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Intensification of Unreliable Radiant Images by using Instinctive Sustained Algorithms

R.Arvind[1],C.M.Gowtham[2], M.Karthi[3] ,T.N.Prabhu[4]

UG Scholar, Sri Ramakrishna Engineering College,Coimbatore,Tamil Nadu,India[1,2,3]

Assistant Professor ,Dept of IT,Sri Ramakrishna Engineering College,Coimbatore,Tamil Nadu,India[4]

***Abstract* - Image intensification plays an important role in image processing and analysis. In this paper, an efficient image intensification method is proposed. In order to sustain and enhance image while enhancing relative pixel details, we propose an algorithm unreliable radiant and low contrast images. The proposed algorithm consists of three phases: Firstly, a reflectance and radiant Extraction is proposed to decompose an image into reflectance and illumination, which respectively determine the details and the naturalness of the image. Secondly, we propose a radiant detailing, which is utilized to map the illumination to make a balance between details and naturalness.Thirdly, The synthesis of reflectance and radiant for enhanced output image. The experimental results demonstrate proposed works better than the existing result.**

Key Words:Reflectance,Radiant,Bi-Log transformation, Instinctiveness

I.INTRODUCTION

The primary objective of image intensification is to process an image so that the result is more suitable than the original image for specific applications. Image processing is a method to convert an image into digital form and perform some operations on it to get an enhanced image or to extract some useful information from it.

It is a type of signal dispensation in which input is image, like video frame or photograph and output may be image or characteristics associated with that image. Image enhancement, which transforms digital images to enhance the visual information within, is a primary operation for almost all vision and image processing tasks in several areas such as computer vision, biomedical image analysis, forensic video/image analysis, remote sensing and fault detection.

This paper deals with increasing the global contrast of many images, especially when the usable data of the image is represented by close contrast values. Through this adjustment, the intensities can be better distributed on the histogram. This allows for areas of lower local contrast to gain a higher contrast. Histogram equalization accomplishes this by effectively spreading out the most frequent intensity values.

A majority of techniques advanced so far have focused on the enhancement of gray-level images in the spatial domain. These methods include adaptive histogram equalization, unsharp masking, constant variance enhancement, homomorphic filtering, high-pass, and low-pass filtering, etc. These methods have also been adapted for color image enhancement. However, later approaches for enhancing color images have taken into account also the chromatic information as well. where chromatic components are more uncorrelated from the achromatic component.

Some histogram based approaches, such as dynamic range separate histogram equalization (DRSHE), brightness preserving dynamic histogram equalization (BPDHE) and gain-controllable clipped histogram equalization (GC-CHE) have been developed in order to overcome some rawbacks of histogram equalization methods.Other classes of methods for image enhancement are approaches based on the Retinex theory spatial operations and pseudo-colouring. Spatial operations may suffer from enhancing excessively the noise in the image or conversely smoothing the image in areas that need to preserve sharp details and these operations are also known to be time consuming. Pseudo-colouring methods artificially map the grey-scale image to a colour image, with the disadvantage that extensive interactive trials are required to determine an acceptable mapping scheme.

This allowed the representation of the color in terms of hue, saturation, and intensity in closer agreement with the physiological models which describe the color processing of the human visual system. There are also a few work reported in the HSI space. For example, Jobson *et al.* has used retinex theory leading to excellent quality of the enhanced images. However, their technique is computationally intensive as it requires filtering with multiscale Gaussian kernels and post processing stages for adjusting colors.

The goal of this paper is to achieve an efficient image intensification. In order to sustain an image from over brightness while enhancing details, instinctivity sustained algorithm is proposed for unreliable radiant images. Among various intensification algorithms, Retinex-based algorithms can efficiently enhance details and have been widely adopted. Since Retinex-based algorithms regard radiant removal as a default preference and fail to limit the range of reflectance, the instinctive of unreliable radiant images cannot be effectively sustained.

II. RELATED WORK

The enhancements closely related to the problem of matching related weight matrix against high contrast images. The problem addressed in existing models is based on two topics in the field of image processing namely 1) pixel recognition, 2) radiant mapping. Most of the proposed techniques have given only implicit assumptions about the

level of contrast present in the image and did not deal with overall contrast and the sharpness in the images.

Spatial decimation reduces the amount of computation required for image enhancement by using the images. The performance of the technique has been evaluated and compared to the existing mean and median filter. An adaptive image equalization algorithm used for automatically enhancing the contrast in an input image.Enhancement techniques for color image enhancement like, Contrast Stretching, Histogram Equalization and its improvement versions, Homomorphic Filtering, Retinex, and Wavelet Multiscale Transform.Automatic exact histogram specification technique is proposed and used for global and local contrast enhancement of images.

