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

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Analysis of Wavelet Transform for Image Denoising with MSE


Index Terms

Computer Science  
Image Processing

Keywords

Image compression, wavelets, storage, etc.