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DIGITAL IMAGE PROCESSING FOR IMAGE REPRESENTATION AND RESTORATION OF THE NOISY IMAGE

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Abstract: Design to exploit the parallel nature of image processing algorithms & enable a camera to process an image to gives an quality/smooth output in less time.

I. IMAGE-PROCESSING OVERVIEW

DIGITAL Image Processing (DIP) involves the modification of digital data for improving the image qualities with the aid of computer. The processing helps in maximising clarity, sharpness and details of features of interest towards n format on extraction and further analysis. This form of remote sensing actually began in 1960s with a limited number of researchers analysing airborne multispectral scanner data and digitised aerial photographs. However, it was not until the launch of Landsat-1, in 1972, that digital image data became widely available for land remote sensing applications. At that time not only the theory and practice of digital image processing was in its infancy brutal so the e cost of digital computers was very high and their computational efficiency was far below by presents standards. Today, access to low cost and efficient computer hardware and software is commonplace and the source o f digital image e data are many and varied. The digital image sources range from commercial earth resources satellites, airborne scanner, airborne solid-state camera, scanning micro-densitometer to high-resolution video camera.

A. Image Restoration:-

Compensates for data errors, noise and geometric distortions introduced during the scanning, recording, and playback operations.

a. Restoring periodic line dropouts
b. Restoring periodic line striping
c. Filtering of random noise
d. Correcting for atmospheric scattering
e. correcting geometric distortions

B. Image Enhancement:-

alters the visual impact that the image has on the interpreter in a fashion that improves the information content.

a. Contrast enhancement
b. Intensity, hue, and saturation transformations
c. Density slicing
d. Edge enhancement
e. Making digital mosaics
f. producing synthetic stereo images

C. Information Extraction utilizes the decision-making capability of the computer to recognize and classify pixels On the basis of their digital signatures,

a. producing principal-component images
b. producing ratio images
c. Multispectral classification

II. PROBLEM STATEMENT

Noise models:-

- Various factors and types of noise present in image.
- Various factors for restoration of image without noise affected by temperature change and extreme air turbulence.

III. LITERATURE SURVEY

In literature Survey, It has been observed that there are three types of systems were used to save pictures with high resolution & skillfully optimizations are:

- Image quality improvement/enhancement has been a concern throughout the area of image processing.
- Images are affected by numerous types of noise.
- Noise in an image is undesirable because it degrades image quality.

Literature Survey Cont....

Noisy Image

Noiseless Image

IV. RESEARCH METHODOLOGY

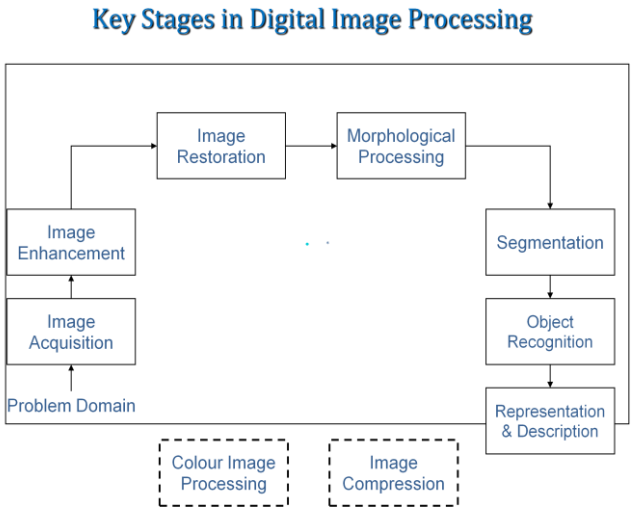
This research has the following:-

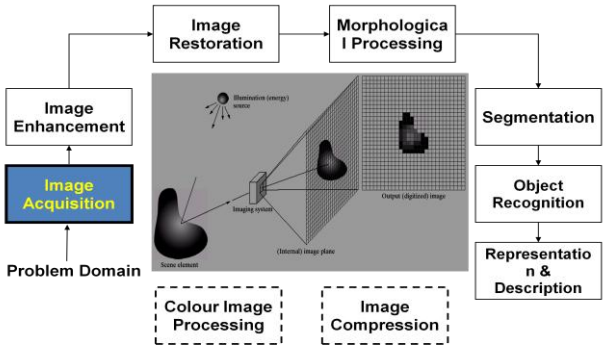
- Take an image (Input).
- Recognize an input image either as noiseless or noisy (client/user choice).
- After noise detection, for noisy color image, convert it into grayscale images and remove/resolve noise using noise removal Random Function Selection Approximation Technique (RFSAT).
- Recover color using one of the reference image (most probably reference image is input color RGB

image).

