A Content‑Based Reversible Data Hiding Scheme Based on Difference Expansion and Histogram Shifting

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ABSTRACT

Steganography is a technology for covert communication. That is, secret data can be embedded into cover media and then it is difficult to determine whether this medium contains secret data or not. In some applications (e.g., medical and military images), the permanent errors resulting from data hiding is not allowable. Therefore, it motivates us to develop a reversible steganographic scheme.

In order to achieve imperceptibility and blind extraction, the difference expansion method is modified and integrated with the histogram shifting in this thesis. In the modified difference expansion scheme, local properties of image content are extracted to determine the number of embedded bits of each pixel pair to raise the embedding capacity.

To evaluate our proposed steganographic scheme, some popular images are tested. Experimental results demonstrate that compared with the existing method, our proposed steganographic scheme is capable of not only yielding a higher PSNR and NQM but also increase the embedding capacity.

Keywords: steganography、reversible data embedding、difference expansion

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