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De-Noisy Image of Activity Tracking System in Digital Image Processing

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Abstract – *In activity tracking system using image processing there are several activity taking place such as Object classification, Edge detection of the object in image form, Military, Space science, Object counting in different environment according the condition.*
An efficient method of removing noise from the images, before applying image processing them for further analysis is a great challenge for researchers. The noise can degrade the image at the time when we capturing or transmission of the image. Before applying image processing tools to an image, noise removal from the image is done at highest priority. The kind of noise removal algorithms to eliminate from the noise depends on the types of noise present in the image. In this paper we used two methods for removal the noise from the image and compare the result of proposed system and Median filter in the terms of PSNR parameter. The results show that the proposed system is better than the Median filter.

Key Words: Noise, PSNR, Median Filter, Edge detection, Thresholding, Background Subtraction, Extraction.

1. INTRODUCTION

A parameter which can determine the quality measurement for the image so that we can ensure that the proposed system algorithm performance is better in comparison with the other algorithm in terms of Peak Signal to Noise Ratio which sated that for any image if the value of the PSNR is more higher then it simply means that the image of reconstructed image higher and which is also indicates that edges are properly detect through the image processing as well as it indicate that loss of information or data is minimize in the image processing also reducing the error control for the image. High PSNR indicate a low variation between the original and reconstructed image.
Filtering in an image processing is a basis function that is used to appreciate many tasks such as noise reduction, break, re-sampling. Filtering image data is a normal process used in almost all image processing systems.

The Median filter is a non-linear operation used in image processing to decrease "salt and pepper" noise. Also Median filter is used to remove the impulse noise. Mean filter substitutes the mean of the pixels values but it does not reserve image details. Some details are removes with the mean filter.

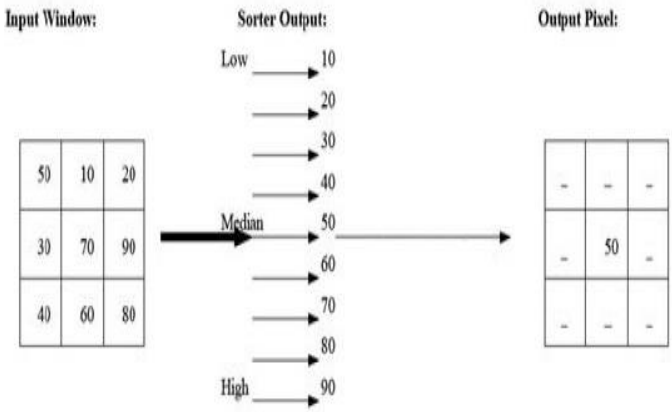

Fig 1.1- Median filter

In Digital image processing into the original image, we improving the visual appearance of images to a human viewer and preparing image for measurement of the features and structures present by enhancement of the image, removing noise of image , detecting sure short edge of the image, proper localization of image manipulated by the image processing system on the original image.
Digital image processing deals with the manipulation and analysis of pictures by computers and digital image processing is the technology of applying a number of computer algorithms to process digital images.

Salt and Pepper noise is also called as shot noise, impulse noise or spike noise that is usually affected by the faulty memory locations, malfunctioning pixel elements in camera sensors or there can be timing errors in the process of digitization. In the salt and pepper noise there are only two possible value exits that is a and b and the probability of each is less than 0.2. if the number greater than this numbers the noise will swamp out image. If an image containing salt and pepper noise will have dark pixels in bright pixels and bright in dark regions and type of noise is due to the dead pixels, analog–to-digital converter errors and also bit errors in during the transmission and that can be removed in large part be dark frame substitution and by interpolating near dark or bright pixels.

Some of the features is not detect by eye in an image so then we use Histogram Equalization which is the most well know methods for contract enhancement of the image. Such types of approach is generally useful for the

poor intensity distribution and this is because of the captured image contain noise in the particular place and there may some other cause which is not proper lighting condition so that the capture image have poor intensity distribution.

