



RESEARCH ARTICLE

REMOVAL OF HIGH DENSITY SALT AND PEPPER NOISE IN IMAGES AND VIDEOS USING DENOISING METHODS

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Abstract: Now a days visual information transmitted in the form of digital images is becoming a major method of communication, but the image obtained after transmission is often corrupted with noise. Noise hides the important details of images. To enhance the image qualities, we have to remove noises from the images without loss of any image information. Image denoising is one such powerful methodology which is deployed to remove the noise through the manipulation of the image data to produce very high quality images. There are different types of noises which corrupt the images. These noises are appeared on images in different ways: at the time of acquisition due to noisy sensors, due to faulty scanner or due to faulty digital camera, due to transmission channel errors, due to corrupted storage media. Impulse noise in image is present due to bit errors in transmission or induced during the signal acquisition stage. There are two types of impulse noise, like salt and pepper noise and random valued noise. Salt and pepper noise can corrupt the images where the corrupted pixel takes either maximum or minimum gray level. Several non-linear filters have been established as reliable method to remove the salt and pepper noise without damaging the edge details, each having their own merits and demerits. This paper presents a review on the existing non-linear Median Filters for the removal of high density salt and pepper noise. The basic nonlinear filter i.e. standard median filter (MF) and different variants such as adaptive median filters (AMF), and decision based median filters (DBMF) are shows better results at low and medium noise densities. At high noise densities, their performance is poor. In this paper, Modified Shear Sorting Method and Decision Based UnSymmetric Trimmed Median Filter (DBUTM) are used for removal of high density salt and pepper noise in images and videos, because it has lower computation time when compared to other standard algorithms. Results of the algorithm are compared with various existing algorithms and this method has better visual appearance and quantitative measures at higher noise densities as high as 90%.

Key words: Noise; Denoising; Salt and pepper noise; Median filters

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