



Applied Chest Imaging Laboratory

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BRIGHAM AND
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HARVARD
MEDICAL SCHOOL

Interactive Lobe Segmentation

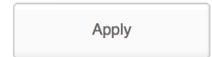
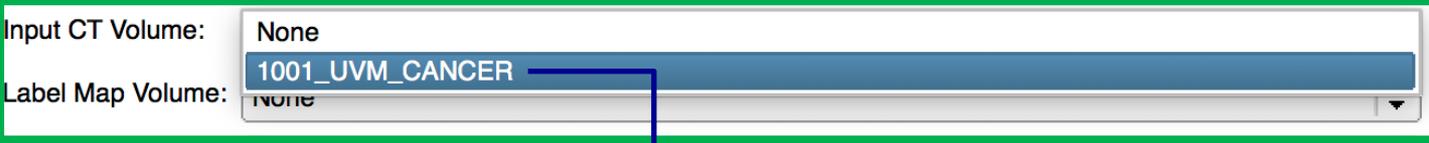
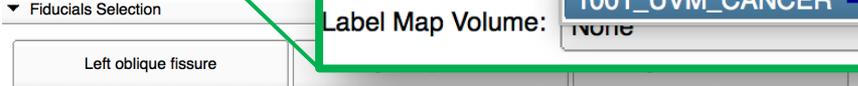
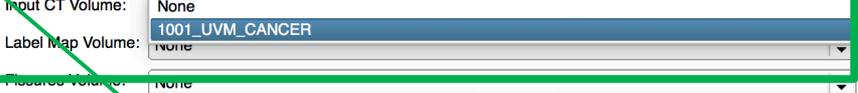
A Chest Imaging Platform Slicer Extension module

Overview

- Goal: The interactive lobe segmentation module quickly segments the lung lobes by selecting a small number of points on the fissures.



Interactive Lobe Segmentation



L
F
B

1- Select an input CT image

Slicer Chest Imaging Platform – Module Name



Interactive Lobe Segmentation

Input CT Volume:	1001_UVM_CANCER
Label Map Volume:	None
Fissures Volume:	None

2- If available, select the LabelMapVolume for the selected input CT

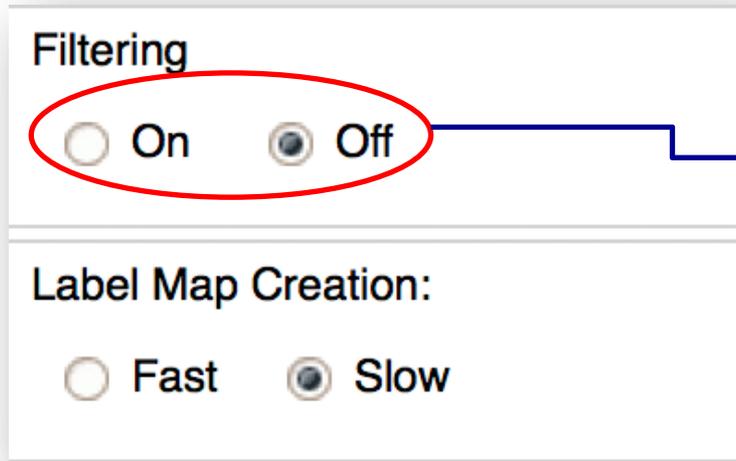
Tip: If None, a new LabelMap would be automatically created during the Lobe Segmentation.

3- If available, select the Fissures Volume for the selected input CT.

Tip: If None, a new Fissures Volume would be automatically created during the Lobe segmentation.



Interactive Lobe Segmentation



3- Filtering options.

Tip: By default filtering is set to "off", turn to "on" to activate filter



Interactive Lobe Segmentation

Tip: when filtering is "on" a new frame opens up

Filtering

On Off

NLM Median Gaussian

Dimensions:

Strength:

Select filter: non-local means (NLM), median or Gaussian filter

Select whether to apply filter in 2D or 3D

Select filtering strength: Smooth, medium, Heavy

Label Map Creation:

Fast Slow

Creating LabelMap. Select method.

Tip: Slow method takes more time to finish but is more accurate.

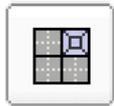


Interactive Lobe Segmentation

Select layout view.

