ABSTRACT

Many people try to interrogate how to protect information, especially information in the form of image data which communicated through transmission channel or interrogate how to detect authenticity from information (image) which was received by him. One of the common ways to protect digital image data is encryption.

Cat Map encryption algorithm has uniqueness aloof in the process but this algorithm is less of key space. If when seen from the security side, sure this algorithm is less satisfies. This Final Project designed to solve that problem by the way of merging Cat Map encryption algorithm with other encryption algorithm. Method which applied is combination method of Cat Map – SDES (Simplified Data Encryption Standard) and combination method of Cat Map – random block permutation.

Result from this system implementation is how this system can encrypt the image with time processed which as soon as possible and level of security which is high. From attempt for each encryption method at fairish image 200 × 200 pixel, it obtained encryption process time for combination method Cat Map - SDES is 16,5973 second, while for combination method Cat Map - random block permutation far quicker that is during 0,91292 second.

To break the keys of combination method of Cat Map - SDES by using brute force attack (specification of computer as according to property of writer) at system with input image of 200 × 200 pixel require time during 10 years, while for combination method of Cat Map - random block permutation require time far longer that is during $4{,}56589 \times 10^{371}$ years.

Keywords: Image Encryption, Arnold's Cat Map, Simplified DES, cryptography, chaotic maps, random block permutation.