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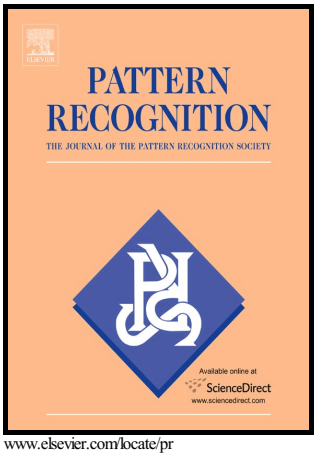

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Approaching the Computational Color Constancy as a Classification Problem through Deep Learning

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Abstract

Computational color constancy refers to the problem of computing the illuminant color so that the images of a scene under varying illumination can be normalized to an image under the canonical illumination. In this paper, we adopt a deep learning framework for the illumination estimation problem. The proposed method works under the assumption of uniform illumination over the scene and aims for the accurate illuminant color computation. Specifically, we trained the convolutional neural network to solve the problem by casting the color constancy problem as an illumination classification problem. We designed the deep learning architecture so that the output of the network can be directly used for computing the color of the illumination. Experimental results show that our deep network is able to extract useful features for the illumination estimation and our method outperforms all previous color constancy methods on multiple test datasets.

Keywords: Computational color constancy, white balancing, illumination estimation, machine learning, convolutional neural network

1. Introduction

Color constancy is the ability of the human vision system to ensure that perceived color of a scene remains relatively constant under varying illumination. The goal of the computational color constancy research is to have the computer emulate this capability

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