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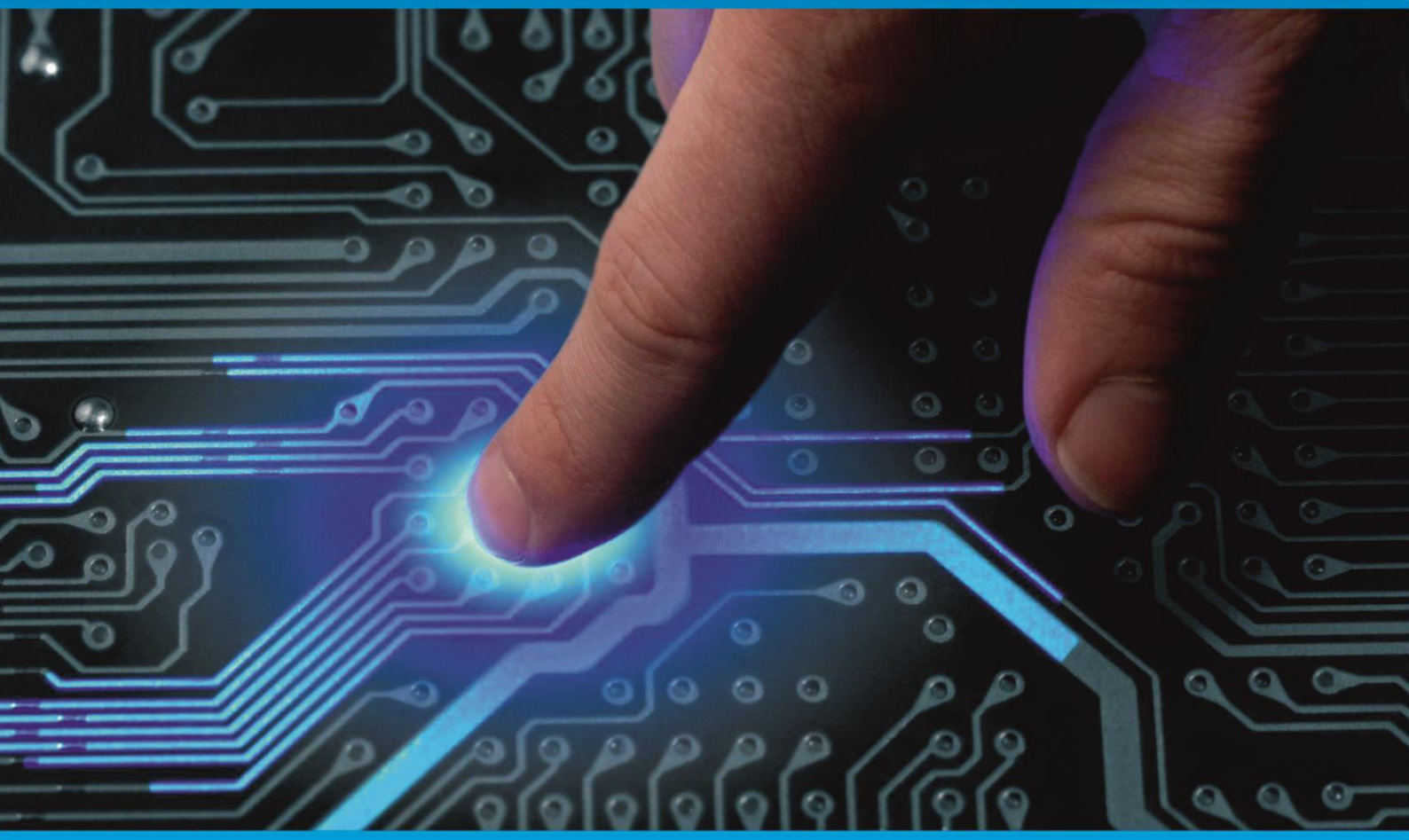

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Intensification Techniques for Haze Affected Images

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ABSTRACT: When we take pictures under water or in fog surrounded areas it will be affected by fog, haze, dust and it will degrade quality of the image. And the more number of suspended particles leads to scaterring of light in the atmosphere so that while taking image the image will be affected. In this processwe are using theIntensification technique for haze and fog affected images by using MATLAB Softwereto overcome thisproblem. Basically the De-hazing technique includes adjusting the contrast saturationof the image to get an the clear image. The CLAHE method is used to improve the image contrast and sharpness then the enhanced image was obtained.T illnow,most of the techniques are proposed only for outdoor images and some methods are only applicable for indoor images. But in this proposal we did enhancement process for both the indoor images and outdoor images. Output can be obtained digitally by using MATLAB Softwere.

