an image through encryption while giving access to watermarking-based reliability security services in both encrypted and compressed domains. As illustrated in system architecture, it relies on two main procedures: image protection and image reliability verification.

At the protection stage, bit-substitution watermarking, JPEG-LS and AES in its CBC mode are jointly conducted so as to protect. This procedure allows the insertion of two messages, and that will be readable from the image encrypted bit stream and from the image compressed bit stream, respectively. Both messages contain security attributes that assess the image reliability. The embedding and the extraction of each message depend on two watermarking keys: in the compressed domain and in the encrypted domain. On its side AES is parameterized with the encryption key.

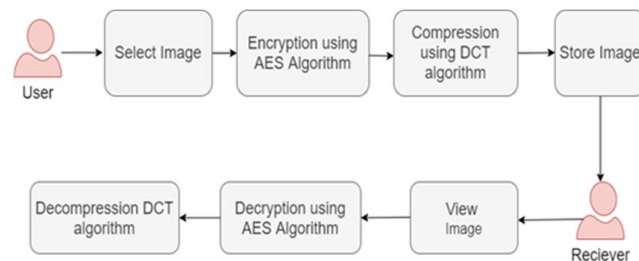## IV. PROPOSED SYSTEM DIAGRAM
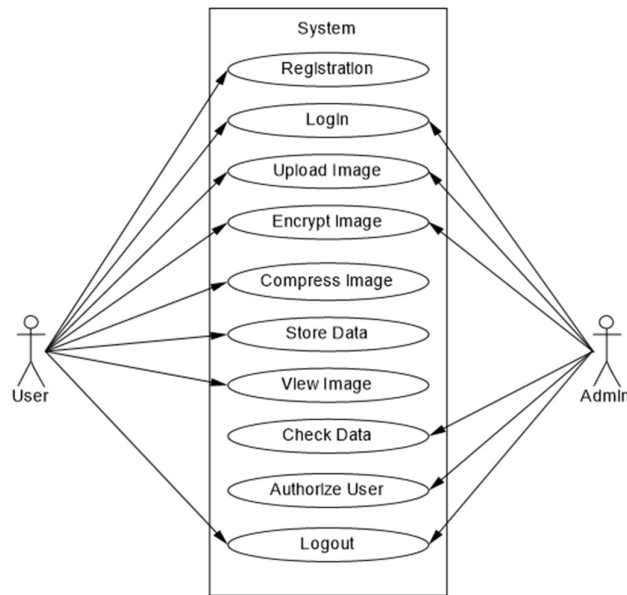

Fig. Working of Model.

Fig. Proposed Model.

V. CONCLUSIONS

The implications of colour subsampling on grayscale-based picture encryption for electronic toner cartridge systems were investigated in this work. Following a description of the scenario and criteria for picture encryption, a demonstration was given. Furthermore, we recommended that the luminance and sub-sampled chrominance components be combined to create a grayscale-based image. To investigate compression performance and robustness against colour subsampling, a large number of images were compressed and decompressed with colour sub-sampling ratios of 4:4:4 and 4:2:0. The results showed that adding colour subsampling to grayscale-based picture encryption does not affect compression performance and that grayscale-based image encryption is robust against colour subsampling.

VI. REFERENCES

[1]   J. Vincent, W. Pan, and G. Coatrieux, "Privacy protection and security in eHealth cloud platform for medical image sharing," in Proc. 2nd Int. Conf. Adv. Technol. Signal Image Process. (ATSIP), Mar. 2016, pp. 93–96.

[2]   D. Bouslimi and G. Coatrieux, "A crypto-watermarking system for ensuring reliability control and traceability of medical images," Signal Process., Image Common., vol. 47, pp. 160–169, Sep. 2016.

[3]   J. C. Dagadu and J. Li, "Context-based watermarking cum chaotic encryption for medical images in telemedicine applications," Multimedia Tools Appl., vol. 77, no. 18, pp. 24289–24312, Sep. 2018.

[4]   Z. Qian, X. Zhang, Y. Ren, and G. Feng, "Block cipher based separable reversible data hiding in encrypted images," Multimedia Tools Appl., vol. 75, no. 21, pp. 13749–13763, Nov. 2016.

[5]   C. V. Kumar, V. Natarajan, K. Nirmala, T. Balasubramanian, K. R. Rao, and S. Krishnan, "Encrypted separable reversible watermarking with authentication and error correction," Multimedia Tools Appl., vol. 78, no. 6, pp. 7005–7027, Mar. 2019.

[6]   S. Haddad, G. Coatrieux, M. Cozic, and D. Bouslimi, "Joint watermarking and lossless JPEG-LS compression for medical image security," IRBM, vol. 38, no. 4, pp. 198–206, Aug. 2017.

[7]   C. Lakshmi, K. Thenmozhi, J. B. B. Rayappan, and R. Amirtharajan, "Encryption and watermark-treated medical image against hacking disease—An immune convention in spatial and frequency domains, "compute. Methods Programs Biomed., vol. 159, pp. 11–21, Jun. 2018.

[8]   X.-J. Tong, P. Chen, and M. Zhang, "A joint image lossless compression and encryption method based on chaotic map," Multimedia Tools Appl., vol. 76, no. 12, pp. 13995–14020, Jun. 2017.

[9]   H. Ga and W. Zeng, "Image compression and encryption based on wavelet transform and chaos," compute. Opt., vol. 43, no. 2, pp. 258–263, Apr. 2019.

[10]   Z. Qian, H. Xu, X. Luo, and X. Zhang, "New framework of reversible data hiding in encrypted JPEG bitstreams," IEEE Trans. Circuits Syst. Video Technol., vol. 29, no. 2, pp. 351–362, Feb. 2019.