监控系统中的多摄像机协同

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摘要
描述了一个用于室内场合对多个目标进行跟踪的分布式监控系统. 该系统由多个廉价的固定镜头的摄像机构成, 具有多个摄像机处理模块和一个中央模块用于协调摄像机间的跟踪任务. 由于每个运动目标有可能被多个摄像机同时跟踪, 因此如何选择最合适的摄像机对某一目标跟踪, 特别是在系统资源紧张时, 成为一个问题. 提出的新算法能根据目标与摄像机之间的距离并考虑到遮挡的情况, 把目标分配给相应的摄像机, 因此在遮挡出现时, 系统能把遮挡的目标分配给能看见目标并距离最近的那个摄像机. 实验表明该系统能协调好多个摄像机进行目标跟踪, 并处理好遮挡问题.

关键词　人体跟踪　分布式监控系统　遮挡　摄像机分配

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Multiple Camera Coordination in a Surveillance System

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Abstract
We present a distributed surveillance system that uses multiple cheap static cameras to track multiple people in indoor environments. The system has a set of Camera Processing Modules and a Central Module to coordinate the tracking tasks among the cameras. Since each object in the scene can be tracked by a number of cameras, the problem is how to choose the most appropriate camera for each object. This is important given the need to deal with limited resources (CPU, power etc.). We propose a novel algorithm to allocate objects to cameras using the object-to-camera distance while taking into account occlusion. The algorithm attempts to assign objects in the overlapping field of views to the nearest camera, which can see the object without occlusion. Experimental results show that the system can coordinate cameras to track people and can deal well with occlusion.

Key words　Human tracking　distributed surveillance system　occlusion　camera allocation

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