REMOVING SALT AND PEPPER NOISE FROM THE IMAGE BY THE USE OF THRESHOLD MECHANISM

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ABSTRACT:Image processing is the mechanism which is required in case of almost every image since distortion is present within the image. Image restoration and removing noise will be the prime objective of the proposed paper. Number of methods has been proposed each having their own advantages and disadvantages. A novel approach to handle salt and pepper noise is suggested in this paper. In the proposed scheme two pass mechanisms is suggested. In the first phase the image is passed from the median filter and improved image is received. The improved image is then passed through the proposed technique known as threshold paradigm. Within the threshold mechanism the values of the maximum co-ordinates associated with the image will be stored. The pixel values exceeding the threshold will be rejected and improved image will be obtained.

Keywords : Image Processing, salt and pepper noise, two pass, threshold paradigm.

INTRODUCTION

The salt and pepper noise is caused by the defective pixel present within the image. The pixels corrupted by this noise can obtain only maximum and minimum value of the pixel present within the image. Salt and pepper noise is special type of impulse noise. The impulse noise can cause spikes within the image. In other words the image wills different levels of contrast within the image. As the noise increases beyond 0.5 some details and edges will be distorted from the image. The code for the proposed work will be created within the MATLAB. The results within the image show the filtered image with improved parameters. The tools are predefined within the MATLAB which can be used to display all the aspects of the image. The probability density function will be used to determine the amount of noise which is present within the image. The image processing is used in almost every area of the daily life. The reasons could be many. One of the

common reasons will be that the object represented graphically is relatively easy to understand than the object expressed in terms of the text. The problem will start to appear when the image is distorted. The distorted image will not represent the image in proper aspect hence clarity is reduced. The techniques are suggested which can be used in order to enhance the image. The commonly used technique will be to use median filter. The median filter will take the image and obtain the pixel position from the image. After the image pixel position is obtained, median is calculated and position is plotted. Thus image will be enhanced. The median filter is one of the common and oldest methods which are used in order to enhance the image. The image enhancement will suffer when temperature rises. The median filter will not work under such situations. In that case modification to the existing approach is required. In the proposed paper two way approaches will be used to enhance the image. The median filter and threshold mechanism both are used in the proposed paper.

RELATED WORK

The work has been done toward the image enhancement. The purpose is to extract the information present within the image. The image enhancement is required during the transmission and receiving of the image also. [1] the cardinal B-Splines are used in order to enhance the image. The image enhancement will be accomplished with this technique will reduce the complexity associated with the image. B-Splines are used in order to reduce the redundancy present within the image. [2] the image enhancement and restoration mechanism are considered in this case. The image is encoded before transmission and during the transmission chances are that noise may introduce within the image. The detection and prevention of the noise is the prime task of the proposed paper. [3] the removal of salt and pepper noise will be considered in this case. The salt and pepper noise will be the

one in which spikes are introduced within the image causing it to be distorted. [4] the salt and pepper noise is the problem when image is transmitted from source to the destination. The encoded image is also known as cipher image. At the receiver end image again has to be decoded this is accomplished with the help of decoder. During encoding and decoding the image clarity is reduced due to salt and pepper noise. This noise will be reduced in the proposed paper. [5] the salt and pepper noise in case of video transmission is considered in this case. The video transmission will take time to travel and noise will be introduced when channel is noise. The mechanisms are considered in order to eliminate the noise present within the image. In all the papers we have analyzed the entropy associated with the image is high. In the proposed paper the entropy associated with the image will be reduced.

PROPOSED SYSTEM

The image is graphical object which is used in order to represent the information which is relatively easy to understand. The image enhancement and restoration are the mechanism present which is used to enhance the image and also to reduce the noise present within the image. The concept of median filter is used in this case. The median filter is common mechanism followed to reduce the affect of salt and pepper noise present within the image. The salt and pepper noise will introduce the spikes within the image. The spikes will be reduced when the median filter is used. There exist a problem with the median filter and that problem is that it is not opera table at high temperatures. The median filter will take the position of the neighboring pixels and then obtain a median in order to plot a pixel. The noise can cause the problems within the pixel and it may take maximum and minimum values present within the pixel position present within the image. Median filter cannot operate at extreme temperatures. So in the proposed paper we will use threshold paradigm. This threshold paradigm will eliminate the spikes within the image. The median filter
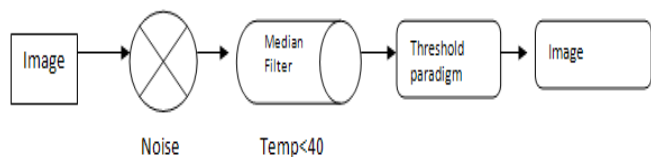

Fig 1: Showing the model of the proposed system.

