Color compensation in underwater images

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***Abstract*— In this paper, I have propose a Planar assumption algorithm. This algorithm to eliminate the haze and light scattering from underwater images. Light scattering is caused by light incident of object reflected and deflected many times by particles present in water before reaching the camera. This the process for turn lower visibility and color deviation of the image captured by camera. Color change caused by light travelling in the water for various wavelength. This paper propose a novel systematic approach to improve the underwater images PA algorithm.PA algorithm to perform the PSNR and MSE.PA algorithm result more efficient compare to (WCID)Wavelength compensation and image dehazing approach.**

***Keywords*—color change, light scattering, PA, underwater images, dehazing**

I. INTRODUCTION

Light scattering is nothing but the light incident of the object that light reflected and deflected multiple times by particles present in the water. The color change is light travelling in the water for different wavelength. Sea contains enormous reserves of minerals,Underwater photography is more essential for ocean engineering. underwater images is used to study and monitor all parts of the sea. Underwater photography has more challenging because of light scattering and haze distortion affect the underwater image. Haze caused by light that is reflected and deflected and scattered by water particles. Color change due to light attenuated for different wavelength rate.

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II. PROCESS

The algorithm for wavelength compensation and image dehazing (WCID) existing work combines techniques of WCID to remove distortions in light scattering and colour change. Dark-channel prior an existing scene-depth source method is used first to approximate the distances of the scene objects to the camera.The little intensities in the dark channel are mostly following three factors, 1) shadows, e.g. shadows of objects, zooplankton, seaweeds, or rocks in seabed images; 2) colorful surfaces, e.g. greenish plants, red or yellow sands, and colorful minerals, deficient in some color channels; and 3) dark habitats or surfaces. Based on the depth map for foreground and background image is segmention is done. A light intensities of the foreground and background is compared to calculate whether an artificial light source is occur during the image acquiring process. If an artificial light source is identify, the luminance developed by the auxiliary lighting is eliminating from the foreground area to avoid overcompensation in the stages Techniques targeting on removal of light scattering distortion include exploiting the polarization effects to compensate for visibility degradation using image dehazing to restore the clarity of the underwater images .

Energy compensation of each color channel is carrying out after to adjust the bluish tone to a natural color. With WCID, high cost optical instruments or more stereo image pairs are no higher required. The WCID is provide enhancing visibility and also get color balance of underwater images is restored, rendering high visual clearness and color fidelity.

Image enhancement in PA(planar assumption)algorithm used to improve the image quality for underwater images.It is able to detect the haze and to eliminate the distortion

A. module

- Foreground and background Segmentation
- Contrast and color enhancement
- Calculate PSNR and MSE
- PA is compensating the light
- Scattering and color change

B.Fog modeling

- Fog is a higher particals.
- It is present in the image due to water droplets.
- In terms of underwater image it is a color change effect presented.
- Proposed work to improve the image quality and to improve the PSNR and MSE by using PA.
- PA to detect the haze and remove the haze effect this process more efficient compares to WCID.
- All these images capture in light source manner for underwater images.

- These images are affected by light scattering and color change distortion.
- These two or more distortions overcome by existing work WCID, but PA proposed work done to solve these distortion output more efficient compare to WCID.
- Image quality is improved. Performance also improved

B. Koschimieder's law

K is a Contrast equal to the inherent contrast with mulplication of ratio between the atmospheric transmissivity into distance

$$Cd = C0 .Td/d \quad (1)$$

III. BLOCK DIAGRAM

To take the input and to segmented for foreground and background of images. To calculate the RGB color analysis and contrast measurement technique. After to apply the PA algorithm.PA to calculate the dark channel prior and enhance the images.PA most effectively for to calculate the PSNR and MSE parameter. PA is a enhancement algorithm

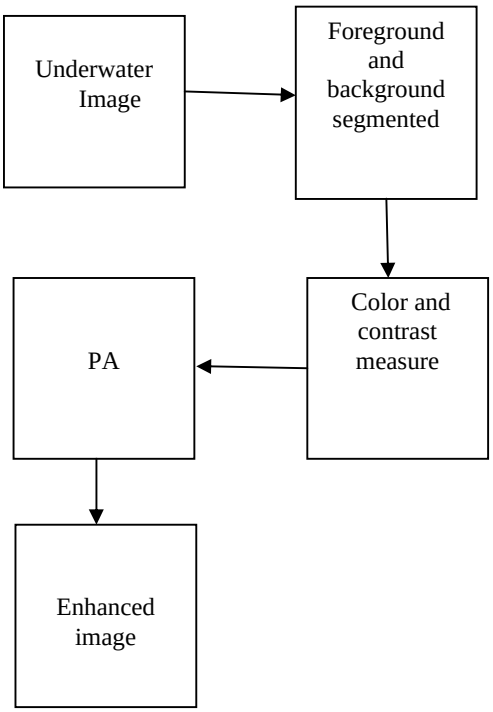

Fig .1 planar assumption

TABLE I

PARAMETER	WCID	PA
PSNR	49.97883	58.233
MSE	0.6532	0.311

IV . OUTPUT

CONCLUSION

PA algorithm proposed in this paper can effectively restore the color balance and remove haze. This method efficient compared to WCID method.PA performance evaluation is to improve the PSNR and MSE above the table In future work to enhance images for various algorithm

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