An adaptive image equalization algorithm used for automatically enhancing the contrast in an input image[1]. Automatic exact histogram specification technique is proposed and used for global and local contrast enhancement of images[4]. Enhancement techniques for color image enhancement like, Contrast Stretching, Histogram Equalization and its improvement versions, Homomorphic Filtering, Retinex, and Wavelet Multiscale Transform[7]. The exisiting images results with propsed results generated by using spacial domain color enhancement technique[2][5].

III. NATURAL IMAGE DETECTION

A.Reflectance and Radiant Extraction

There are many algorithms that are available for radiant stimation, they do not take the range of reflectance into consideration (e.g. 50% of the reflectance obtained by SSR is more than 1) and usually result in over-enhancement. The bright-pass filter which is able to restrict the reflectance to (0, 1). The basic idea of the bright-pass filter is that, for an adjacent pixel of value affecting a central pixel of value. The effect is positively related to the frequency for pixels of value and pixels of value being neighbors all over the image[6].

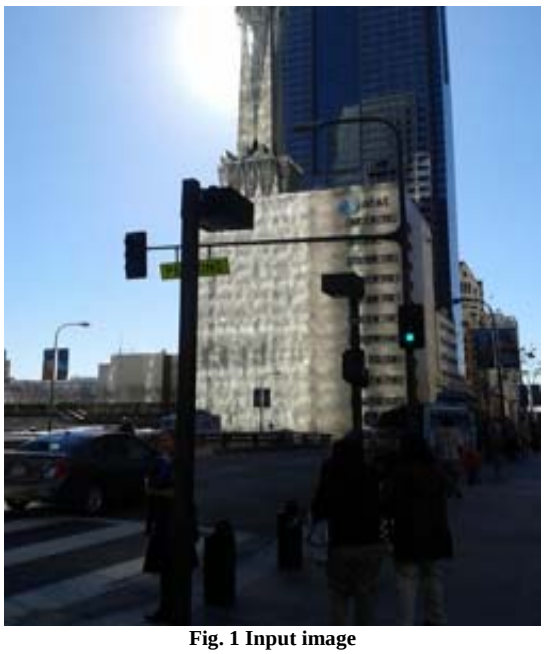

Fig. 1 Input image

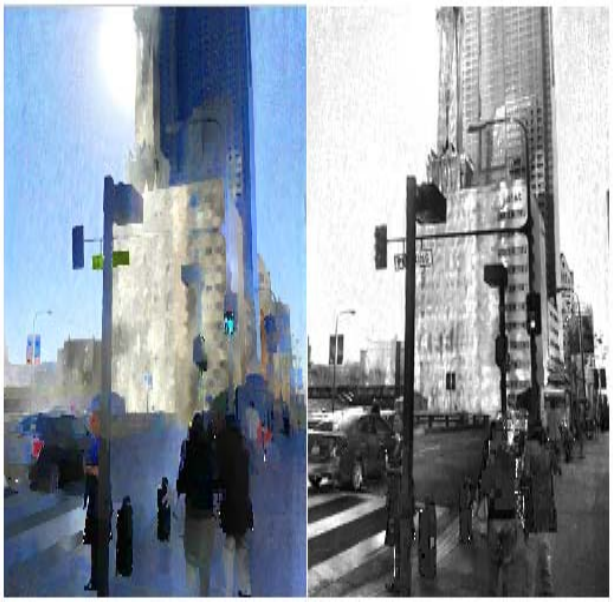

Fig. 2 Reflectance and Radiant

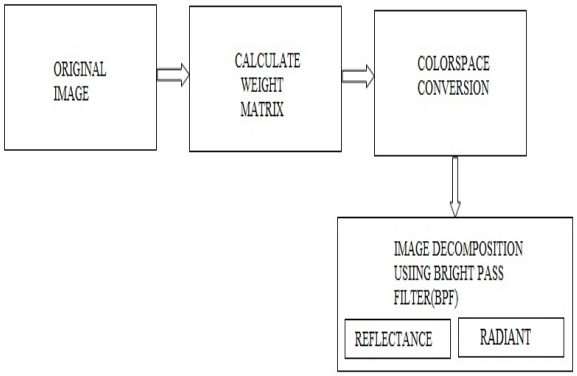

Fig. 3 Reflectance and Radiant Extraction function

B. Radiant Detailing

Bi-Log transformation is utilized to map the radiant to make a balance between color details and naturalness[3]. The mapped radiant will be synthesized with the reflectance to get the final intensificated image, it should not suppress the details so that it should be bright enough, and meanwhile the lightness order should be preserved.

