

论文

基于EMD的快速活动轮廓图像分割算法

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摘要

C-V模型等传统基于区域的几何活动轮廓模型仅将灰度同质作为区域相似性的测度, 致使其在分割噪声分布大、灰度复杂的自然及遥感图像时难有较好的分割结果。为此, 该文提出基于Earth Mover's Distance (EMD)的快速活动轮廓图像分割算法。首先, 给出了基于EMD的区域相似性测度, 并引入到模型的定义; 接着, 提出了基于过分割的规则化和快速曲线演化方法, 很好地克服了传统模型的冗余轮廓、计算复杂等问题。对合成图像和遥感图像的实验结果证明了算法的有效性。

关键词 [图像分割](#) [活动轮廓](#) [相似性测度](#) [Earth Mover's Distance \(EMD\)](#) [过分割](#)

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Fast Active Contour Model for Image Segmentation Based on EMD

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Abstract

Classical region-based geometric active contours (e.g. C-V model) only take intensity homogeneity as the similarity measure for regions, and can not obtain satisfactory segmentation results of complicated images. Thus, a fast active contour model based on Earth Mover's Distance (EMD) is proposed and well adapted to segment images. First, a similarity measure based on EMD is proposed and employed to the segmentation model. Then, a novel regularization and curve evolution method using oversegmentation is enforced to improve the numerical accuracy and evolution efficiency. Experimental results of both synthetic and remote sensing images verify that the algorithm is efficient and accurate.

Key words [Image segmentation](#) [Active contour](#) [Similarity measure](#) [Earth Mover's Distance \(EMD\)](#) [Oversegmentation](#)

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