

基于计算机视觉的葡萄茎直径高精度测量方法 High Accuracy Measurement of Grape Stem Diameter Based on Computer Vision

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关键词: 葡萄 茎直径 计算机视觉 非接触测量 图像处理

摘要: 提出了基于计算机视觉的葡萄茎直径测量方法, 采用双边滤波降低图像噪声, 通过Otsu阈值分割和BloB分析实现葡萄茎与背景的分, 应用基于特征点的定位方法得到茎直径测量位置, 由茎直径所包含像素数和尺寸当量计算出茎直径值, 从而实现茎直径连续测量。实验和现场应用表明, 系统测量重复精度可达 $\pm 0.5\mu\text{m}$ 。 For non-contact and high accurate measurement of grape stem diameter, a method based on computer vision was proposed. Bilateral filtering was implemented for smoothing original grayscale images. Furthermore, the grape stem was extracted from the background by Otsu and BloB analysis. According to the localized feature point, the position of stem diameter was determined. Then the stem diameter was calculated by the pixel size coefficient and the pixels of the stem diameter. Consequently, continuous stem diameter measurement was achieved. Field applications and experimental results show that the repeatability accuracy of the system achieves $\pm 0.5 \mu\text{m}$.

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