Abstract

Most of the existing interpolation techniques available in the literature produce a blurring effect while converting a low resolution video to its high resolution counterpart. The blurring results in the loss of fine details and critical edge information of a video intra frame. In order to resolve this problem, an efficient, no reference, hybrid interpolation technique is proposed here. The proposed method makes use of a combination of anticipatory, spatial domain, region adaptive unsharp masking operation with the discrete cosine transform (DCT) based interpolation technique for retaining some of the fine details and critical edge information in the reconstructed video frame. The region adaptive unsharp masking is a preprocessing step which sharpens the
intra frame regions locally as per their statistical local variance so as to compensate the blurring caused by the subsequent DCT based interpolation technique. The degree of sharpening is proportionately increased if the local variance is greater than the global variance on the contrary the sharpening will be proportionately reduced, if the local variance is less than the global threshold value. Experimental results reveal that the proposed method outperforms most of the existing interpolation techniques in terms of peak-signal-to-noise-ratio (PSNR) as well as visual quality for different types of video sequences.

References


Index Terms

Computer Science

Electronic Design And Signal

Processing

Keywords

Image And Video Processing  Video Interpolation  Unsharp Masking  Discrete Cosine Transform (dct)
Up-sampling