

基于自动视觉检测的棉花异性纤维分类系统 AVI System for Classification of Foreign Fibers in Cotton

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关键词: 棉花 异性纤维 分类 自动视觉检测 多分类器集成

摘要: 为实现棉花异性纤维的在线识别, 设计了一种基于自动视觉检测(AVI)的棉花异性纤维分类系统。该系统利用棉层生成器将待检测皮棉制成约2mm厚的均匀薄层使其中的异性纤维更容易检测, 利用彩色线扫描相机检测有色异性纤维, 利用单色线扫描相机检测在紫外线激发下能产生荧光的白色异性纤维。采用多特征多分类器集成的模糊分类方法实现了对异性纤维的分类。实验表明, 该系统对异性纤维的平均分类正确率可达80%。 An online classification system was developed based on automated visual inspection (AVI) technology to classify the foreign fibers detected in cotton. The proposed system uses a lint layer generator to bring the foreign fibers buried inside the lint to the surface, to make them easy to be “seen”. A Piranha color camera with a tri-linear CCD sensor was used to detect color foreign fibers, and a Piranha2 line scan CCD camera was employed to detect the white foreign fibers which can emit fluorescence under the ultraviolet excitation. Then a fuzzy classifier integrating multiple classifiers was designed for the classification of the detected foreign fibers. The results indicate that the mean veracity of classification of foreign fibers reaches 80%.

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