AW SERVER

Lung VCAR

For lung nodule analysis - automatic visualization, measurement, reporting and follow-up

Clinical and Technical Background

CT scanning is utilized as the exam of choice to visualize and analyze complex lung pathology. The detection of pulmonary nodules and assessment of their evolution with CT are of major importance in chest imaging.

Highlights

- Synchronized 2D, Digital Contrast Agent (DCA) and segmentation analysis.
- Automatic nodule visualization.
- Automatic nodule analysis (volume, doubling time, % growth).
- Automatic follow-up
- Reporting workflow

Overview

Lung VCAR brings efficient CT pulmonary nodule assessment and diagnosis. The innovative Digital Contrast Agent (DCA) feature automatically visualizes lung nodules to help you confirm the presence or absence of suspicious lesions from 2 to 12 mm in size. Lung VCAR allows automated follow-up for lesion matching by the registration of two or more datasets, automatic lesion classification.

Features

Review

- Ability to synchronize multiple images for nodule comparison.
- Ability to review single or multiple exams and compare axial, sagittal, oblique, coronal, and volume-rendered images.
- Automatically propagates previous exam bookmarks to current exam.
- Automatically segments both right and left lung to reduce visual distraction.
- Digital Contrast Agent (DCA) automatically highlights spherical shapes to enhance visualization of suspicious nodules.

Analysis

- Performs automatic segmentation of all nodule types.
- Provides automatic nodule analysis, including % growth, doubling time
- Automatic Nodule Contour to verify pixels within the volume

Indications for Use

Lung VCAR/AdvantageALA is intended to provide an optimized non-invasive application to measure abnormalities in the lung (for example, nodules, lesions, etc.) from a set of computed tomography (CT) images.

The software is designed to support the physician in confirming the presence or absence of physician identified lung lesions (e.g. nodules). The software allows measurement of volume over time using a consistent standardized measurement protocol, thus providing an estimation of the volume doubling time. The Lung VCAR/AdvantageALA software allows analysis and displays statistics for nodule characterization all the different nodule types. Lung VCAR optional Digital Contrast Agent (DCA) module is an automated highlight feature for the visual identification of possible lesions. Digital Contrast Agent (DCA) is a 3D filter that produces images that highlight spherical (S) or cylindrical (C) anatomical regions, such as nodules, cysts, scars, and vessels. Images are made available to the physician to aid in characterization of suspicious nodules and thus, the patient management care decision process. Lung VCAR/AdvantageALA provides the physician with additional information, meant to complement diagnosis based on classical techniques.

System Requirements

Lung VCAR/AdvantageALA can be installed on AW Workstations AW 4.7 Ext. 14 or later and AW Server 3.2 Ext 3.2 or higher.

Regulatory Compliance

This product complies with Regulation (EU) 2017/745 of the European Parliament and of the Council on medical devices (MDR). This product or its features may not be available in some other countries or regions. Please contact your sales associate.

Rx Only

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Features Detail

Scanning

Lung VCAR sensitivity and segmentation performance is a function of slice thickness and dose. Lung VCAR was designed to be compatible with slice thicknesses ranging from 0.625 –1.25 mm with a dose range of >40.

Review Correlated Workflow

The Lung VCAR user interface is designed to organize routine chest radiology reading and make it more efficient. Viewports and displayed anatomy are synchronized and correlated, facilitating reading by making review and problem solving more transparent.
Lung VCAR gives you the ability to:

- Synchronize multiple images for nodule comparison.
- Review single or multiple exams and compare axial, sagittal, coronal, oblique, and volume rendered images.
- Automatically propagate and display previous exam bookmarks on the current exam when two exams are loaded.

Lung VCAR provides you with tools to help improve your workflow and analysis precision.

Lung Segmentation
Lung VCAR automatically segments both the right and left lungs. Segmentation reduces visual distractions associated with irrelevant anatomy during lung nodule evaluation. Total lung volume is captured in the patient report.
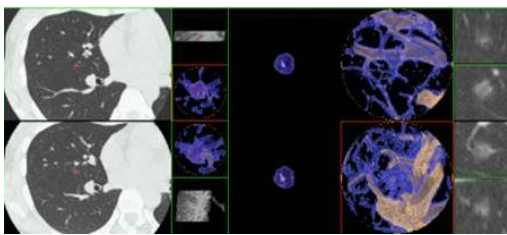

Automatic Follow-up synchronizes and displays current and prior patient exams and their corresponding bookmarks for quick and easy comparison review.

Digital Contrast Agent (DCA) automatically highlights spherical shapes to enhance visualization of suspicious nodules.
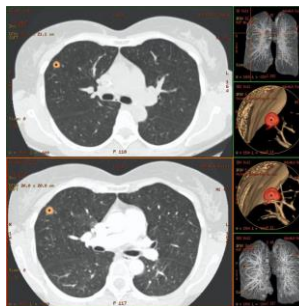
DCA Color Mapping highlights nodules in your choice of red, or for a colorblind-friendly display, orange.
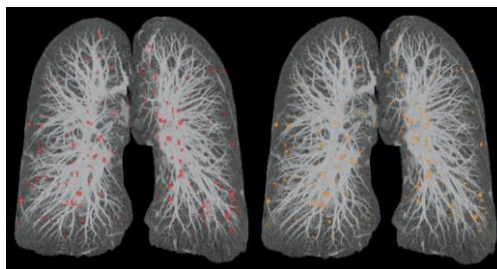

DCA Object Size (0-10mm) gives you full control over visualization sensitivity to a desired nodule size and the number of false positives displayed.

