Noise Exclusive Adaptive Mean Filter using Global Characteristic for Removal of Impulse Noises from Images

IJCA Special Issue on International Conference on Computing, Communication and Sensor Network

© 2013 by IJCA Journal

CCSN2012 - Number 1

Year of Publication: 2013

Authors:
Punyaban Patel
Bibekananda Jena
C. R. Tripathy

Abstract

Removal of noises from the images is a critical issue in the field of digital image processing. This paper describes a new technique for the design of noise exclusive adaptive mean filter using global characteristic for removal of impulse noises efficiently from images, aimed at removing the impulse noise (salt and pepper noise) from the image and reducing distortion in the image while preserving image details. This filter solves the dual purpose of removing the
impulse noise from the image and reducing distortion in the image. It can achieve the filtering operation of an image corrupted with impulse noise up to 70%. This proposed technique provides much better results than that of the existing mean and median filtering techniques. The Peak Signal to Noise Ratio (PSNR) of the filtered image using the proposed technique is much higher than that of the filtered images obtained by the existing mean filtering techniques. Extensive experimental results show that the proposed technique performs significantly better than many existing state-of-the-art algorithms. Due to its low complexity, the proposed algorithm is very suitable for hardware implementation. Therefore, it can be used to remove impulse noise in many consumer electronics products such as digital cameras and digital television (DTV) for its performance and simplicity.

References


Index Terms

Computer Science
Computing, Communication

And Sensor Network
Keywords
Image Denoising  Tolerance Value  Peak Signal To Noise Ratio (psnr)  Mean Square Error (mse)
Mean Square Error (mse)
Peak Signal To Noise Ratio (psnr)
Adaptive Filter