A Novel Joint Data-Hiding and Compression Scheme Based on SMVQ and Image Inpainting

Abstract:

In this paper, we propose a novel joint data-hiding and compression scheme for digital images using side match vector quantization (SMVQ) and image inpainting. The two functions of data hiding andimage compression can be integrated into one single module seamlessly. On the sender side, except for the blocks in the leftmost and topmost of the image, each of the other residual blocks in raster-scanning order can be embedded with secret data and compressed simultaneously by SMVQ or imageinpainting adaptively according to the current embedding bit. Vector quantization is also utilized for some complex blocks to control the visual distortion and error diffusion caused by the progressive compression. After segmenting the image compressed codes into a series of sections by the indicator bits, the receiver can achieve the extraction of secret bits and image decompression successfully according to the index values in the segmented sections. Experimental results demonstrate the effectiveness of the proposed scheme.