图形、图像、模式识别

基于区域分割的红外和可见光图像融合方法

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摘要　　针对红外和可见光图像融合在场景监控中的应用，提出了一种基于区域分割的图像融合方法。首先采用改进的区域生长法对源图像进行区域分割，得到用于融合图像的联合区域表示，然后综合考虑目标灰度和面积的特点将区域划分为目标区域和背景区域，分别采取基于区域能量和区域平均梯度的融合规则得到融合图像。通过对两组不同场景下的图像进行实验，结果表明该方法能够有效地保持源图像特征，融合结果有利于人眼感知和机器视觉。

关键词　　图像融合　区域分割　联合区域表示　融合规则

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Fusion algorithm for IR and visible images based on region segmentation

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Abstract

For the fusion of IR and visible images in the application of scene surveillance，a fusion algorithm based on region segmentation is proposed.Firstly，the source images are segmented into several regions by an improved region growing method，and a joint region representation for the fused image is produced.Then，by considering the features of target grey level and region area，the joint region representation is divided into target regions and background regions.Different rules based on region energy and region average gradient are adapted respectively in target and background regions to produce the fused image.Experiment shows that the proposed algorithm is effective retain the features of source images and the fused image is suitable for human vision or machine perception.

Key words　image fusion　region segmentation　joint region representation　fusion rules

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