2. PROPOSED SYSTEM

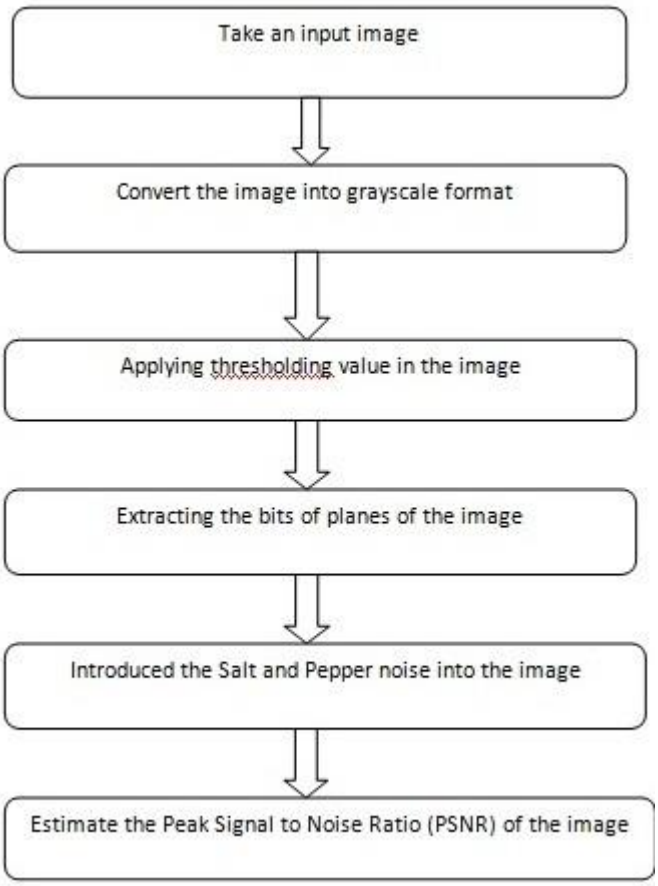

Figure 2.1-Work flow of proposed system

First of all we take input image to the proposed system and performing the different activity on the image through the image processing.

We convert the image into grayscale but the image is already in grayscale then no need to covert. After converted into grayscale then we perform masking that is thresholding on the image which simple means that we set a base pixel that is if the magnitude of the pixel is greater than the base pixel value then it is set to be one that is white regions pixel and if magnitude is less than base pixel then it is set to zero which means black region pixel. Calculate the PSNR average value is 61.1345 db.

3. CONCLUSIONS

Methods	Average PSNR(db) value
Proposed System	61.1345
Median Filter	25.0361

Table 3.1- Average PSNR value of methods

From the table we observed that the proposed system have higher PSNR value in compare with the median filter and that described the higher the PSNR value greater the image quality of compressed or reconstructed of Lena image.

Figure 3.1- Original Lena image

Figure 3.2- Processed Lena image

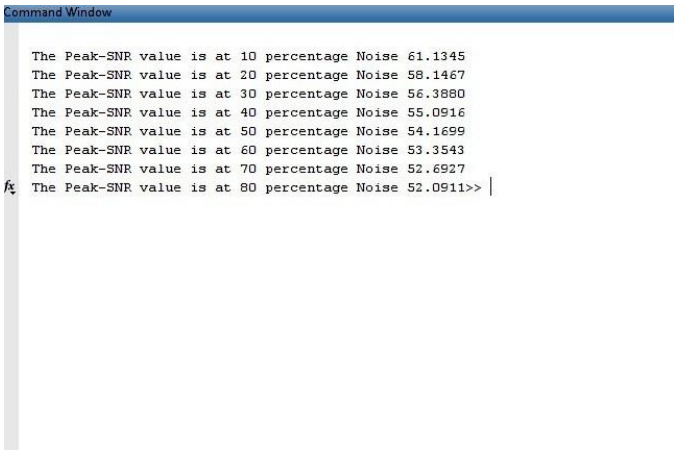

Figure 3.3- Output of proposed system with PSNR value

PSNR=10 $\log_{10}$ (R^2/MSE)
Where R = the maximum fluctuation in the input image data type. For example if it has an 8-bit unsigned integer data type, R is 255.

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