Tip: Choose Sagittal view to easily identify fissures

Layout Selection



Four-up



Axial



Sagittal



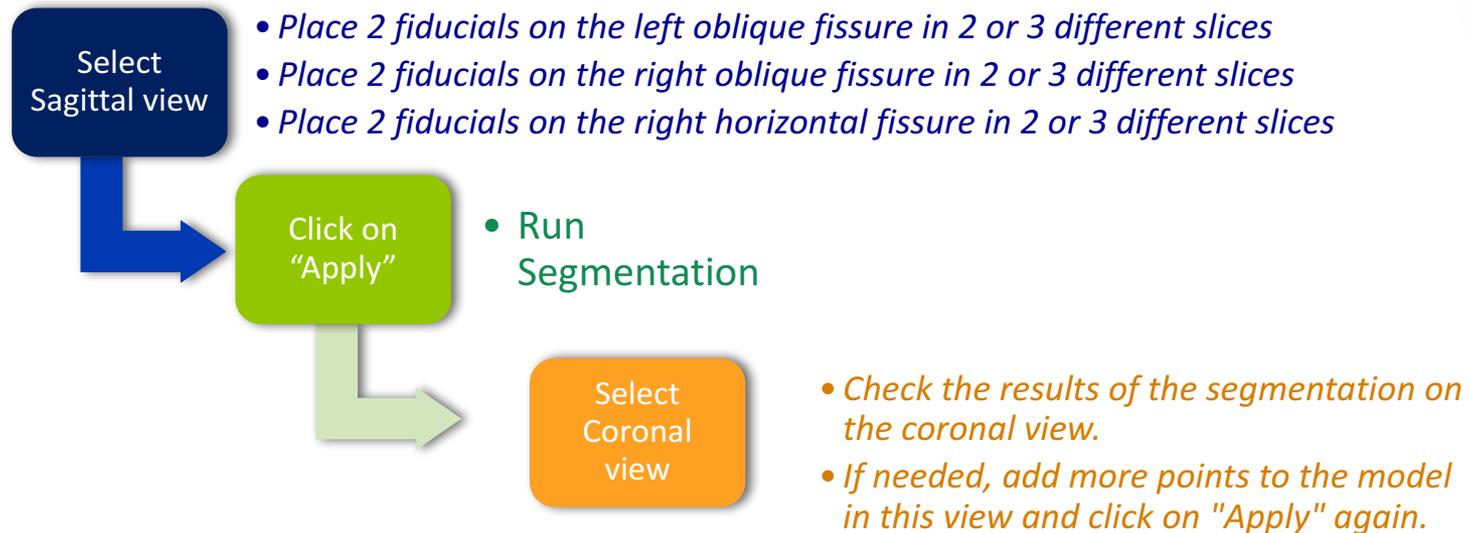
Coronal



Interactive Lobe Segmentation

Recommended workflow:

Tip: see next slices for details



Interactive Lobe Segmentation

Place Fiducials. Place Fiducial points on the fissures.

Tip: Picture shows an example of 4 points placed on the left oblique fissure.

▼ Fiducials Selection

Left oblique fissure	Right oblique fissure	Right horizontal fissure
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Tip: highlight of the left oblique fissure



Note: Place fiducials in different planes.



Interactive Lobe Segmentation

Place Fiducials. Place Fiducial points on the fissures.

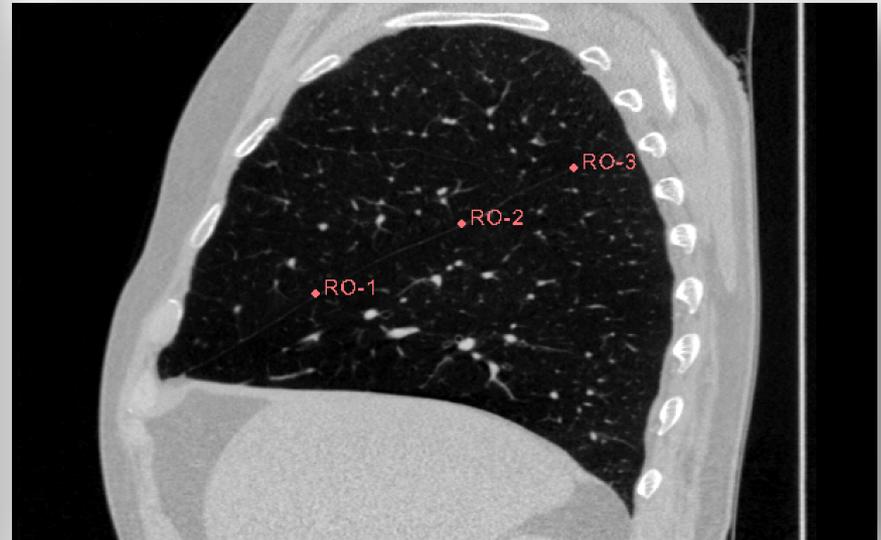
Tip: Picture shows an example of 4 points placed on the right oblique fissure.



Left oblique fissure	Right oblique fissure	Right horizontal fissure
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Tip: highlight of the right oblique fissure



Note: Place fiducials in different planes.



