Improving Edge based Color Constancy using Grid based Sampling

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Abstract

Color constancy refers to stable psychological tendency in perception even the lighting circumstances changed and it plays an important role in many computer vision applications. Color constancy is the ability to measure the impact of light onto a digital image independent of the color of the light source. Many color constancy algorithms for estimating the color of the light source, are developed so far but all the existing algorithm are based on single light source i.e. they consider that an image is affected by only one light source or single uniform illumination, which is not the case every time, because an image may be affected with more than one illuminations. The illusion of single light source is now violated by multiple sources of light. In this paper, we will discuss a new method which considers that an image is affected by multiple sources of light, without any clue about the color of the light sources. Grid based sampling technique along with Grey Edge algorithm is used to estimate the color of multiple light sources. The use of Bilateral Filter after applying color correction is giving most promising results and it has provided the consistency of this algorithm over different types of images taken from different datasets. Experimental and visual results show that the proposed method achieves much better results than existing methods for color constancy. The qualitative results are tested over some well known parameters i.e. Median Angular Error (MAE), Peak Signal to Noise Ratio (PSNR) etc.
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Index Terms

Computer Science  Image Processing

Keywords

Color Constancy  Illumination  Computer Vision  Median Angular Error (MAE) and Peak Signal to Noise Ratio (PSNR).