

计算机科学

一种基于CI特征的3-域均值平移聚类肺结节分割算法(英)

聂生东¹, 李立鸿², 陈兆学¹

1. 上海理工大学 医疗器械与食品学院, 上海 200093; 2. 上海交通大学 医学图像处理与模式识别研究所, 上海 200240;

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摘要 提出了一种有效的分割CT图像中肺结节的新算法。该算法采用均值平移(mean shift)算法和基于CI特征, 共由三个步骤组成: (1) 计算感兴趣区内的所有像素的CI特征; (2) 把CI特征与像素的灰度值和空间位置信息结合在一起, 形成3-域特征向量集; (3) 利用均值平移聚类算法对特征向量集进行聚类。由于本文的算法能有效分析多高斯模型描述的包括实质性结节和亚实质性结节在内的所有结节, 因此, 可应用于CT图像中任何含有结节的用户感兴趣区域。实验结果证明, 本文方法能更精确地分割出不同类型的结节。

关键词 [CT图像](#) [结节分割](#) [实质性结节](#) [亚实质性结节](#) [CI特征](#) [均值平移算法](#)

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Pulmonary nodule segmentation algorithm based on three-domain mean shift clustering(English)

NIE Sheng-dong¹, LI Li-hong², CHEN Zhao-xue¹

1. School of Medical Instrumentation & Foodstuff, University of Shanghai for Science and Technology, Shanghai 200093, China;
2. Institute of Image Processing and Pattern Recognition, Shanghai Jiao Tong University, Shanghai 200240, China;

Abstract

In a Computer-Aided Detection (CAD) scheme for pulmonary nodules using computed tomography (CT) images, nodule segmentation is an important intermediate step, which impacts a great influence on the final performance of detection. In order to improve the detection rate of nodule and suppress the false positive, a more effective and physical meaningful nodule segmentation method is proposed in this paper. The algorithm is based on mean shift clustering method and CI (Convergence Index) features, which could represent the multiple Gaussian model of pulmonary nodules both for solid and sub-solid, substantially. This approach is based on an idea of utilizing features in a more "active" way, that is, we integrate the feature to the segmentation algorithm rather than just calculate them after segmentation. The presented segmentation method can figure out the outline of pulmonary nodules more precisely and especially suitable for the segmentation of sub-solid nodules.

Key words [CT images](#) [nodule segmentation](#) [solid nodule](#) [sub-solid nodule](#) [CI feature](#) [mean shift algorithm](#)

DOI:

通讯作者 聂生东 nsd4647@sohu.com.

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