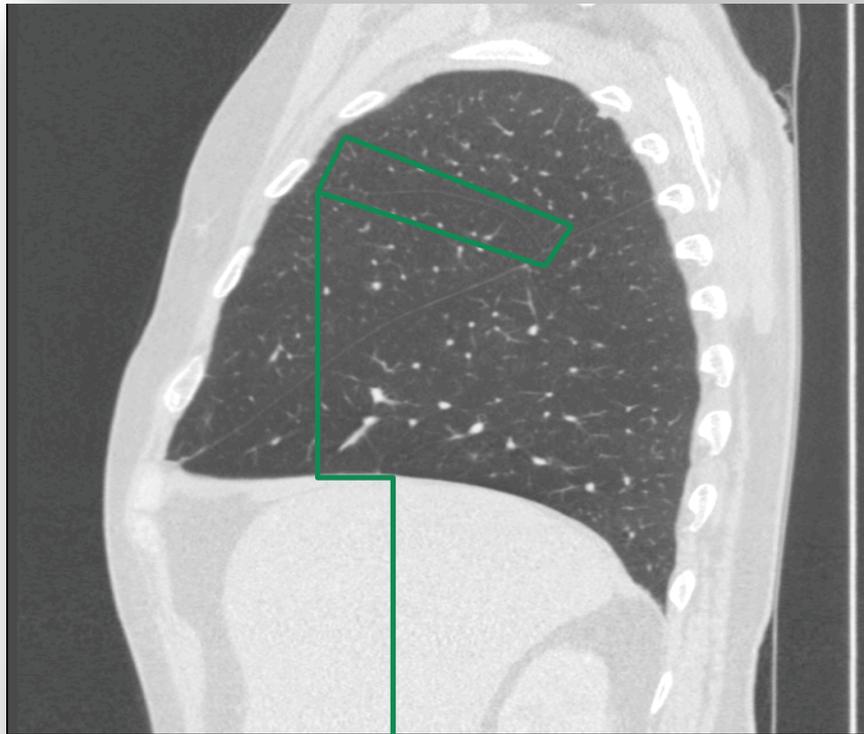
Interactive Lobe Segmentation

Place Fiducials. Place Fiducial points on the fissures.

Tip: Picture shows an example of 4 points placed on the right horizontal fissure.



Left oblique fissure	Right oblique fissure	Right horizontal fissure
----------------------	-----------------------	--------------------------



Tip: highlight of the right horizontal fissure



Note: Place fiducials in different planes.



Interactive Lobe Segmentation

Each time a fiducial is placed, it will appear in the fiducials list.

▼ Show Fiducials

	Left Oblique Fiducials	Right Oblique Fiducials	Right Horizontal Fiducials
1	ObliqueFiducial-1	rightObliqueFiducial-1	rightHorizontalFiducial-1
2	ObliqueFiducial-2	rightObliqueFiducial-2	rightHorizontalFiducial-2
3	ObliqueFiducial-3	rightObliqueFiducial-3	rightHorizontalFiducial-3
4	ObliqueFiducial-4	rightObliqueFiducial-4	rightHorizontalFiducial-4

