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Reversible Image Data Hiding with Contrast Enhancement

ABSTRACT:

In this letter, a novel reversible data hiding (RDH) algorithm is proposed for digital images. Instead of trying to keep the PSNR value high, the proposed algorithm enhances the contrast of a host image to improve its visual quality. The highest two bins in the histogram are selected for data embedding so that histogram equalization can be performed by repeating the process. The side information is embedded along with the message bits into the host image so that the original image is completely recoverable. The proposed algorithm was implemented on two sets of images to demonstrate its efficiency. To our best knowledge, it is the first algorithm that achieves image contrast enhancement byRDH. Furthermore, the evaluation results show that the visual quality can be preserved after a considerable amount of message bits have been embedded into the contrast-enhanced images, even better than three specificMATLAB functions used for image contrast enhancement.