

图形、图像、模式识别

基于Gabor滤波器组的实时疵点图像分割

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摘要 使用Gabor滤波器组进行布匹在线疵点检测与疵点图像分割。通过定义一个分辨力函数和一些合成的疵点图像, 对已有的Gabor滤波器组的参数选择方式做出评价, 提出了在实时应用场合有效地确定Gabor滤波器组参数的方法。分析指出: Gabor滤波器的实部输出是主要因素; 滤波器的方位角仅选取疵点出现得最多的水平和垂直方向, 而径向中心频率的选取依赖于纹理本身的固有频率; 滤波器的长度也应与纹理的固有周期一致。尽管Gabor滤波器的个数减少到4个以满足实时性要求, 但结果表明, 滤波器组仍能很好地检测和分割出大多数疵点。

关键词 [Gabor滤波器组](#) [疵点检测](#) [图像分割](#) [分辨力函数](#)

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Online defect segmentation based on Gabor filter bank

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Abstract

Gabor filter bank is applied to textile online defect detection and defect image segmentation. The parameter selection in many proposed methods in this area is evaluated firstly by defining a discriminability function computing on some synthesized defect images, and thereby an efficient parameter selection method is proposed in real time constraint. It is argued that the outputs of the real part of Gabor filters are the key factor for defect detection; the orientation angles of the filters are selected as horizontal and vertical direction, in which most defects appear; the radial center frequencies are selected according to the instinct frequency of the texture; and the length of the Gabor filters depends on the periodicity of the texture as well. Although the number of the Gabor filters decreases to four within the real time constraint, it is illustrated that most kinds of defects are correctly detected and segmented by the proposed filter bank.

Key words [Gabor filter bank](#); [defect detection](#); [image segmentation](#); [discriminability function](#)

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