

基于双目视觉技术的猪生长监测系统标定模式 Calibration Mode of Pig Growth Inspecting System Based on Binocular Stereovision Technology

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关键词: 猪 生长检测 双目视觉 标定模式

摘要: 针对养猪生产中对猪体生长监测的需求, 设计了基于双目视觉的猪生长监测系统的软、硬件, 实现了基于非线性摄像机模型双目视觉系统的标定算法。根据摄像机成像原理建立了基于最小二乘法的空间点坐标检测算法。利用标定和检测算法, 从标定板图像数目、标定板位置、旋转角度3个方面对系统的标定模式进行了研究。结果表明: 利用19幅以上标定板图像能够得到稳定的标定结果; 不同位置的标定板图像对检测精度影响较大, 应当在全视场内采集标定板图像; 标定板的旋转角度对检测精度影响不明显, 但是旋转角度增大不利于标定点的完全提取。 To inspect weight and growth of pigs in real time, an web-based inspecting system based on binocular stereovision technology was developed. Hardware and software related to this inspecting system were established in laboratory condition. The calibration algorithm with non-linear camera model and coordinate inspecting arithmetic based on least square methods was developed. Calibration mode about different numbers, parts and rotating angle of the calibration board images was collected and the inspecting results were analyzed. Results showed that more than 19 calibration board images should be used to get steady system parameters. Collecting the calibration images in all parts of inspecting zone could improve the inspecting precision. There was no obvious difference in inspecting precision at different rotating angle, but a large rotating angle was not conducive to extract all coordinates of the calibration points.

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