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Proposed Design of Generalized Equalization Model for Image Enhancement Technique

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Abstract.

This article introduces a new adaptive local image enhancement method and a graphical user. The algorithm for image enhancement will correct contrast for some certain areas of an image which is based on edges contained in the image and some statistical properties; variance of the whole image and mean value of an image block. A contrast correction gain is chosen for each image tile based on statistical properties. The algorithm improves the visual quality of an image and also restricts noise amplification. The algorithm is tested with gray scale images and results are compared with histogram equalization and adaptive histogram equalization techniques by image quality metrics parameters.

Keywords: Image Enhancement; SNR; PSNR; AMBE; RMSE; Region of Interest; GUIDE

INTRODUCTION:

With the fast advance of technologies and the prevalence of imaging devices, billions of digital images are being created every day. Due to undesirable light source, unfavorable weather or failure of the imaging device itself, the contrast and tone of the captured image may not always be satisfactory. Therefore, image enhancement is often required for both the aesthetic and pragmatic purposes. In fact, image enhancement algorithms have already been widely applied in imaging devices for tone mapping. For example, in a typical digital camera, the CCD or CMOS array receives the photons passing through lens and then the charge levels are transformed to the original image. Today, contrast enhancement process plays an important role in enhancing medical images' quality. Several previous studies proved that contrast enhancement techniques capable to clean up the unwanted noises and enhance the images' brightness and contrast. The resulting enhanced medical images provided clearer images for better and easier disease screening process by doctor.

METHODOLOGY

Existing scheme:

Despite of the abundant literature on image enhancement, including representatives on literature survey, two challenging problems for image enhancement are still not solved. First how to achieve contrast enhancement while preserving a good tone. Second how to theoretically relate different types of enhancement algorithms to each other.

Working Principle The methodology First the image is loaded and converted into gray scale image. Then the whole image is sub divided into several image tiles or windows. The algorithm will be working on each tile of the image, with the basic formula: B= A * Con+ Bri, where B is the output tile image, A is the input tile image, (Con) is a contrast correction parameter and (Bri) is brightness correction parameter. Value of parameters (Con) and (Bri) is set based on edge parameter and statistical parameters of the image and each image window which is discussed in algorithm section.

3.Algorithm : performing image enhancement. According to the algorithm 1st the input image will be loaded in 2D matrix (gray image).Then the algorithm will search for the parameters (k, m, n), where k is contrast gain parameter and m, n are window parameter. According to the algorithm standard deviation of input image will be calculated and then stored in p. After that Edge detected version will be calculated and stored in B. Then window of size m x n is selected as the region of interest from the input image. The same size of window and region of interest is also selected from edge detected image. Mean values of both the windows are calculated and then stored in q & r respectively. After this a flow control segment is there which q is, <=r and r==0. The significance of this flow control is to allow contrast correction while preserving edges contained in the image. If the condition is satisfied then contrast correction is applied. Then window pixels are amplified by the contrast gain parameter k (formula is window=window. * k). The output window will be placed to a new matrix C in appropriate ROI (Region of Interest). After that, algorithm will check whether the processing is complete for the whole image or not; if yes the resulted image is stored in C; if not the algorithm will proceed to the next window and in this way it will be rounding unless the whole image is processed.

CONCLUSION This Project is aimed to quality of an image / video which is taken without the presence of proper lighting source by means of using FFT and bilog transform. Here with I obtained the output of the image which are better than the existing, using the above mentioned technique as shown as bellow. In the upcoming enhancement the performance of the image and the video frame quality are improved by using the technique of white balancing and the Bi-log transformation. This technique improves the performance by reducing the noise content present in the output shown. FUTURE WORK In the future, besides global image enhancement, we expect to unify more local video enhancement methods into the model through local image feature analysis. Further to improve the performance by means of live capturing of the video and generating the direct output.

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