



AI IN CHEST IMAGING

MEDICAL FIELD, OR MEDICAL METHOD

Radiology / Emergency medicine / General practice
Medical imaging

TYPE

Decision support Autonomous decision making

CATEGORY

Prevention Detection Diagnosis Treatment
 Other

DESCRIPTION

AI-powered radiological software using image recognition capabilities to assist in generating qualitative and quantitative data in assessing lung disease.

AIM / PURPOSE

Efficiency gains for radiologists by automating time-consuming image recognition tasks.

OUTPUT / RESULTS

Performance of lung lobe segmentation has been validated in a retrospective performance study (n> 4,500 CT data sets from multiple clinical sites from within and outside United States).

In this study, DICE coefficients, surface metrics and volume

error have been computed by comparing the output of the algorithm to the manually-established ground truth.

The average DICE coefficients for individual lung lobes ranged from 0.95 to 0.98, with a standard deviation (SD) \leq 0.07.

Mean surface distance ranged between 0.5 and 1.0 mm with a SD of \leq 1.5 mm.

The 95th quantile of the Hausdorff distance ranged from 2.6 to 5.2 mm with a SD \leq 6.7 mm.

Volume error was between 1.5 - 3.5 %, with a SD \leq 7.3 %.

AI METHODOLOGY

Segmentation and measurements of complete lung and lung lobes, segmentation and measurements of identified lung lesions, based on deep learning algorithms.

INPUT / SIZE OF THE DATA

DICOM images of adult patients.

REFERENCE DOCUMENTS / LINKS / PUBLICATIONS

510k summary available at:
https://www.accessdata.fda.gov/cdrh_docs/pdf18/K183271.pdf

SOURCE

Siemens Healthineers