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基于Gabor小波变换的帘子布疵点检测研究

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摘要 Gabor小波变换已经成功地应用到各种机器视觉实例中，如纹理分割、边缘检测等。给出了一种基于多通道Gabor滤波器技术实现高速实时帘子布疵点检测方法。在多尺度多方向上分别对具有规则纹理结构的织物图像进行Gabor滤波，并对滤波后的多幅子图像进行融合分割处理，将疵点从织物背景中分割出来，从而实现对织物疵点的实时检测。该方法用于帘子布的缺陷检测，具有识别能力强、实时性好等优点，实验结果证明该方法是有效可行的。这种方法也可以用于检测有规则纹理结构的表面及物体。

关键词 Gabor小波变换 帘子布 织物疵点 图像融合 疵点分割

分类号

Research on defect detection of cord fabrics based on Gabor wavelet transform

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Abstract

Gabor wavelets have been successfully applied for a variety of machine vision applications such as texture segmentation，edge detection etc.This paper proposes a multichannel Gabor filter scheme for cord fabric defect detection.A textile image with regular peridic texture is procesed using the Gabor-filters in a multi-scale and multi-orientation mode，forming multi-images.Sub-images filtered are fused in order to reconstruct the defect binary image that segments the defects from the texture background.The proposed method is used to detect the faults of cord fabrics.The algorithm is characterd by strong capability of recognition and high testing speed.Experimental results show that it is efficient and practicable.This can also be applied to detect defects on surfaces and materials that have regular periodic texture.

Key words Gabor wavelets cord fabrics fabric faults image fusion fault segmentation

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