Abstract

A Great challenge is to obtain an efficient method for removing noise from the images. Noise can contaminate the image at time of capturing or transmission. The method of removing noise from image depends on the type of noise present in image. In this, different types of noise and analysis of noise removal techniques is presented. Here, result of applying various noise types to image and also results of applying various filters to those noisy images have been presented. Quantitative measure of comparison is provided by several quality parameters on the image. The parameters used are: Mean Square Error (MSE), Peak signal to noise ratio (PSNR), and Universal Image Quality Index. Whenever an image is reconstructed, the quality of reconstructed image is calculated in terms of various quality parameters. MSE is considered as one of the most reliable and widely used quality parameter however, we are using a new universal image quality index Q, which proves to be better than MSE. An improvisation of the same has also been proposed in this report. The noisy image is reconstructed by using wavelets on filtered image. The image is filtered using wiener filter i.e. frequency domain filtering followed by application of wavelets. The fact that the image reconstructed by this
method is better than that reconstructed using other methods is proved to be true by examining
the value of quality parameters MSE and PSNR. The value of MSE obtained by the above
mentioned technique is found to be the smallest among all values of MSE obtained by other
techniques i.e. the most favourable till now. Similarly the value of PSNR calculated by this
technique is the highest obtained till now. Hence, we can say that the method adopted in this
report to reconstruct an image from a noisy image is by far the best technique encountered till
now.

References

1. Archana, Sheenam, AmitChhabra, “comprehensive review of Denoising techniques in
image restoration,” International Journal of Innovative Research in Computer and
Communication Engineering (ijirce) Vol.2, Issue6, June2014
2. NishthaAttlas, Dr. Shefali Gupta, “Wavelet based Techniques for Speckle Noise
Reduction in Ultrasound Images,” International Journal of Engineering Research and
Applications (ijera) vol. 4, Issue 2, February 2014, pp.508-513
3. Anutam, rajni, “Performance Analysis of Image Denoising with Wavelet Thresholding
methods for different levels of decomposition,” The International Journal of Multimedia &
itsApplications(IJMA) vol.6, no.3, June 2014
4. Manjumandot, Shrustiporwal, “Overview on Noise, Types of Noises which corrupts the
digital images and the LSH-frequency domain filtering technique to remove noise in medical
5. HazimG.Daway, “Removal of high density salt and pepper noise depending on mode
filter,” International journal of application or innovation in engineering and management
(IJAIEM) volume 3, Issue 6, June 2014.
Transform Method,” 978-1-4673-5999-3/13/$31.00 ©2013 IEEE.
7. Hari Om, MantoshBiswas “An Improved Image Denoising Method Based on
8. P. Hedao and S. S. Godbole, “Wavelet Thresholding Approach for Image Denoising,
for Image Denoising,” 2010 International Conference on Computer and Com-communication
10. Ajay Boyat, Brijendra Kumar Joshi, “Image Denoising using Wavelet Transform and
Median Filtering” 2013 Nirma University International Conference on Engineerin (nuicon77 e),
978-1-4799-0727-4/13/$31.00 ©2013 ieee.
11. Hancheng Yu, Li Zhao, and Haixian Wang, “Image Denoising Using TrivariateShrinkag
Filter in the Wavelet Domain and Joint Bilateral Filter in the Spatial Domain,” ieee transactions
on image processing, vol. 18, no. 10, october 2009
usinggaussian curvature of image surface,” 978-1-4673-6361-7/13/$31.00c 2013 IEEE


Index Terms

Computer Science  Image Processing

Keywords

Image compression, wavelets, storage, etc.