

基于计算机视觉的新疆棉种颜色分选系统设计 Xinjiang Cotton Seed Color Separation System Based on Computer Vision

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摘要: 设计了一套基于机器视觉的脱绒棉种在线分选系统, 采用种子平抛和气吹分离的方式实现了新疆地区红棕色棉种与黑色棉种的自动分选。研究了无序状态下的种子图像采集方法, 并通过区域细分的方式解决了无序种子与气流喷嘴的对应关系。提出了种子位置跟踪和分离算法, 实现了对棉种图像处理结果的延时分离操作。实验结果表明: 在传送带速度为0.50 m/s时, 分选精度为88.6%, 选出率为80.7%。 A cotton seed on-line separation system based on computer vision was designed to realize the automatic separation of red-brown and black cotton seeds produced in Xinjiang Province. In the system, the seeds were projected horizontally, separated by compressed airflow in the air. Meanwhile, a method of capturing seed images was studied in an unordered arrangement. And the corresponding relationship between unordered seeds and the airflow nozzles was resolved by region subdivision of seed image. Lastly, a seed tracking and separating algorithm was proposed which memorized the position of each inspected seed until the seeds reached the separation region. The experiment results show that when the speed of the conveyer belt is 0.50 m/s, the inspecting accuracy is 88.6%, and the separating ratio is 80.7%.

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