An Efficient Algorithm for Removal of Salt and Pepper Noise from Images

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Abstract

Noise deletion is a significant issue in the field of image processing. In this paper switching threshold algorithm for the elimination of high density salt and pepper noise is proposed. It is implemented in two steps; firstly switching threshold is applied to the whole image to detect the pixels as corrupted/uncorrupted. Secondly, new pixel value is anticipated only for the corrupted pixels. The algorithm use an adaptive length window having maximum size is of 7x7. The existing methods are Arithmetic Mean Filtering (AMF) technique, Geometric Mean Filtering (GMF) technique, Harmonic Mean Filtering (HMF) technique. The proposed algorithm automatically switches the window size as per the noise occurrence. Performance of algorithm is evaluated in terms of Mean square Error, Peak Signal to Noise Ratio, Image Enhancement Factor, and processing time and evaluated with other filtering techniques. Extensive simulation shows that proposed algorithm removes the noise even though noise level as high as 50% and produces better results than that of existing filtering techniques.

References

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Index Terms

Computer Science

Image Processing

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Keywords
Impulse noise; Adaptive median filter; Peak signal to noise ratio (PSNR).