Abstract

This paper presents a novel two-stage adaptive noise reduction scheme for images corrupted by salt and pepper noise. The first stage identifies the impulse noise in the image by classifying the pixels into two classes—noise-free pixels and noise corrupted pixels, based on the intensity values of the pixels. The second stage aims to reduce the impulse noise from the image by processing the noise corrupted pixels while the noise-free pixels are kept intact. This stage consists of two steps. In the first step, the denoised value of each noise corrupted pixel is calculated using adaptive multilevel median filter. The second step enhances the image quality by applying directional filtering to the denoised image of the first step. Extensive computer simulations...
indicating that this technique provides significant improvement over many other existing techniques in terms of PSNR.

References

- F. Russo and G. Ramponi, "A fuzzy filter for images corrupted by impulse noise."

Index Terms

Computer Science
Signal Processing

Keywords

Image Restoration Impulse Noise Adaptive Median Filter Noise Detection Denoising

Directional Filtering