KEYWORDS: Dehazing, white Balanced Image, Weight Maps, Multiscale Fussion, CLAHE Histogram Equilization

I. INTRODUCTION

Image processing is a method to perform some operations on the image,in order to get an enhanced image or to extract some useful information from it.It is a type of signal processing in which input is an image and output may be a image.

Now a days,image processing is among rapidly growing technologies.It forms core research area within engineering and computer disciplines too.

Image processing basically includes the following three steps:

1)Importing the image via image acquisition tools;

2)Analyzing and manipulating the image;

3)Output in which result can be altered image or report that is based on image analysis.

In digital image processing has an three general phases while on undergo the techniques are pre-processing,image enhancement and output display.

While taking a pictures in a fog area visual scenario of the environment lost the parameters like shading ,contrast like fog, haze will corrupt the pictures and it changes the conditions like shading and sharpness.And also the fog is varies from place to place.

The image while taken in fog area the quality is get reduced due to the scattering of light before we capture the images.In some method done only for the static scenes only to overcome it by fuse the IR image with the colourimage.A step by step image processing is applied in an fog affected image.First the input fogy images is get improves the image by varying the illumination properties

In the image the RGB can be split it down and maps can be generated like chromatic map,saliency map based on it image can be captured.

During the fogy condition the maps can be varied and by using the three maps the laplasian pyramid can be generated it act as an filter.By using it noise can be removed.Theedges,corners in the background images is get sharpned it makes the image brightened.

Mainly the fog removal technique is mainly into two types by image enhancement and image restoration.The fog affected image get enhanced by white balancing and sharpned image.

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II. EXSISTING METHOD

In image enhancement approach adopts a two step:

1)It's Combined with white balancing and image fusion.

2)To improve images without resorting the explicit inversion of the optical mode is done.

