

论文与报告

一种复杂背景下皮棉中异性纤维特征快速提取算法

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摘要

提出一种复杂背景下皮棉中异性纤维特征提取算法. 采用二维小波变换提取边缘特征用于检测异性纤维和皮棉背景的灰度差, 采用CrCgCb色度空间提取颜色特征以消除亮度变化的影响. 考虑到目标特征的不连续性和算法的运算时间, 提出一种基于两级连通域标记和等效长宽比的形态分析方法. 通过对5类异性纤维的实验表明: 算法能有效地识别异性纤维特征, 识别率达到95%, 同时满足实时工作场合的应用.

关键词 [Foreign fiber](#) [feature extraction](#) [length-width ratio](#) [connected component labeling](#) [real-time application](#)

分类号

A Fast Feature Extraction Algorithm for Detection of Foreign Fiber in Lint Cotton within a Complex Background

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Abstract

A novel algorithm is presented in this paper to extract the features of foreign fibers in lint cotton within a complex background. The 2D wavelet transform is used to implement the edge detection based on the gray contrast between foreign fibers and cotton background, while the color features are extracted in CrCgCb color cube to solve the problem of luminance fluctuation. Morphological analysis is a critical procedure of the algorithm and the discontinuity of object features and operation time must be considered. Therefore, the proposed approach integrates a two-level connected component labeling algorithm and a morphological identification algorithm based on equivalent length-width ratio. Tests on five typical kinds of foreign fibers were implemented, and the results show that the identification rate of the above-mentioned algorithm is about 95%. The experimental results demonstrate that the feature extraction algorithm can identify foreign fibers effectively and can be used in real-time application.

Key words [Foreign fiber](#) [feature extraction](#) [length-width ratio](#) [connected component labeling](#) [real-time application](#)

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