

全燕鸣,黎淑梅,成喜春,林子其.基于机器视觉的果肉多类型异物识别方法[J].农业工程学报,2011,27(3):162-166

### 基于机器视觉的果肉多类型异物识别方法

#### Detection technology for recognizing multi-type foreign bodies from fruit flesh based on machine vision

投稿时间: 7/12/2010 最后修改时间: 1/10/2011

中文关键词: [机器视觉](#) [果肉异物检测](#) [HSI模型](#) [形态学边缘检测](#)

英文关键词: [machine vision](#) [fruit flesh](#) [foreign body detection](#) [HSI model](#) [morphology edge detection](#)

基金项目:广东省企业技术创新项目:果肉的自动分拣投料及异物在线检测剔除设备的研制和产业化(B01B2061180)

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中文摘要:

该文基于机器视觉技术对果冻、罐头灌装前的多品种、多规格、湿态反光果肉进行多类型异物自动检测。根据果肉与异物的颜色和亮度差异大小,提出了对高饱和度彩色果肉采用基于HSI三分量独立性的彩色图像分割算法,对低饱和度彩色果肉采用以形态学边缘检测算法为核心的异物识别图像处理路线。然后采用图像分区,各区域独立计数判断有无异物的策略。对上述路线和策略,分别给出具体流程和算法,最后编程实现,并通过试验验证。试验结果表明,该方法能够有效地检测出多品种湿态块状果肉上的多类型异物,误检率小于5%,能满足实时生产检测准确性要求。

英文摘要:

Based on machine vision, the wet fruit flesh of jelling with different kind and size can be inspected automatically for multi-type foreign bodies detection before filled into containers. According to the difference degree in color and brightness between fruit flesh and foreign bodies, two approaches of image processing for foreign bodies reorganization were put forwarded. For high-saturation color fruit flesh, a segmentation algorithm based on the independence of HSI three components was adopted. For low-saturation color fruit flesh, an edge detection algorithm on mathematical morphology was taken as the main means. Then the result images were divided into several regions according to the size of fruit flesh, and the judgment whether foreign bodies existed in each region was worked out. As for these approaches, the specific processes and programs were given and verified by experiments. The results show that the method can detect a variety of foreign bodies on wet fruit flesh with a high accuracy.

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