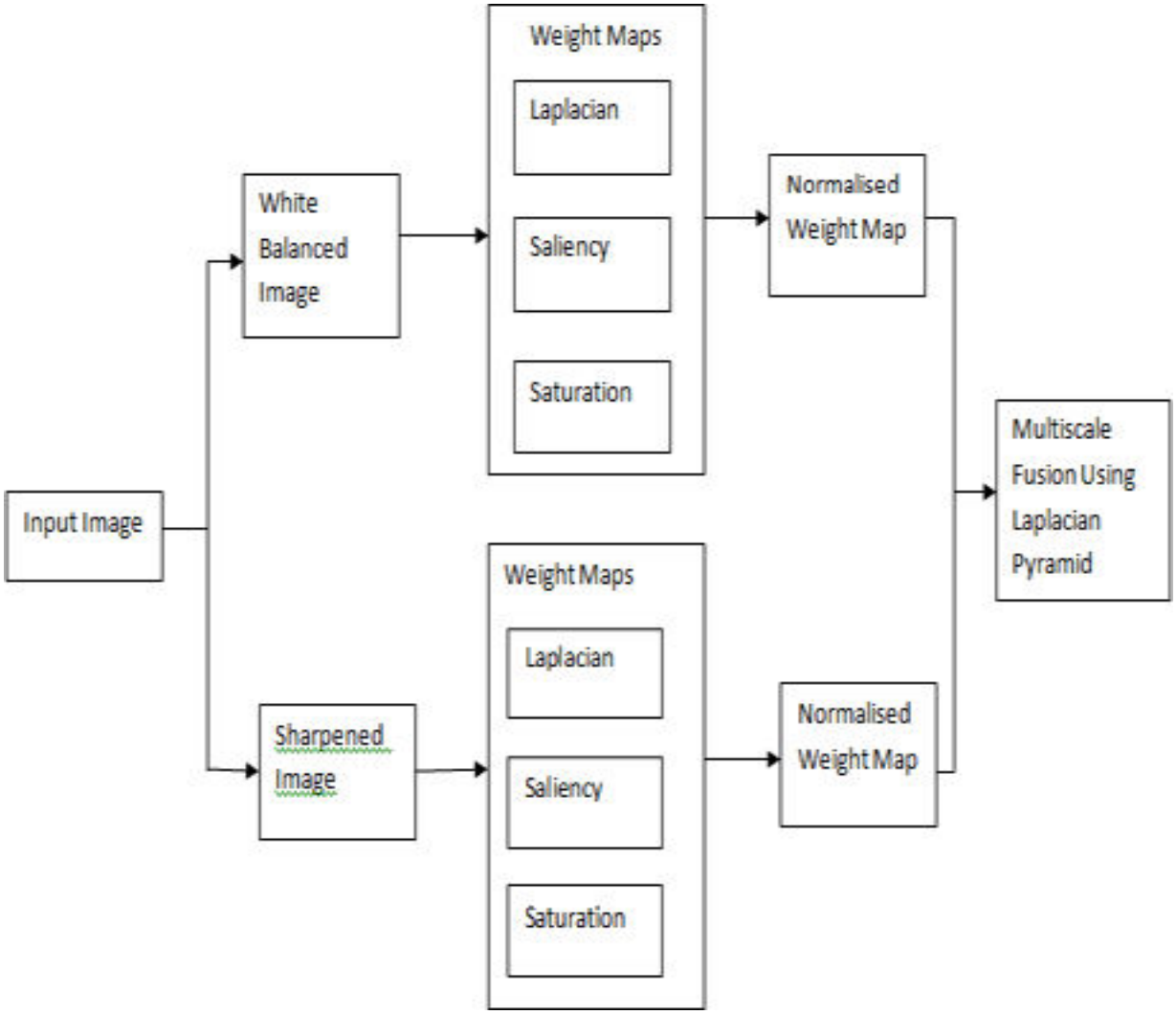
PROPOSED METHOD:

BY adding CLAHE Histogram Equalization techmique,we can get

i)Improved SSI(Structural Similarity Index), it actually measures the perceptual differences between two similarimages.it must be inferred from knowing which is orginal it has to be advised to more processing such as data compression.Itaslo has an capabilities in SSIM module like(noise,blur,flare,etc.).

ii)Improved PSNR(Peak signal to Noise Ratio),the PSNR completes the peak signal-to-noise ratio in decibels between two images.This is used for the quality measurement for the original and compressed image.

BLOCK DIAGRAM:



III. SYSTEM IMPLEMENTATION:

MATLAB Softwere:

The name MATLAB completes MATRIX LABORATORY and this isaccessible to matrix software which is developed by the Linear system package and Eigen system package projects. It serves the purpose of technical computing because MATLAB Softwere provides High Performance.Itis including the following processes like computation,visualization process and programming environment.MATLABSoftwere

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provides a modern programming platform. It including end data structures and inbuilt editing tools. It gives access to OoPs programming. MATLAB is one of the best tool for research purpose. MATLAB is having many advantageous compare to any other conventional programming language. Dimensioning is not required in the MATLAB since it's basic data element is an array. MATLAB is supports user interaction and it is user friendly softwere.

WHITE BALANCING:

In this process,white balancing technique used compensating process for the color cast affected by the selective absorption of colors with depth, and image fusion technique is usedfor intensifying and enhancing the edges and details, to calculate the loss of contrast due to scattering whitebalencing is used. White balancing image is used for improving the image aspect, that is done by removing the undesired color castings due to various attenuations.

