

New Approaches to Airway Segmentation in CT Data

Abstract: In this talk, we present and compare two different methods for the segmentation of airways in CT dataset. The first method utilizes a multi-scale tube detection filter for the identification of tubular objects followed by a reconstruction of the airway tree. During the reconstruction step, prior knowledge about the airway trees is utilized to identify and link tubular objects that are part of the airway tree. This approach enables robust handling of disturbances like tumors or emphysema. The second method utilizes the Gradient Vector Flow (GVF) field for the identification of airways and extraction of their centerlines. The found centerlines are used in a second step to initialize the actual GVF-based segmentation. The performance of both methods has been evaluated on a set of 20 chest CT scans with available reference segmentations. We present the results of this evaluation, discuss properties of the two methods, and compare them to the results of 13 other methods from different research groups.