成像技术与图像处理

基于改进MeanShift的目标跟踪算法

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摘要： 针对传统Meanshift算法在某些干扰或遮挡情况下不能保证跟踪的准确性, 以及目标模型内的背景像素也会造成定位偏差的问题, 提出一种基于MeanShift的改进算法。首先对目标模型进行改进, 通过目标与背景的区分度引入权系数, 在目标模型中进行加权处理, 可达到降低目标模型内背景像素对跟踪定位精度的影响。然后, 将跟踪窗进行分块, 对各子块使用改进目标模型的Meanshift算法进行跟踪。最后, 用匹配度最大的两个子块加权决定目标的最终位置, 从而在目标发生遮挡时能有效剔除被遮挡子块对目标定位的影响。实验表明, 在复杂背景下, 新算法仍然可以有效、准确地跟踪运动目标。

关键词： Meanshift　目标跟踪　分块　抗遮挡

Target Tracking Algorithm Based on Improved Meanshift

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Abstract: Aiming at the problem that traditional Meanshift algorithm can not guarantee tracking accuracy in certain interference or occlusion case and background pixel in object model will induce localization error, a improved targets tracking algorithm based on Meanshift algorithm was proposed. Firstly, the object model is improved by introducing weights which is decided by divisional degree between object and background, and then the weight was used in object model to reduce the localization error of object tracking. Secondly, the target in the tracking window is divided into a number of fragments, the improved Mean Shift algorithm is used in every fragments separately. Finally, the match degree of each fragment is computed and the fragment with the highest match degree is involved to achieve the whole target's coordinates and to avoid the influence of occluded fragments on the object location. Experimental results show that the new method can effectively and accurately track moving target in the cluttering background.

Keywords: Meanshift　target tracking　fragments　anti-occlusion

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