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成像技术与图像处理

基于SURF的抗视角变换图像匹配算法

苏可心[1,2], 韩广良[1], 孙海江[1]

1. 中国科学院 长春光学精密机械与物理研究所, 吉林 长春 130033;
2. 中国科学院大学, 北京 100049

摘要：　针对原SURF算法难以解决图像发生仿射变换特别是发生大视角变换时的有效匹配问题,提出了一种基于SURF的抗视角变换图像匹配算法。算法首先通过模拟可能的视角变换对基准图像进行视角补偿来生成模拟图像序列;再对序列中的每幅图像分别提取SURF特征点并映射到基准图中,构成基准图像的特征点集合,从而增加了基准图像中抗视角变换特征点数目;最后以欧氏距离作为相似度量准则得到待配准图像和基准图像间的SURF匹配特征点对。实验结果表明,所提算法增加了特征点匹配对数目,改善了视角变换过大(大于60°)使得图像无法匹配的情况。

关键词：　SURF　视角变换　模拟图像序列　图像匹配

Anti-Viewpoint Changing Image Matching Algorithm Based on SURF

SU Ke-xin[1,2], HAN Guang-liang[1], SUN Hai-jiang[1]

1. Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences, Changchun 130033, China;
2. Graduate University of Chinese Academy of Sciences, Beijing 100049, China

Abstract: To overcome the affine transformation, especially great viewpoint changing between the real-time image and the reference image, an anti-viewpoint changing image matching algorithm based on SURF is proposed to bridge the gap of the original one, which may lead to failed matching for the lack of correct matched pairs. The proposed algorithm simulated possible perspective transformations from the original image, generated a set of simulated image sequences, and extracted SURF feature points in the sequence images. Then, the feature points of the simulated image sequence were mapped to the reference image. Finally, the matching point pairs are obtained by the method of the euclidean distance criterion. Experiment results show that the proposed algorithm increases the matching pairs of the feature points, and overcomes the influence of viewpoint change (more than 60°) in image matching.

Keywords: SURF　viewpoint-changing　simulating image sequence　image matching

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