夜间图像的白平衡算法研究与实现

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摘 要： 本文提出了一种基于像素点加权的白平衡算法，并且对算法进行了 FPGA 实现.该算法首先将 RGB 图像转化为暗通道图像，根据图像的暗通道值以及高光区域的分布情况为各像素点加入权重.然后，根据各像素点的权重计算出各通道的加权平均值，并将其结合标准灰度得到各通道的增益因子，最后利用增益因子完成白平衡调整，消除图像的颜色偏色.实验结果表明，该算法有效解决了夜间图像的偏色问题，并且满足了实时系统的要求.

关键词： 颜色恒常性；夜间图像；颜色校正；FPGA

Research and Realization of White Balance Algorithm for Night Image

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Abstract：This paper a white balance algorithm based on the weight of pixels is proposed，and the algorithm is implemented by FPGA. Firstly， the RGB image is converted into a dark channel image， and the weight of pixels is achieved according to the dark channel value of the image and the distribution of the high light region. Then， the weighted mean of each channel is calculated according to the weight of each pixel， and the gain factor of each channel is obtained by combining the standard gray scale. Finally， the gain factor is used to adjust the white balance to eliminate the color deviation of the image. The experimental results show that the algorithm can effectively solve the problem of color cast of nighttime image and meet the requirements of real-time system.

Key words：color constancy； night images； color correction； FPGA

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