



SPECTRAL CLUSTERING WITH SPATIAL COHERENCE PROPERTY JOINTING TO ACTIVE CONTOUR MODEL FOR IMAGE LOCAL SEGMENTATION

Guang Hu¹, Shengzhi Yuan²

¹School of Computer and Control Engineering, Yantai University, Yantai, 264005, China

²Department of Armament Engineering, NAEI, Yantai, 264001, China

Emails: Ghu0459@163.com¹, yuanshengzhi_hy@sina.com²

Submitted: Jan.6, 2016

Accepted: Oct.4, 2016

Published: Dec.1, 2016

Abstract- Local Segmentation is the fundamental task for image processing. Consider to the problem of low segmentation precision and contour control instability for image local segmentation, a local segmentation theory is researched that based on SSCACM (spectral clustering with spatial coherence property jointing active contour model). First, by applying spatial coherence property constraint of image pixels to spectral clustering, an adaptive similarity function is constructed and the corresponding spectral clustering algorithm is used to extract initial contour of the local region of an image. Then, the NBACM (narrow band active contour model) is combined with the priori information of initial contour to evolve contour curve to get the segmentation result. At last, the local segmentation experiment is realized on synthetic images and medical images. The experimental results show that the method proposed can extract contour accurately and can improve the effectiveness and robust for image local segmentation.

Index terms: Adaptive similarity function, Spatial coherence property constraints, Adaptive speed operator, Spectral clustering, Active Contour model.