

AbstractID: 7093 Title: Assessment of False-Positive Detections from a Computerized Analysis of CT Lung Nodule Cases

We have developed a fully automated system for the detection of lung nodules in helical computed tomography (CT) scans. A gray-level thresholding scheme is applied to CT image data to obtain a segmented lung volume. A multiple gray-level thresholding technique is then implemented within the segmented lung volume to identify lung nodule candidates based on a single volume criterion. Nine features are computed for each nodule candidate, and a rule-based scheme is used in conjunction with an automated classifier to distinguish candidates that correspond to actual nodules from candidates that correspond to normal anatomy. This method has been applied to a database of 43 standard-dose helical thoracic CT scans and currently achieves an overall nodule detection sensitivity of 71% with an average of 1.5 false-positive detections per section. The clinical utility of such computerized systems will depend, in part, on the presentation of a more reasonable number of false-positive detections to the radiologist. To achieve this goal, we are investigating the large number of normal structures that are erroneously identified as lung nodules by our system. Characteristics of these false-positive detections will be addressed, and modifications to the multiple gray-level thresholding process, feature vector, and rule-based scheme will be described.

Authors are shareholders in R2 Technology, Inc.