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Design and Performance Analysis of Advanced B-Spline Algorithm for Image Resolution Enhancement

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Abstract : An approach to super-resolve the low-resolution (LR) image is presented in this paper which is very useful in multimedia communication, medical image enhancement and satellite image enhancement to have a clear view of the information in the image. The proposed Advanced B-Spline method generates a high-resolution (HR) image from single LR image and tries to retain the higher frequency components such as edges in the image. This method uses B-Spline technique and Crispening. This work is evaluated qualitatively and quantitatively using Mean Square Error (MSE) and Peak Signal to Noise Ratio (PSNR). The method is also suitable for real-time applications. Different combinations of decimation and super-resolution algorithms in the presence of different noise and noise factors are tested.

Keywords : advanced b-spline, image super-resolution, mean square error (MSE), peak signal to noise ratio (PSNR), resolution down converter
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