

Toward Automatic Chest CT Image Segmentation

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Abstract : Numerous studies have been conducted on the segmentation of medical images. Segmenting the lungs is one of the common research topics in those studies. Our research stemmed from the lack of solutions for automatic bone, airway, and vessel segmentation, despite the existence of multiple lung segmentation techniques. Consequently, currently, available software tools used for medical image segmentation do not provide automatic lung, bone, airway, and vessel segmentation. This paper presents segmentation techniques along with an interactive software tool architecture for segmenting bone, lung, airway, and vessel tissues. Additionally, we propose a method for creating binary masks from automatically generated segments. The key contribution of our approach is the technique for automatic image thresholding using adjustable Hounsfield values and binary mask extraction. Generated binary masks can be successfully used as a training dataset for deep-learning solutions in medical image segmentation. In this paper, we also examine the current software tools used for medical image segmentation, discuss our approach, and identify its advantages.

Keywords : lung segmentation, binary masks, U-Net, medical software tools

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