METAMORPHOSIS AND INTERSECT TO SECURE IMAGE

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Abstract- *Enciphering is one of the popular methods to attain secret communication between dispatcher and recipient. In current time the security of images draws more consideration, especially when these images are stored in memory or drive through the networks. Many different image enciphering techniques have been proposed to save the security of images. Image enciphering techniques try to convert an image to another image that is tough to understand. Metamorphosis and intersect Algorithm has been popular in the enciphering image because of its intuitiveness and ease of implementation. This paper proposes a method based on metamorphosis which is used to produce a new encryption method by exploiting the powerful features of Images. It is a new approach of enciphering with pseudorandom sequence to encipher image stream. The feature of this approach includes high security and high feasibility for easy assimilation with image applications. The experimental results of the proposed technique confirmed that high throughput rate required for real time data protection was achieved.*

Key words: *Block ciphering, Image, Intersect, metamorphosis.*

1. INTRODUCTION

With the increasing use of the Internet and other efficient communication technologies, the digital media have become the most common tools used to exchange data. Most of these digital media are in an image form and used in various applications, such as websites, email, chats, e-commerce, eBooks, news, etc. However, digital content is still confronted with several challenges, such as copyright protection, tampering, and authentication. The modern encryption techniques have been considered the most powerful solution to most of these problems. Content

authentication and tamper detection of digital image, video and audio have captured interest of researchers. Recently, content authentication, protection, copyright and tamper detection of images attracted the interest of researchers. During the last ten years, researches on image security schemes focused mainly on issues of copyright protection, but gave less attention on lossless data, distortion and speed. The traditional image encryption algorithms developed in the last few years may not be appropriate for different digital image formats because of data large size, real time constraint and unknown environment. In addition, some of them have been known to be insecure, the encryption methods allow to transform digital images into some unreadable form and hard to understand, and inverse transform feasibility of the encryption digital image to the target image. All these issues arise the need for reliable methods of encryption.

Metamorphosis algorithms are basically a machine learning, heuristic search and optimization techniques based on the theory of survival of the fittest and naturals. Cryptography is the practice and study of techniques for secure communication in the presence of adversaries. It is the study of sending messages methods in disguised form so that only intended recipients can read the message after removing the disguise. It provides an effective solution for protecting sensitive information in large number of application, including data security in personal, Internet, diplomatic and military communication etc., by implementing the processes of encryption and decryption.

Generally, Metamorphosis Algorithms contain three basic operators: Resize, intersect and transformation. Metamorphosis Algorithm gains most of their searching power from resize and intersect. Various

Metamorphosis algorithm enciphering have been proposed. The reference from {4}, described a new symmetrical block ciphering system called ICSMP (Improved Cryptography stimulated by Metamorphosis Algorithms) that generates a symmetric key in a random process.

2. BACK GROUND

Image encryption schemes have been increasingly premeditated to meet the demand for real time secure image transmission over the Internet and through wireless/Wired networks. Most of the algorithms specifically designed to encipher images. However, most of these algorithms are designed for a specific image format, either compressed or uncompressed methods that offer light degradation, while offer strong form of enciphering. Some of the algorithms are scalable and have different modes ranging from degradation to strong encryption. The user is expected to choose a method based on its properties, which will be best for image security. In modified AES based algorithm for image enciphering technique, the advance encryption standard and in their image encryption technique they add a key using pseudorandom key generator to AES to ensure improving the encryption performance. AES is very fast symmetric block algorithm. However, each of them has got their own strengths and weakness in terms of security level, speed, and stream size metrics. Hence, we propose a new encryption method that would make an attempt to address the above problems

