AUTOMATIC SHADOW DETECTION AND REMOVAL FROM SINGLE IMAGE

Group members

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Idea description

Shadow is defined as the inverse of light; when light is obstructed, shadow occurs. The shadow is a natural phenomenon that occurs frequently. The physical properties of shadow are studied in physics. In physics, the shadow serves several functions. Shadow has recently been used to practice making shapes, sizes, and movements of unknown objects. Shadows are especially important in augmented reality applications. The shadow is significant in physics. Aside from its significance, the shadow has some undesirable properties in nature (Chen and Long, 2021). The shadow can be an impediment to the visualization. The nature of the shadow will be summarized in this project, and the elimination of the shadow will be investigated.

Goals and objective

The project's goal is to learn about the characteristics of shadows and how these properties affect people's daily lives. Light's properties have also been investigated. The main focus of Physics is on the properties of light (Fan and Lang, 2021). The primary goal of the project is to eliminate unwanted shadows during experiments and in everyday life. Various techniques are used to accomplish the same goal.

Motivation

Individuals can be motivated to work on company projects if they are inspired, encouraged, and stimulated. The main reason for doing the project is to investigate the function of light and shadow. Investigate the characteristics of the shadow and the technique for removing it. The main inspiration for the shadow is to solve the problem of shadow obstruction in practical and real life. The shadow can be avoided with careful lighting planning.

Significance

The traditional approach to shadow detection combines local information from image patches and local information from image boundaries. The image boundary is a collection of various properties that are determined by the location of the shadow. The basic approach to detecting shadows is the covets, and by using this, the image boundary is cleared by the viewers. The image boundary indicates the object's shape and size. However, there is one issue with this. Another system is the

conditional random field method, which can capture the neighboring image of the object so that the main view of the object is not clear. The field method creates a clear graphical image of the object, which clears the location and shape of the object. Anyone can see the legs, horns, and other external parts of the object by using the detected shadow mask.

Literature survey

According to Chen, the purpose of this paper is to identify the best technique for removing shadows. According to Zhang, the scope of this paper also includes the scope of the existing system's drawbacks. However, according to Fan, this paper has examined the disadvantages of the future system.

Objectives

Based on the chromatic detection method, the existing shadow removal system can remove shadows. The information in the shadowed image increases as it is processed. As a result, the removal of the shadow has been critical. Shadow removal is essential for object classification, recognition, and image fusion.

Features

The project describes the implementation of a technique/algorithm used to detect and then remove the shadow in an image. The image can be indoors or outdoors. We'll start with the input image to create an edge map, then apply the CRF model to create the final shadow map. In the beginning, we will employ the multilevel color transfer strategy, which improves estimation along boundaries. To obtain a shadow-free image, the Bayesian formulation is optimized to solve alpha, beta matte.

Expected outcome

The report's outcome is positive, and the expected result must be impressive in the field of physics. Because the project has several components, the maintained process is slightly more complex than the previous one. If the system is properly maintained, the project's prospects look promising.

Reference list

Chen, Z., Long, C., Zhang, L. and Xiao, C., 2021. CANet: A Context-Aware Network for Shadow Removal. In *Proceedings of the IEEE/CVF International Conference on Computer Vision* (pp. 4743-4752).

Fan, P., Lang, G., Guo, P., Liu, Z., Yang, F., Yan, B. and Lei, X., 2021. Multi-Feature Patch-Based Segmentation Technique in the Gray-Centered RGB Color Space for Improved Apple Target Recognition. *Agriculture*, *11*(3), p.273.

Sudiatmika, I.B.K. and Dewi, I.G.A.A.S., 2021. Indonesian Shadow Puppet Recognition Using VGG-16 and Cosine Similarity. *The IJICS (International Journal of Informatics and Computer Science)*, *5*(1), pp.1-6.

GITHUB Link:

https://github.com/keerthanapinikeshi/FE-Project.wiki.git

https://github.com/keerthanapinikeshi/FE-Project