Chapter 10
Effective Recognition of Stereo Image Concealed Media of Interpolation Error with Difference Expansion

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ABSTRACT

In this chapter, a new data conceal technique is anticipated for digital images. The method computes the interpolation error of the image by using histogram shifting method and difference expansion. With the expectation of embedding high payload and less distortion, the undisclosed data has embedded in the interpolating error. Additionally for hiding the data, reversible data hiding technique is used. The histogram deviation is used as evidence for resulting the data conceal in the stereo images. To our best knowledge, by extracting the statistical feature from the image subsample works as steganalysis scheme. To enhance the revealing rate precision the well known support vector machine acts as classifier. In addition to that the experimental results show that the proposed steganalysis method has enhanced the detection exactness of the stego images.

INTRODUCTION

Steganography is the untimely knowledge of hidden statement. The communication can be takes place by together with the message endurance on the cover medium that no one is assume about the buried message. Steganography greatly recommends the concealment by shielding the confidential message when the undisclosed communication takes place. Hiding the data in the digital medium used several techniques; the digital medium is broadly specified as text, audio, video and an image. In different electrical device and application this steganography is largely used. However, like all the security tech-
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Techniques this steganography has been propelled to grip the computational power, proliferation in security alertness and etc. On contrary the technique steganalysis which exploits the dissimilarity between the steganogram and cover image, to perceive the hidden messages.

The presence of image and video is primarily used by the website group of actors. The steganalysis endeavour is to recognize or presume the buried data without any awareness on the subject of steganography algorithm and parameter. Generally, covert data extraction might a tough exertion than simple revealing.

While hiding the payload, reversible data hiding method affords additional strength, robustness to the corresponding payload. Additionally it widens the variances among the pair of pixels followed by embeds single bit in relevant expanded difference. To our best knowledge, it is highly used in the digital signal processing community. It is the process of embedding data on the consequent host signal, hence recover the original signal once the embedded message extracted. In the related work, nearly all the algorithms are used to embed the concealed data on the image source. Optimistically wherever there is no need of changing the host signal permanently, the resulted RDH is the most excellent option.

The key shortcoming of reversible data hiding is that after data embedding, some pairs of pixels may be overflow or underflow, hence cannot be used for secret message embedding. The advantage is original image might be utterly restored after extracting the data. In the following section we will briefly see about the interpolation methods and reversible data hiding techniques.

INTERPOLATION AND REVERSIBLE DATA HIDING

Interpolation Methods

In digital images, interpolation ensues at some stage. The process of finding the function value at a particular position lies between the samples. It occurs owing to resizing an image, or maps an image from one pixel to other. Each and every time increasing or reducing the number of pixels and remapping arise on the scenarios such as image rotation, lens distortion correction. Whenever the interpolation is performing, there might be some quality loss in the resultant image, and it can be minimized. The fundamental thought of interpolation is by knowing the data and calculates the values at some unknown point. By putting on the low pass filter over the discrete signal, the bandwidth can be reduced for a particular. The image quality can be greatly achieved based on the interpolation technique used.

The interpolation technique can be broadly divided into two categories namely statistical and deterministic interpolation technique. In the deterministic techniques, among the sample point certain variation can be considered. While in statistical method, the signal can be approximated by reducing the estimation error. When comparing to deterministic methods the statistical method are computationally inefficient. Occasionally two dimension interpolation is problematic to define. In case of gridded data a dimension interpolation function can be termed as the multiplication of n 1-dimension interpolation functions.

In the deterministic method the subsequent methods are used namely nearest neighbor, spline, and linear interpolation techniques.