DCA Shape Choice (Sphere / Cylindrical) lets you select from two different filters to help visualize specific shapes and assist in problem solving:

- Cylindrical for vessels
- Spheres for nodules

DCA Toggle enables you to toggle the DCA-highlighted nodules on and off.

X-Reference / Correlation Bar provides you with a quick reference for localizing a nodule's global location when reading 2D axial images. The x-reference bar is synchronized with both review and analysis layouts for immediate screen refresh when deposited at any location or on any anatomy.
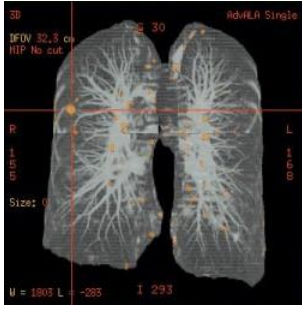
Bookmark Management

Lung VCAR provides you with custom-designed (select dot or small box bookmark format) bookmark management capability linked to review, paging and Digital Contrast Agent for a more organized nodule tracking and analysis workflow.

Interface lets you dynamically and easily view, page and deposit bookmarks within an exam. It provides:

- On/Off toggle capability for DCA-highlighted nodules
- Smooth, contiguous paging through large data sets
- Thick slab MIP paging
- Bookmark paging (next / prior and add / delete)

Automatic Bookmark Propagation lets you automatically propagate bookmarks from previous to current exam or current to previous exam.

**Deferred bookmarking** lets you queue bookmarked nodules for later segmentation (operator initiated segmentation).

Immediate bookmarking automatically segments the nodule and displays the analysis review layouts immediately after you place a bookmark

Layouts

Layout Preferences let you create and save a layout to match your reading style. Layout elements such as viewport, image type in each viewport, slice thickness, window level/width, magnification, rendering mode, can be easily customized.

Analysis

Analysis mode allows you to maximize use of a second monitor by displaying a segmented nodule of interest to an orientation useful for quick problem solving and analysis.
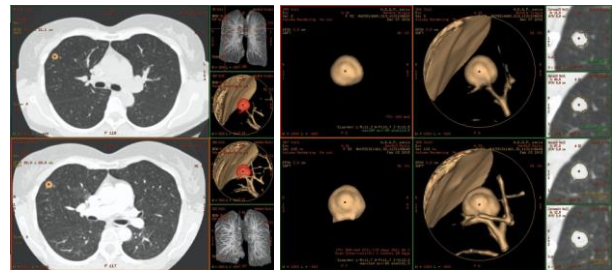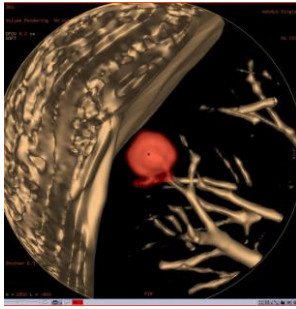

Automatic segmentation of all nodule types provides automated segmentation and sizing of all nodules types. This feature can:

- Display 3D volume rendered nodule view.
- On follow-up exams, display doubling time and percentage of nodule growth.
- Compare nodules from multiple exams

Solid	Part-solid	Non-solid
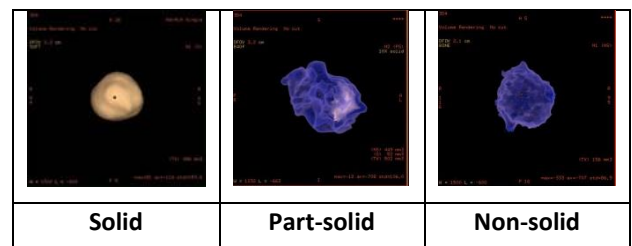
Shutter view provides you with a quick Volume Rendered framed view of a point of interest in relationship to surrounding structures for fast visualization and problem solving.

Manual or automatic nodule characterization can automatically characterize and label nodule type and apply the necessary segmentation algorithm for accurate isolation. You can at any time manually override this feature and apply a different segmentation algorithm and labeling for any nodule.

Automatic Nodule Analysis provides the following nodule information:

- % growth
- Doubling time
- Volumes (solid component, non-solid component, total volume)
- Maximum distance in 3D (long axis)
- 2D measurements
- Hounsfield units (Min, Max, Avg)
- Scan interval

Paging enhancements provide a special scrolling tool that lets you page through large data sets while the image displays seamlessly.

Automatic nodule contour capability lets you verify pixels within the volume. It displays segmentation nodule contour on the 2D image for quick segmentation validation.
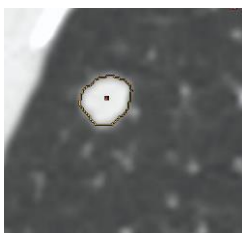
Patient Report

DICOM SR allows a reporting workflow to present and archive images and measurements.

Report feature only available on AW Workstation.

Summary

With automated nodule visualization and localization, increased detection sensitivity, accurate and repeatable segmentations analysis, Lung VCAR could streamline your reading workflow, enhance your efficiency, and increase your diagnostic confidence.

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