Delete Selected Fiducial Delete All Fiducials

Apply

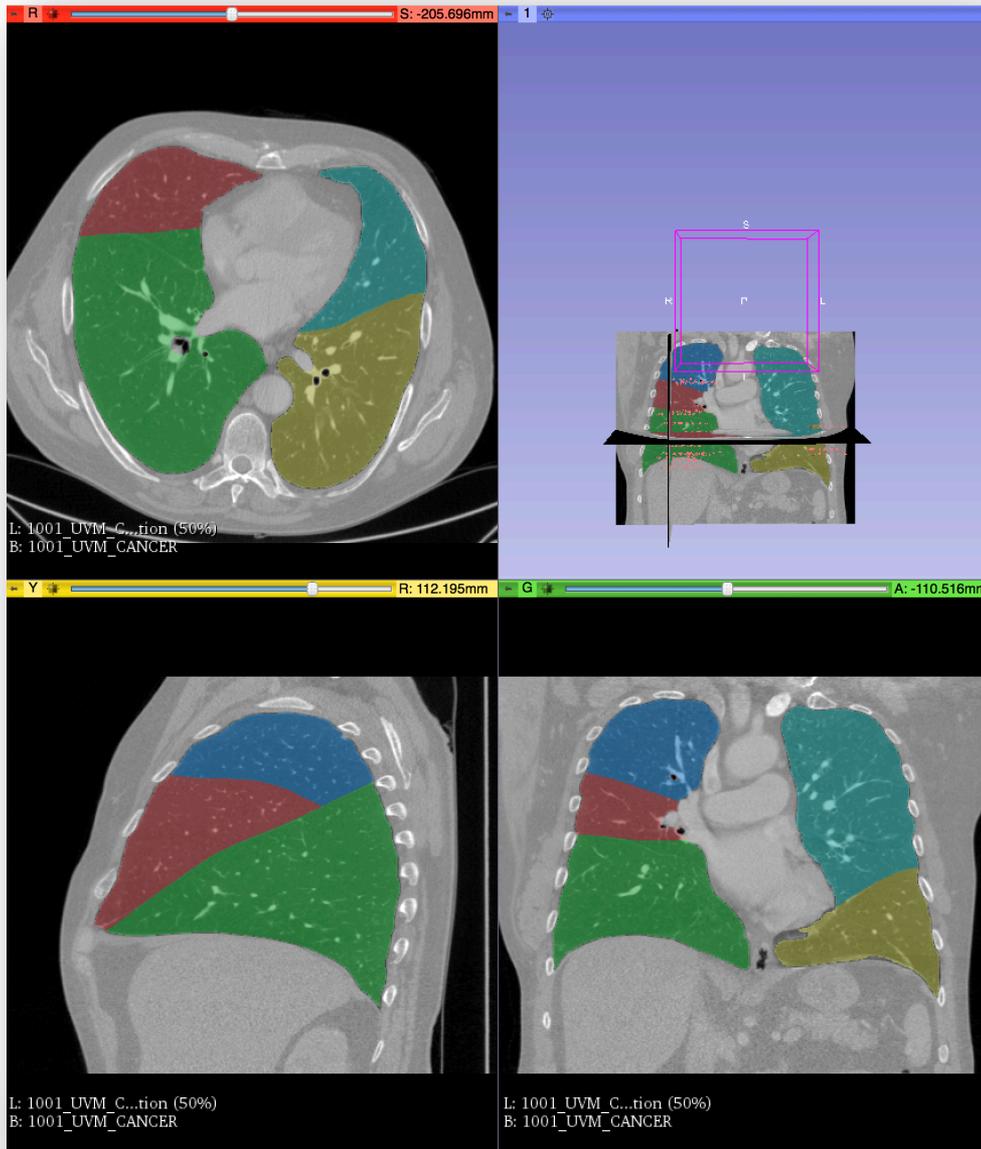
Tip: to remove a fiducial, select it on the list and click "Delete Selected Fiducial"

Tip: To remove all fiducials click on "Delete All Fiducials".

When the fiducials are placed, click on "Apply" to start the Interactive Lobe Segmentation



Interactive Lobe Segmentation

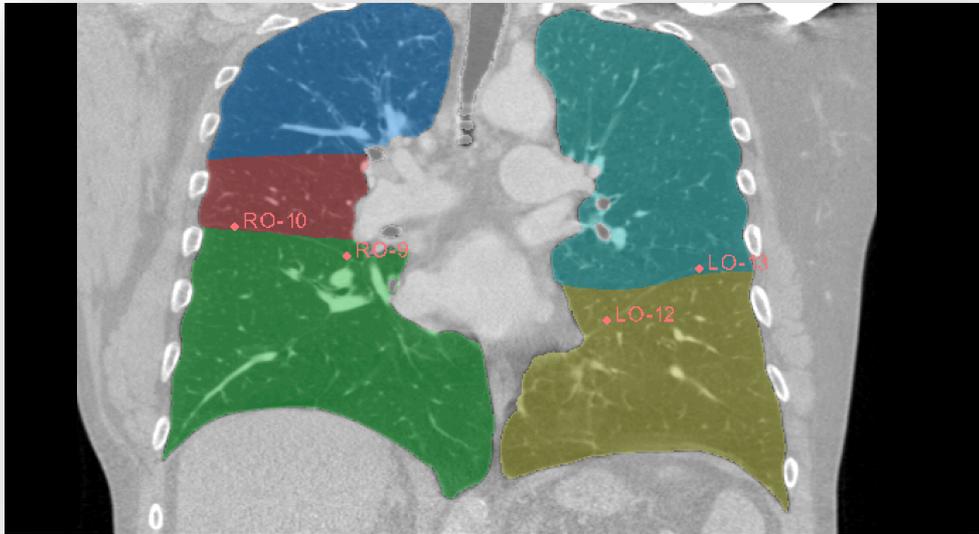


Once the segmentation is complete, the model will appear on the screen.

Tip: to improve segmentation performance, add more fiducial points and click "Apply" again.



Interactive Lobe Segmentation



Choose the sagittal view to place more fiducials.



Interactive Lobe Segmentation

- The Interactive Lobe Segmentation is part of the Chest Imaging Platform extension for 3D Slicer (www.chestimagingplatform.org)
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