基于三维视觉的地铁客流信息智能采集算法研究

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摘　要：针对传统的采集方法，在地铁客流信息采集方面存在采集精度低的问题，提出基于三维视觉的地铁客流信息智能采集算法，首先利用 CCD 数码摄像机或传感器等设备拍摄郑州地铁客流纹理图像，利用三维视觉传感技术对地铁客流信息进行数字化处理，将数据化的地铁客流信息进行去噪、阈值分割等深度处理；然后对地铁客流信息进行时间序列的状态空间重构，计算地铁客流信息时间序列的自相关函数；最后在上述计算结果的基础上利用 GPS、无线通信、地铁车辆跟踪以及地铁卡收费系统对地铁客流信息进行统计，完成地铁客流信息的智能采集.实验结果分析证明，所提算法使得地铁客流信息智能采集效率大大提高，加快了信息采集速度，从而降低了成本.

关键词：三维视觉；地铁客流信息；状态空间重构；自相关函数；智能采集算法

Subway Intelligent Traffic Information Collection Based on 3 d Vision Algorithm Research

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Abstract：According to the traditional acquisition methods, there is the problem of low accuracy in the acquisition of subway passenger information collection, the proposed intelligent subway passenger information acquisition algorithm based on 3D vision, first using the equipment of CCD digital camera or sensor shooting ZhengZhou subway passenger texture image, to digitize the subway passenger information using three dimensional vision sensing technology, the subway passenger information the data are to the depth of processing noise, threshold segmentation; state space reconstruction and time sequence of subway passenger information, calculating the autocorrelation function of subway passenger information of time series; finally, based on the calculation results of the statistics on the subway passenger information with GPS, wireless communication, subway vehicle tracking and subway card charges intelligent acquisition system, complete the subway passenger information. The experimental results show that the proposed algorithm can greatly improve the efficiency of subway passenger flow information collection, accelerate the speed of information collection, and reduce the cost.

Key words：3d visual; the subway traffic information; state space reconstruction; autocorrelation function;intelligent acquisition algorithm

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