

STEGANALYSIS OF HISTOGRAM MODIFICATION REVERSIBLE DATA HIDING SCHEME BY HISTOGRAM FEATURE CODING

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ABSTRACT. *In 2006, Ni et al. proposed a reversible data-hiding algorithm based on histogram modification that utilizes the zero points and maximum points of the histogram of an image to slightly modify the pixel grayscale values to embed messages into an image. Reversible data-hiding schemes assure that the original cover image can be completely recovered from the stego-image after the hidden messages are extracted. Such data-hiding techniques are suitable for applications in the military, medicine, high-energy particle physical experimental investigation and art in cases in which any distortion to the original images is not acceptable. Steganalysis techniques are used to identify possibly hidden images from cover images or determine whether there are messages embedded in cover images. In this paper, a novel steganalytic scheme that can detect the present of Ni et al.'s steganographic method and that is based on histogram feature coding is proposed. Experimental results show that the steganalytic scheme is capable of detecting Ni et al.'s steganographic method.*

Keywords: Data hiding, Information hiding, Digital watermarking, Steganalysis, Reversible data hiding

1. Introduction. Data hiding [1-3] is a process to hide secret messages in a cover media to make them undetectable. The main goal of data hiding is to enhance communication security by embedding secret messages into an inconspicuous carrier and thereby transmit them to the receiver. Hence, embedding capacity and imperceptibility are two important dimensions of data-hiding methods. However, at present, another important, broadly researched issue is the reversibility of data hiding. In general, the embedding process involved in data hiding overrides the original data of the selected carrier, which cannot be restored at the receiver side. Reversible data-hiding techniques aim to solve these problems. Reversible data-hiding techniques [4-7] not only can hide the secret messages in a cover carrier, but also can provide a lossless reconstruction of the original cover carrier after the secret messages are extracted. Reversible data-hiding techniques satisfy some applications that demand no distortion, such as in the military, medicine, high-energy particle physical experimental investigation and art.

In contrast to data hiding, the goal of steganalysis is to detect the presence of secret messages or determine a steganographic method. Current steganalysis techniques [8] fall