



基于全景子空间的尺度不变特征跟踪方法

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Panoramas subspace based scale invariant feature tracking method

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摘要

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摘要 提出一种基于全景子空间尺度不变特征跟踪方法,包括离线阶段建立全景图像与原始图像序列特征集对应关系和在线阶段基于关键图像识别的特征匹配等过程.首先利用全景图充分覆盖局部场景信息特性,通过扩展Kd树组织全景图特征并建立其与原始图像序列特征对应关系,不但解决了图像间特征对应,而且能够有效减少全景图冗余特征量,提高首次特征匹配速度.然后给出一种基于投票策略的关键图像识别方法以进一步完成二次特征匹配,从而将多图像大数据量特征匹配转换为单图像小数据量特征匹配目标,较好实现了特征匹配速度与稳定性的平衡.试验结果表明本方法能够有效增强特征跟踪的稳定性.

关键词: 全景图 Kd树 尺度不变特征变换 关键图像 投票

Abstract: Aiming to panoramas images, a panoramas subspace based scale invariant feature tracking method was proposed which contains an offline process to build feature correspondence between panoramas and original image sequence and an online process to match features based on keyframe recognition. Firstly making full use of the ability of panoramas to cover approximately entire local nature space, a way was given to extend Kd tree to build feature correspondence between panoramas and original image sequence which can efficiently reduce feature redundancy of panoramas and improve the first matching stage-s time. On the basis of this mapping, a voting method was used to recognize keyframe to finish the second matching stage. Through the two feature matching stages above, the aim was reached that converts the feature matching from multiple images to single image to decrease feature number. Experimental results show that the method can efficiently achieve good balance between matching time and stability.

Keywords: panoramas Kd tree scale invariant feature transform keyframe voting

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