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A SURVEY ON VARIOUS HAZE REMOVAL ASPECTS

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Abstract - Haze forms when weather conditions remains stagnant for a period of time. Depending upon the direction of view with respect to the sun it may be brownish or bluish. Haze particles can affect our health. To remove haze from an image in a polluted nature is a very difficult task. The air light and attenuation are two main phenomena responsible for haze formation. All images contain some noise . During bad weather conditions such as fog and haze, captured images will be unclear or blurred. This is because of the presence of the suspended particles absorb and scatter of light between objects and the camera. A number of methods have been proposed for haze removal from images. we propose two methods for removing both haze and noise from a single image. Haze can be removed from single image as well as multiple images.

KeyWords: Dehazing, Attenuation, Airlight, Degradation, Haze

1.INTRODUCTION

Existence of motionless weather conditions remains for a certain period of time. This is usually not fog or clouds, rather something known as Haze. Improving the haze removal techniques will help in image understanding and computer vision application. The concentration of haze varies from place to place and it is a very tedious task to detect it. In ancient times, researchers perform haze removal approach using single images but later they performed using multiple images. Under bad weather conditions, the light reaching a camera is scattered by the atmosphere. The resulting decay in contrast varies. Therefore, traditional techniques are not sufficient to remove stagnant weather conditions from images. The haze removal can produce depth information for many vision algorithms and advanced image editing. Haze removal techniques helps in recovering the brightness of the scene. These techniques have found many applications in the area of image processing.

2. LITERATURE SURVEY

2.1 Single Image Approach

Do not require information extracted from additional images.Do not require depth-information.depend upon the statistical assumptions,or the nature of the scene Sometimes they require user interaction.

2.1.1 Dark Channel Prior

Assumes a portion of the scene is dominated by airlight.The statistical assumption is "In most of the non-sky objects, at least one color channel has some pixel whose value is very low and close to zero". Based on this, there are two assumptions. First assumption is used to estimate airlight, which varies with the distance between the objects and the observer. Airlight is estimated by picking up the pixels of the image corresponding to the brightest pixels in the dark channel, and then choosing the one with maximum intensity.second assumption is used to estimate transmission.Airlight and transmission are the important two aspects needed to and retrieve the original radiance of the scene.Transmission depends upon various factors and

certain conditions.By estimating both value some part of the problem became solved.

2.1.2 Based on Markov Random Field(MRF)

Robert T Tan proposed a novel based haze removal method by maximizing the brightness of the image based on Markov Random Field (MRF).It is a graphical model of joint probability distribution. It consist of an undirected graph in which the nodes represent the random variables. Two observations are made based on this method. First, higher contrast in images taken on a clear day compared to images clicked in bad weather. second based on airlight. which varies with the distance between the objects and the observer.

2.1.3 Contrast Maximization Method

Haze disappears the contrast. Removing the haze improves the quality of the image. Contrast maximization is a method that improves the contrast under conditions. But the remaining images have larger saturation values because this method does not actually improve the brightness but enhance the clarity.

2.2 MULTIPLE IMAGE APPROACH

In this haze removal two or more images or multiple images of the same scene are taken. This method uses known variables and avoid unknown variables.

2.2.1 Based on different Weather conditions

Narasimhan proposed haze removal approaches with the same scene under different weather conditions. In this, we are taking the differences of the two images of the same scene. This helps in enhancing quality but the disadvantage is that the user have to want till the weather condition change.so it is unable to deliver and it cannot handle dynamic pictures.

2.2.2 Based On Polarisation

In this method, two or more images of the same scenary are taken with different polarisation filters. A polarization filter attached to the camera determine the different degrees of polarization. But this does not produce accurate results.

3. CONCLUSION

This paper deals with Haze removal aspects and the various techniques used to remove haze from single and multiple images. Although there exists various difficulties to deal hazy image and to obtain a haze free image. mentioned some problems while dealing with this. This survey is basically done to study about the characteristics of hazy image and various problems while capturing an image.

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