3D Visualization of DICOM Data

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3DSlicer

• 3DSlicer is a visualization and image analysis software for medical image computing.

• Open-source platform available for Windows, Mac, Linux and Solaris.
Goal of this tutorial

This tutorial guides you step-by-step through the process of 3D visualization of DICOM volumes from the National Cancer Imaging Archive using Slicer.
Material

• Slicer: version 2.6

• Data: National Cancer Imaging Archive
  Dicom Lung CT from the Rider Collection
  https://imaging.nci.nih.gov/ncia/faces/baseDef.tiles

(Disclaimer: It is the responsibility of the user of Slicer to comply with both the terms of the license and with the applicable laws, regulations and rules.)
Slicer Interface

Menu

Viewer

Tk window

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www.na-mic.org
Loading Lung CT data

Click on **Add Volume** in the Slicer Menu
Loading Lung CT data

The Panel **Props** appears by default.

Left-click on the Menu **Properties** and change **Basic** to **DICOM**
Loading Lung CT data

The DICOM panel appears

Click on **Load DICOM Study**
Loading Lung CT data

Select the directory **RIDER** which contains the Lung CT dataset.

Click on **OK** to load the volume
Loading Lung CT data

Slicer loads the DICOM volume of the lungs

3D Viewer

2D Viewer

Axial View

Sagittal View

Coronal View
Loading Lung CT data

Click on **Volumes** in the Slicer Menu

Slicer displays the information contained in the DICOM Header
Loading Lung CT data

Click on **Display** to access the window parameters.
Loading Lung CT data

Use the sliders to adjust the values of the window (Win) and levels (Lev).
Click on the V button to display the Axial slice inside the 3D Viewer. (V stands for Visible)
Position the mouse inside the 3D Viewer
Left-click and move the mouse towards the top of the 3D Viewer.
3D Visualization

The axial slice appears in the 3D Viewer.
3D Visualization

Click on the V button to display the coronal slice inside the 3D Viewer.

Left-click and move the mouse down.
The Coronal slice appears in the 3D Viewer.
3D Visualization

Click on the V button to display the Sagittal slice inside the 3D Viewer.

Left-click and move the mouse to the left.
3D Visualization

The Sagittal slice appears in the 3D Viewer.
Interacting with the data

Use the sliders to slice through the volume in the three anatomical directions.
Interacting with the data

Slicer updates the anatomical slices display within the 3D Viewer.
Interacting with the data

- **Zoom**

  Right-click and move the mouse up

  The 3D Viewer moves away from the volume.
Interacting with the data

- Zoom

Right-click and move the mouse down

The 3D Viewer gets closer to the volume.
Slicer Compendium

- A **series of courses** have been developed to facilitate the use of advanced image analysis techniques available into Slicer to clinicians and scientists.

- Our compendium is available at:
  
Slicer Compendium
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