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论文

基于良分布的亚像素定位角点的图像配准

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摘要
针对Harris检测出的角点位置会发生偏移和易产生伪角点，以及在角点匹配过程中计算复杂，容易产生误匹配等缺点，该文提出了基于良分布的亚像素定位角点的图像配准方法。该方法首先使用多尺度Harris算子检测图像的角点作为初始兴趣点，并采用自适应非极大值抑制对兴趣点的数量进行限制，以减少后续过程的计算复杂度，提高算法效率，同时使得角点在图像中处于良分布状态。然后利用亚像素定位技术进行精确定位，排除伪角点和不稳定的角点。最后使用随机抽样一致性算法对初始匹配进行鲁棒的模型参数估计。实验结果表明算法配准效率改进明显，并具有良好的精确性和鲁棒性。

关键词 图像配准 亚像素定位 良分布 随机抽样一致性

分类号 TP391

Image Registration Based on Well-Distributed Corners with Sub-Pixel Localization

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Abstract
To deal with the false and unstable corners, high computational complexity and incorrect matching, a new image registration algorithm is proposed based on corners which are well-distributed in image and with sub-pixel localization precision. Firstly corners in an image are detected by multi-scale Harris operator, which are taken as initial interest points. And then adaptive non-maximal suppression is used to limit the number of interest points, so the computational complexity is decreased and the efficiency of the algorithm is improved. At the mean time, the corners are made to be well-distributed in image. Since the location of initial Harris corners have offset and false corners have existed, sub-pixel localization technique is applied to determine the location of corners and eliminate the false and unstable corners in this process. Finally, RANSAC is used to estimate the parameters robustly based on initial matching. Experiments showed that the proposed algorithm has a good performance of efficiency, accuracy and robustness.

Key words Image registration Sub-pixel localization Well-distributed RANdom SAmple Consensus (RANSAC)

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