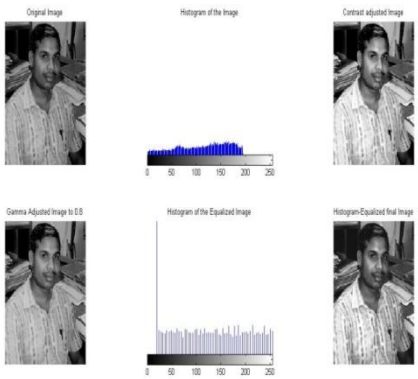
- For noisy grayscale image, remove noise using noise removal Random Function Selection Approximation Technique (RFSAT).
- Display output image/result.

F(X,Y)→ Degradation function(H)→ADDER Restoration filter(f(x,y))





V. IMAGE HISTOGRAM



HISTOGRAM EQUALIZATION & CONTRAST STRETCHING

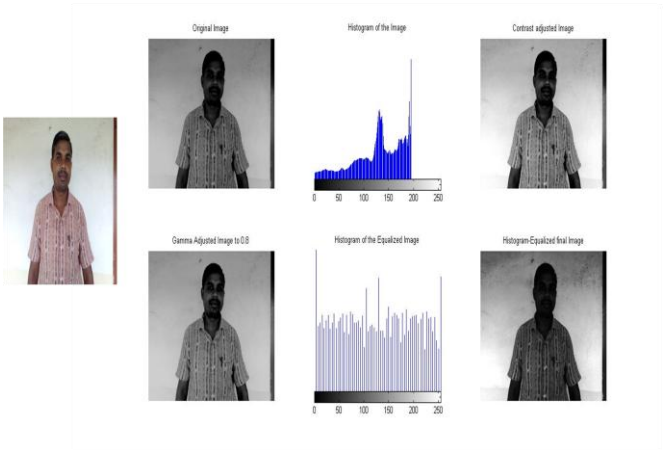
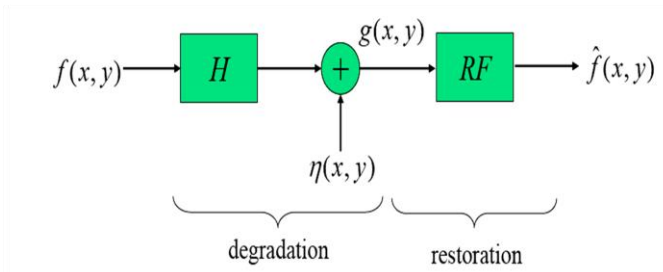


Image Degradation/Restoration model

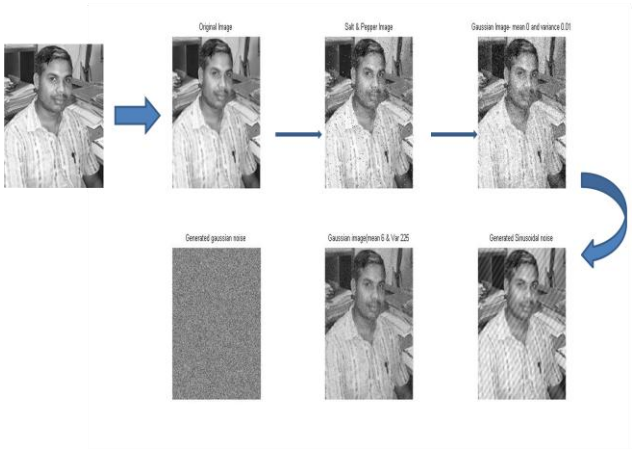


- **When *H* is a LSI system**

$$g(x,y) = h(x,y) * f(x,y) + \eta(x,y)$$

$$G(u,v) = H(u,v)F(u,v) + N(u,v)$$

Using Gaussian noise, salt & paper noise



VI. CONCLUSION

From the above proposed , it was seen that quality image can be recovered by enhancing the enhanced image by removeing the non-linearity of the pixel quality and used of lossless compressive methode can also gives the compatible image by degrading use of certain noises.Also noiseless image has higher priority to compatible in different assessment.

REFERENCES

[1] K.R. Cattleman. Digital Image Processing, Prentice Hall, Englewood Cliffs NJ, 1996.
[2] R.C. Gonzales and P. Wintz. Digital Image Processing, 2nd Edition, Addison-Wesley, New York, 1987.
[3] A.K. Jain. Fundamentals of Digital Image Processing, Prentice Hall Intl., Englewood Cliffs NJ, 1989.
[4] M. Joule and J.C. Pinole, "Image dynamic range enhancement and stabilization in the context of the Logarithmic image processing model", Signal processing, Vol. 41, no. 2, pp. 225-237, 1995.
[5] V. Patapsco and V. Buzuloiu, "The mean dynamic range optimization in the framework of logarithmic models".
[6] Advanced Topics in Optoelectronics, Microelectronics, and Nanotechnologies, Proc. SPIE, Vol. 5227, pp. 73-80.

