Abstract

Images get contaminated due to different noises at various stages of processing and Salt and Pepper is one such noise. The noise removal approach used for filtering mainly differs in their basic methodologies, but the purpose is to suppress different types and percentage of noise. Some of the filtering schemes replace those corrupted pixels by indentifying the positions of the corrupted pixels in the observed noisy image, with the help of a noise detector, whereas others remove all the pixels irrespective of corruption. This paper investigates the former method in denoising a digital image through incorporation of an adaptive threshold into the noise detection process. The adaptive threshold value thus obtained is based on the noisy image.
characteristics and their statistics using LeNN (Legendre Neural Network) and the patterns of input image are taken to train FLANN (Functional Link Artificial Neural Network) corrupted by SPN (Salt & Pepper noise). Comparative analysis on standard images at different noise percentage shows that the proposed scheme outperforms the existing schemes in terms of PSNR (peak signal to noise ratio). Thus, the proposed method named as “Two pass- Two phase adaptive filtering mechanism” is feasible and also makes it an efficient filter to restore the gray image fairly well preserving the quality of the filtered image, and also provides a better visual perception.

References

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An ANN Based Two Pass-Two Phase Adaptive Filtering of a Digital Image Corrupted by SPN


Index Terms

Computer Science
Image Processing

Keywords
MLP  FLANN  LeNN  Salt & Pepper noise