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成像技术与图像处理

基于CCD图像的LED显示屏亮度均匀性评估方法

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摘要： 将CCD摄像机用于LED显示屏亮度特征数据的采集，深入分析了LED显示屏CCD感光图像的特点，在此基础上，完成了感光别以及亮度特征数据的提取，提出了一种通过计算亮度特征图像各部分之间的相似程度评估显示屏亮度均匀性的方法。针对亮度特征用在水平和垂直方向上各等分为2块以及直接将其等分为4块2种分块方法，分别计算各图像分块之间奇异值向量的夹角以度量其相似后将各分块相似度的平均值作为该显示屏样块亮度均匀性的度量。实验结果表明，2种分块方法对同一组显示屏样块的亮度均匀性评价致的，均与人的主观感觉相符。

关键词： 光学测量 CCD图像 亮度均匀性 奇异值分解

Assessment method for luminance uniformity of LED display based on CCD image

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Abstract: CCD camera is used in the luminance data acquisition of LED display, and the property of CCD photo image is analyzed. On the basis of that, a luminance uniformity assessment method is presented after finishing photosensitive unit recognition and luminance data extraction. It is based on the structure comparability of the different parts of the luminance data image. The luminance data image is divided into two blocks horizontally a vertically. It's also divided into four blocks equally.The angle between singular vectors of each two blocks is us evaluate their difference. The blocks of luminance data image of LED display with good luminance uniformity ar similar than the blocks of luminance data image of LED display with poor luminance uniformity. The luminance u of the display is accordingly evaluated by the difference measurement of the blocks. Experimental results show the assessment results of the two dividing methods are all coincident with perceptual property of human eye.

Keywords: optical measurement CCD image luminance uniformity singular value decomposition

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