SHARPENED IMAGE:

The sharpened method is the method that includes normalized unsharp masking process in the following. It is effective and it is not requiring any parameters tuning at all. This second input is used for reducing the degradation caused by scattering process. The difference between white balanced image and its Gaussian filtered version is a highpass signal that approximates the opposite of Laplacian, this operation has the not used to magnify the high frequency noise, thereby generating undesired artifact in the second input.

WEIGHT MAP:

The weight maps are used during blending process beacuse pixels with a high weight value are more represented in the final image. The saliency metrics are used to represent the final image.

SALIENCY WEIGHT:

The main goal of Saliency weight is emphasizing the salient objects that affect their prominence in the scene. Saliency estimator is used for measuring the saliency Level.Thisis an efficient algorithm and it has been inspired by the biological concept of center-surround contrast. The saliency map are used only in regions with high luminance values .An additional weight map based uponthe observation that saturation decreases in the highlighted regions is introduced to overcome that limitations.

LAPLACIAN CONTRAST WEIGHT:

Laplacian contrast weight gives the global contrast by computing the absolute value of a Laplacian filter applied on input luminance channels. This indicator was used by different applications such as tone mapping and extending depth of field because it assigns high values to edges and texture. However, this weight is not sufficient to recover the contrast, mainly because it can not distinguish much between a ramp and flat regions, this is used for the dehazingtask.An additional and complementary contrast assessment metric is introduced to overcome this limitations.

SATURATION WEIGHT:

Saturation weight enables the fusion algorithm to adapt to chromatic information so that it will be used on high saturation regions. This weight map is simply computedas the deviation between the Rk ,Gk and Bk color channels and the luminance Lk of the kth input.

MULTI SCALE FUSION:

The multi-scale fussion is based on pyramid called theLaplacian pyramid. The pyramid representation decomposes an image into a group of the bandpass images.

CLAHE HISTROGRAM EQUALIZATION:

In this process we have to apply the CLAHE to enhance the image.It is also an adaptive equalization and gives an output of increase the contrast level.We can also apply CLAHE to colour images aslo mainly used in luminance channel of an image is good rather than equalizing all.

While using CLAHE two parameters must be remembered:

i)cliplimit--This parameter gives a threshold value for contrast limit.The default value is 40.

ii)tileGridSize –This sets the number of tiles in row and column.By default this is 8x8.This is used while the image is divided into two tiles for applying CLAHE.

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IV. LITERATURE SURVEY

CONTRAST IN HAZE REMOVAL: CONFIGURABLE CONTRAST ENHANCEMENT MODEL BASED ON DARK CHANNEL PRIOR

Conventionally, De-hazing is performed by adjusting the contrast and saturation to improve the quality of the reconstructed image. The difficulty in haze removal algorithm is reformulated subjecting to luminance reconstruction scheme based on statistical analysis of luminance value. The augmentation of contrast is based on the variance in the gradient space and the interpretation of contrast shows that dark channel magnifies the diversity details by maximizing the changes in input image gradient or the saturation of the scene radiance is enhanced by minimizing the difference to the estimated initial dark channel. The resultant contrast value supercilious for the given brightness value. Here the atmosphere light estimation module operates on colour constancy method which outperforms even when noise is considered. And the luminance-oriented optimized framework runs at a processing time of 0.55 seconds for the 1-megapixel image.

MIXTURE CONTRAST LIMITED ADAPTIVE HISTROGRAM EQUALIZATION:

Muhammad SuzuriHitam et.al. (2013) [13] has evaluated a new method called mixture Contrast Limited Adaptive Histogram Equalization (CLAHE) color models that exactly established for underwater image improvement. The technique works CLAHE on RGB and HSV color models and the results are joint together using Euclidean norm.Enhancing the property of an underwater image has received significant attention due to poor visibility of the image which is caused by physical properties of the water medium. The proposed method significantly improves the visual quality of underwater images by enhancing contrast, as well as reducing noise and artifacts.

V. CONCLUSION

The outcome of our project is to enhance the quality of image by improving the visibility and contrast in both the outdoor and indoor images.After the enhancement process is done we obtain the improved contrast and sharped images as a output.We have presented the process and work flow of the enhancement of the fog affected image process.

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