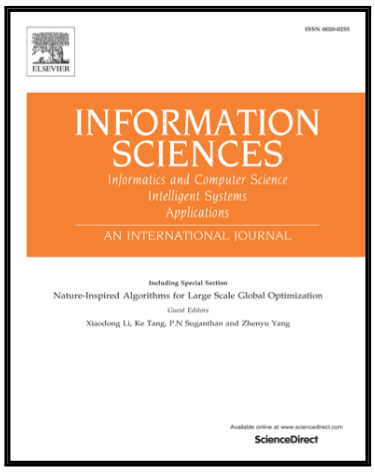

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PII: S0020-0255(18)30088-4
DOI: 10.1016/j.ins.2018.02.007
Reference: INS 13412

To appear in: *Information Sciences*

Received date: 24 January 2016
Revised date: 25 January 2018
Accepted date: 5 February 2018

Please cite this article as: Jiaqing Miao, Ting-Zhu Huang, Xiaobing Zhou, Yugang Wang, Jun Liu, Image Segmentation Based On an Active Contour Model of Partial Image Restoration with Local Cosine Fitting Energy, *Information Sciences* (2018), doi: 10.1016/j.ins.2018.02.007

Image Segmentation Based On an Active Contour Model of Partial Image Restoration with Local Cosine Fitting Energy

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Abstract

In this paper, we use the cosine function to express the data energy fitting of a traditional active contours model and propose a model based on sectional image recovery local cosine-fitting energy active contours, which is used to segment medical and synthetic images. The algorithm is a single level image segmentation method. It can process synthetic images with intensity inhomogeneity. Moreover, our model for the images with noise and the fuzzy ones is more efficient and robust, and the computational speed was similar or faster, compared with Convex Variant of the Mumford-Shah Model and Thresholding (CVMST) model, a local binary fitting (LBF) model and L_0 Regularized Mumford-Shah (L0MS) model. In addition, we describe the model in a discrete form, which is more convenient to add a regular term to control the segmentation. Therefore the massive calculation is reduced by re-initializing the level set curve. At the end of the paper, the modified algorithm has been utilized to segment medical images and three-dimensional visualization results are obtained. The experimental results indicate that the segmentation results are accurate and efficient when applied to different kinds of images.

Key words: Active contour; Local cosine; Section image recovery; Image segmentation; Three-dimensional image segmentation.

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