Abstract

Steganography is the art and science of communicating secret data by embedding it into a multimedia carrier. The ultimate goal here is to conceal the very existence of the embedded data. Although the term Steganography has been known for thousands of years, its digital version came about only lately and research was intensified after the depressing event of Twin towers (11th Sep 2001). Steganalysis, which is the official counter attack science, defeats Steganographic algorithms whether they are based on the traditional spatial domain or the transform one. Steganography’s ultimate objectives, which are undetectability, robustness and capacity of the hidden data, are the main factors that separate it from other relating techniques, namely watermarking and cryptography. This paper focuses on improving the embedding capacity in steganography. For the improvement in the capacity, secret bits are encoded into cover image by three types of modulo functions. More specifically, to alleviate further color
Modulo Based Image Steganography Technique against Statistical and Histogram Analysis

distortion and obtain a higher hiding capacity, the R, G and B component is encoded by Mod u, Mod v and Mod w functions respectively. Simulations were performed on cover images with different message sizes. The proposed technique showed that improved data hiding capacity in the cover image can be obtained without any compromise in histogram and statistical analysis. It also gives good perceptual quality in Stego image and greater security.

Reference

  Pixel-Value Differencing Histogram with Modulus Function”, EURASIP Journal on Advances in
- S. Lyu and H. Farid, “Steganalysis using higher-order image statistics,” IEEE
- W. Luo, F. Huang and J. Huang, “Edge Adaptive Image Steganography Based on LSB
  Matching Revisited”, IEEE Transactions on Information Forensics and Security, vol. 5, no. 2,
  June 2010.
- H. Yang, Xingming SUN and Guang SUN, “A High-Capacity Image Data Hiding Scheme
- Masoud Afrakhteh, Subariah Ibrahim,” Steganography Using More Surrounding Pixels”,
  London, U.K.

Index Terms

Computer Science Security

Key words

Steganography

adaptive algorithm

spatial domain

frequency domain

security

embedding payload