

用于遮挡形状匹配的弦角特征描述

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Chord angle representation for shape matching under occlusion

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摘要 图/表 参考文献 相关文章 (4)

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摘要 为了在兼顾形状匹配算法的检索率和运算效率的同时实现部分遮挡目标的精确匹配,提出了一种基于弦角轮廓特征的形状描述算法.该算法基于轮廓点的空间位置关系构造每个轮廓采样点的弦角轮廓特征描述子,利用描述子的自包含属性描述开轮廓的形状特征.采用L1度量方法计算两个轮廓点的弦描述子之间的距离,获得匹配代价矩阵.最后利用积分图算法计算匹配代价矩阵的相似度,实现部分遮挡目标的识别.基于MPEG-7形状数据库和Kimia216形状数据库进行了目标识别实验.实验结果表明:该算法对部分遮挡目标具有良好的鲁棒性,而且具有较高的运算效率,部分匹配的检索率达到83.63%,提高了19.09%,实验结果优于现有部分遮挡形状匹配算法.该算法较好地满足了遮挡形状的匹配和识别对速度、准确率和抗遮挡能力等方面的要求.

关键词 : 形状匹配, 部分遮挡, 弦角描述, 积分图

Abstract : A shape description method based on chord angle representation was proposed to solve the problem of shape matching under partial occlusion, meanwhile balancing retrieval accuracy and computational efficiency. A chord angle descriptor was defined based on the angle between two chords for each sample point, which could be used to describe an open contour by its self-contained property. Then, a match cost matrix was constructed by computing the L1 distance between descriptors of all the sample points on two open contours. Finally, the similarity between two contours was obtained by the integral image algorithm and the partial shape matching result was achieved. The experimental results on MPEG-7 and Kimia216 shape databases indicate that this method is robust to the partial occlusion, and the computational efficiency and the retrieval accuracy are both essentially improved as compared with other partially occluded shape matching algorithms. The retrieval accuracy of proposed partial contour matching method reaches to 83.63% and increased by 19.09%. It concludes that this proposed method meets the requirements of shape matching and object recognition in efficiency, accuracy and ability of anti-occlusion.

Key words : shape matching partial occlusion chord angle representation integral image

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