Abstract

This paper presents a new approach for secure hiding of textual data in a colored digital image. Use of images as a cover media in steganography is based on the deficiencies in the human visual system (HVS). The proposed technique employs two independent chaotic sequences for specifying the locations where the message bits are embedded in the cover image using an adapted version of the least significant bit (LSB) method. Message bits are embedded using the 3-3-2 LSB insertion method for the chaotically selected pixels of the cover image. This technique provides sufficient security as the same sequence of numbers cannot be generated without knowing the exact key; that is, the initial conditions of the two chaotic maps used in the index selection process. Moreover, the preliminary results ensure that eavesdroppers will not have any suspicion that there is a message hidden within the sent image since the peak signal to noise ratio (PSNR) is high and the mean-squared-error (MSE) is low. Furthermore, the length of the secret message is another important component of the key, which standard steganography detection methods cannot estimate correctly. Finally, the proposed approach provides better PSNR values and MSE values compared to other existing techniques as
apparent from our experimental results.

References


Index Terms

Computer Science  Image Processing
Keywords

Chaotic Maps, Cover image, Histogram, LSB method, PSNR, Stego-image, Embedding Capacity