UNDERWATER IMAGE COLOR CORRECTION USING IMAGE ENHANCEMENT AND BOUNDARY DETECTION TECHNIQUES

Dr. G. Mohan babu[1]

S. Ajith Kumar[2], S. Baruck Abdulla[2], R.P. Jeya Balaji[2]

[1]Associate Professor, Department of ECE, SSM Institute of Engineering and Technology, Dindigul, Tamil Nadu - 624002

[2]Department of ECE, SSM Institute of Engineering and Technology, Dindigul, Tamil Nadu - 624002

Email: shamyubabu@gmail.com, akajith9797@gmail.com, baruckajmeer008@gmial.com, gowthamkrishnan204@gmail.com

Abstract*—Absorption and scattering of causes heavy colour damage in underwater. So, result of the underwater images is blur, noisy and dark shaded. It is very difficult to analyse the living and non-living things in underwater. Absorptions means it is removing energy of light and Scattering is defined as change of direction of light path. Scattering has two process. These are forward scattering process and reverse scattering process. Where various of methods to increases contrast and reduce noise of underwater image. Applied log and power law modification of integrated RGB and HSV colour models. Mapping various pixel values according to cache and contrast stretching process. Limiting dynamic range of colour models to reduce blur and noise over-enhanced areas of pixels. other state of the art method in term of contrast and noise reduction. In this proposed method we use image enhancement and boundary detection algorithm to correct the colour in the underwater images. In image enhancement technique, to improve the colour by log transformation at which one of the methods of gray scale transformation to maintain the white balance on the image. Another method of grey scale transformation is power-law transformation at which square the value of pixel. The haze of image can be removing by cache process and maintain the RGB colours by use of contrast stretching process. Also, we used Morphological operator for detect the edges. These operators useful for clearly detect the edges.

1. INTRODUCTION

The development of underwater imaging techniques has attracted considerable attentions in recent years. However, absorption and scattering of light in an underwater scene cause heavy colour distortion, making it difficult to recognize and analyse objects. An image contains descriptive information about the object it represents. An image is defined as a two dimensional function (x,y) that carries some information. Where x and y are known as spatial or plane coordinates. The amplitude of 'f' at any pair of coordinates (x,y) is called the intensity or gray level of the image at that ponts. In current times the underwater image enhancement techniques and Edge detection techniques are very helpful for research field. But absorption and scattering causes high colour distortion in underwater image. So, the images are dark shaded, noisy, low contrast and blur. Due to this effect very difficult to analyse the objects. The solution for this effect is image enhancement method and edge detection technique. This method very useful for underwater research purpose. These operators must segment the edges, boundary and shape of the object in underwater haze image. Which are leads to identify the mystery creature at which living in the very depth ocean or sea. Also, these methods are used to provide the helps to the peoples in flood time. During dam surviving, it can be inspecting the structure of the dam and monitoring the cracks and damages. Its analysis the sea bed, coral reef structures and tectonics plate of the earth. The aim of the project is to be enhancing the underwater image and also detect the object or obstacle in blur, noisy and haze image.

2. EXISTING METHOD

Hazing and bluish effect caused by light scattering and colour change in underwater images. Haze is caused by suspended particles such as sand, minerals in lakes, river and oceans. Capturing image underwater is challenging due to haze caused by incident light. Incident light traverses from surface of water reaching the image scene covering range from D through D+R, where R corresponds to image depth range and background light is usually assumed to be pixel intensity with highest brightness. Thus, foreground and background intensities are known and