The proposed model uses the median filter and when the output image is obtained it is passed through the threshold mechanism in order to obtain the clarity within the image. The image will be enhanced by the use of the proposed system. The proposed algorithm will have the following structure.

Algorithm(Image$_i$)

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a) Receive the image

B=Image$_i$//B is the two dimensional matrix having pixel values[X,Y]

b) Pass through the median filter

Filter=medianF(B)//Store filtered [X,Y]

c) Compare the [X,Y] with Max[X,Y]

If([X,Y]>Max[X,Y]then

[X,Y]=Max[X,Y]

End of if

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d) Receive the image

B=Image$_i$//B is the two dimensional matrix having pixel values[X,Y]

e) Pass through the median filter

Filter=medianF(B)//Store filtered [X,Y]

f) Compare the [X,Y] with Max[X,Y]

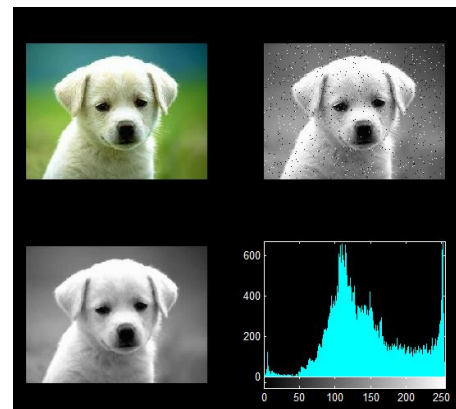If([X,Y]>Max[X,Y]then

[X,Y]=Max[X,Y]

End of if

Fig 2: Showing the image with and without salt and pepper noise.

The result of other images is also present which indicates that salt and pepper noise will be minimized and image is enhanced by the use of threshold mechanism.
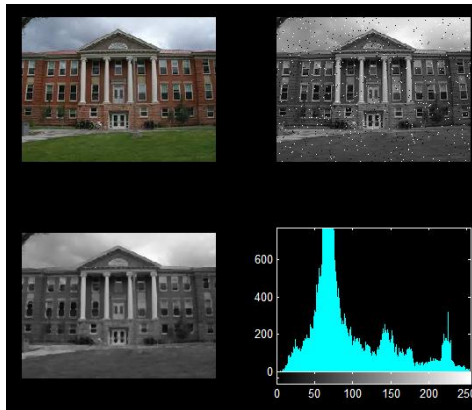
Fig 3: showing the effect of salt and pepper noise on the image and its rectification

The result of the salt and pepper noise on the image has been analyzed and result is noted. The comparison of the result is presented in this case

	Entropy	Noise	Brightness error
Existing Work	4.988	0.1	4.322
	3.222	0.2	2.345
	5.678	0.2	3.456
	5.654	0.1	4.443
	4.567	0.1	4.678
	5.632	0.2	3.456

Table 1: Showing the work under existing work

	Entropy	Noise	Brightness Error
Proposed Work	6.234	0.1	2.332
	4.345	0.1	1.234
	6.667	0.1	2.000
	6.789	0.1	2.345
	7.234	0.1	2.123
	6.765	0.1	1.987

Table 2:Showing the simulation results of the proposed system

The simulation result indicates that the proposed system has good entropy and better performance under high temperature. At high temperature the median filter will not work properly. The proposed scheme will ensure that the noise is under control and brightness error is minimized.

CONCLUSION AND FUTURE WORK

The proposed work deals with eliminating salt and pepper noise when high temperature is present. The median filter is commonly used for this purpose. But median filter will not work when high temperature is present. The median filter will take the value of the neighboring pixel and then calculate the value of the median. The value so obtain will be used in order to plat an image. The temperature when goes beyond limit then median filter become useless. In order to solve the problem concept of threshold mechanism is introduced. The maximum x and y coordinates will be stored within the buffer known as threshold values. These values are compared against the x and y values of the image. The values will be rejected if they exceed the threshold value. This way spikes within the image will be removed and salt and pepper noise will be minimized. In the future, we try to reduce the complexity of the image by the use of this threshold mechanism. We try to implement this threshold mechanism on the spatial domain also.

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