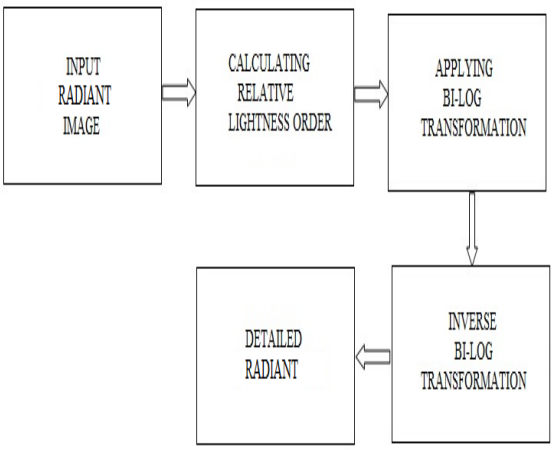

Fig. 4 Log Shape function

Fig. 5 Bi-Log Transformation function

IV. RADIANT MAPPING

As the mapped radiant will be synthesized with the reflectance to get the final enhanced image, it should not suppress the details so that it should be bright enough, and meanwhile the lightness order should be preserved. Inspired by that histogram specification is able to preserve the lightness order, we map the illumination through histogram specification and our task focuses on finding an appropriate shape for the specified histogram[8].

Fig. 6 Enhanced output Image

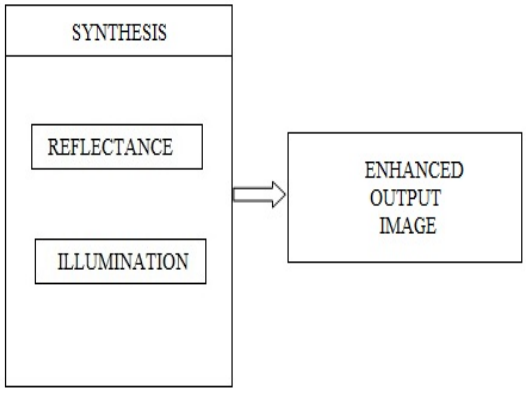

Fig. 7 Synthesis of Reflectance and Illumination

V. EXPERIMENTAL RESULTS

In the performance evaluation, the proposed method,which works as an automatic enhancement method using parameters with default values, is compared with four classical enhancement methods (linear contrast stretching, contrast reverse, gamma correction and histogram and some recent developed histogram equalization based methods, such as DRSHE, BPDHE and GC-CHE using test images. The test images include well-known typical test images including Mountain,Scene,etc.

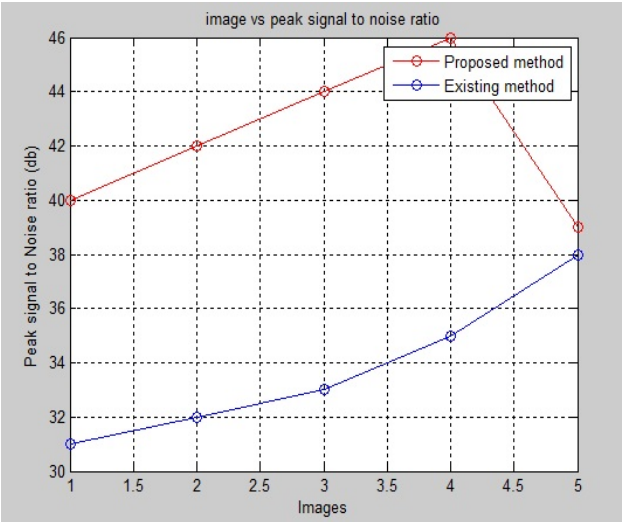

Fig. 8 Peak signal to Noice Ratio

VI. CONCLUSION

We have studied the problem of intensificating instinctively illuminated images. The proposed methodology consists of intensificating method to improve the visual quality of the images. Our proposed work uses virtual histogram approach to intensify the natural image and produce more than that of the original image. Experimental results show that the enhancement is achieved better in innate images than that of peak signal to noice ratio used in the existing model.

One of the possible improvements could be made is the use of retinex based algorithm which helps to know about the prior on the relative weight matrix of the image gradient for natural images. Another future work to be done is the color enhancement in the exact histogram[9] technique which will improve the integrity of the overall data and visual quality of the image.

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