3. THE PROPOSED METHOD

The proposed method block diagram is shown down in Figure (1).
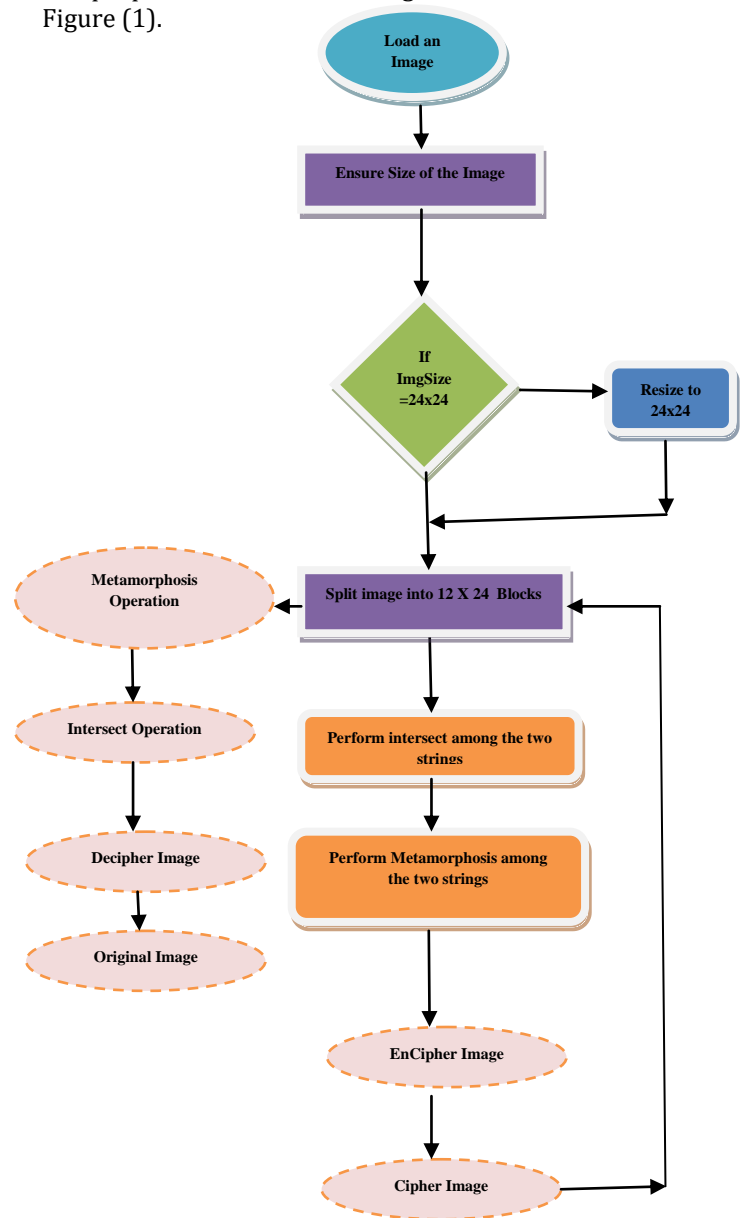

Figure 1: Block Diagram of the Proposed Method

The proposed algorithm has proved to provide high protection to the images data from criminal intrusions. It is also fast in the process of encryption and decryption.

4. EXPERIMENTAL ANALYSIS

This paper proposes a new approach for images security. The proposed algorithm will increase the efficiency of the algorithm in terms of computation time required and complexity to attack. It uses the concept of Intersect and metamorphosis algorithms to increase the complexity of key by increasing the irregularity of the key. The proposed algorithm is applied on different sizes and types of images. The implementations of the above encryption algorithm were conceded out using SCILAB.

4.1. Histogram Analysis

An image histogram is very important feature in analyzing images. It is obvious that histogram of the enciphered image is nearly identical and significantly different from the histogram of the original image. It does not give any clue to utilize any statistical analysis attack on the encrypted image.

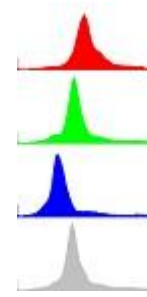**Figure 2:** Original Image

Figure 3: Encrypted Image

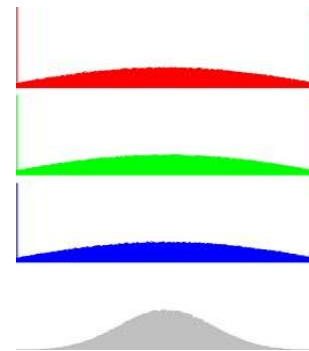**Figure 4:** Histogram of Original Image

Figure 5: Histogram of Encrypted Image

4.2. Correlation of the Two Adjacent Pixels

The recent statistical analysis is called adjacent pixels correlation. This method involves calculating three adjacent pixels correlation for each plain cipher image: vertically, horizontally, and diagonally.

5. CONCLUSION

In this paper presented a digital image encryption algorithm based on block-level using Metamorphosis algorithm. From the above results the proposed algorithm, can confidential as more efficient, loss less and high speed algorithm. It is also a high level security algorithm

6. REFERENCES

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