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信息科学

基于MeanShift图像分割结合SVM判决的候梯人数视觉检测系统

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摘要：根据电梯群控系统的需求，提出了一种基于视觉检测技术获得候梯人数的新方法。考虑候梯人数检测系统的监测目标为候梯人群，而候梯人群的心理、建筑风格，摄像机的安装角度、复杂背景等因素均会影响到待识别模式的提取，故作者提出了以人体头部作为模式进行模式识别来检测候梯乘客的数量。该方法以Mean Shift图像分割算法和支持向量机(SVM)决策分类器为核心，考虑候梯人群图像采集角度、拍摄镜头的特殊性等对候梯人群头部进行精确识别，较为快速地得到了准确的识别结果。实验证明，该方法处理图像速度可保持在每幅图片2 s以内，准确率超过80%，满足了电梯群控系统的需求。由于能够使电梯群控系统获得稳定可靠的输入参数，从而提高了电梯群的运送效率。

关键词：视觉检测 Mean Shift图像分割 支持向量机决策分类 人数检测

Elevator-Waiting People Counting System Based on MeanShift Segmentation and SVM Classification

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Abstract: According to the requirements of elevator-group-control systems, a new method based on computer vision detection technology was proposed to obtain the number of passengers waiting outside of an elevator. As the detecting target of the system was the passengers waiting outside of the elevator, the feelings of passengers, building styles, the installation angle of a camera and the complex background would effect the detection pattern. Therefore, this paper took the human head as the model to implement the pattern recognition and to detect the number of passengers waiting outside of the elevator. The proposed method based on computer vision detection algorithm combined Mean Shift image segmentation and Support Vector Machine (SVM) classification and recognized the human head features according to the angles of image acquisition and special lenses of cameras. It can obtain accurate recognition results. Experimental results show that the method has an image processing speed by 2 s/image in real time and the accuracy above 80%, which meets the needs of elevator-group-control systems. As a results, the transport efficiency has been improved greatly due to the stable input parameters for the elevator-group-control systems.

Keywords: Vision inspection Mean Shift Image Segmentation Support Vector Machine(SVM) classification People Counting

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