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FAST IMAGE ENCRYPTION BASED ON RANDOM IMAGE KEY

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FAST IMAGE ENCRYPTION BASED ON RANDOM IMAGE KEY

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Abstract
Internet plays an important role in circulating a huge amount of multimedia. An example of this multimedia is the image. To send an image over the network secretly, the sender tries to find encryption algorithm to hide image information. This paper aims at designing an efficient encryption algorithm for color image using random image key generated with minimum time execution for encryption and decryption operations. XOR operation is used here to make more diffusion of the encrypted image to maintain a higher level of security upon transference than it is with the original image.

Keywords – Encryption, Decryption, Random Key, XOR operation.

1. INTRODUCTION

Network technologies and media services provide ubiquitous conveniences for individuals and organizations to collect, share, or distribute images/videos in multimedia networks and wireless or mobile public channels. Image security is a major challenge in storage and transmission applications. As a matter of fact, all users, who use multimedia such as image, audio, video and text, may need to protect information from attacks during sending or receiving them through channel. There are two challenges for multimedia encryption; the first one is the size of data and the second is the cost of encryptions . In this paper, an image encryption method based on a new random key generated from the same image is going to be adopted.. Image Crypto system can be classified into two main sections; one for encryption and the other for decryption. In this paper a new algorithm is proposed to encrypt color image using symmetric key which is generated from the same image or any image can be selected. Some tests are applied here to determine performance algorithm. These are histogram, mean square error, peak signal to noise ratio, entropy, correlation coefficients, number of changing pixel rate and unified averaged changed intensity . The proposed algorithm was satisfied with good results where speed of running was good for encryption and decryption algorithm.

2. RELATED WORK

In this section many studies are summarized here to survey some ideas about the image encryption during the last years. Pratibha S.Ghode et al improved a keyless method for image cipher in lossless color images to encrypt and decrypt image without any loss of data quality. Khanzadi H. et al proposed an image encryption algorithm using bit sequence random generator based on Chaotic Logistic and Tent maps. Mirzaei et al introduced a new parallel algorithm for image encryption. First of all, the plain image is divided into 4 equal blocks and then the position of each block is shuffled. Then a total shuffling algorithm is applied to the whole image. After this, we use different values for encrypting each pixel in each of the 4 blocks of the whole image.

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