

DICOM to NRRD Conversion Tutorial

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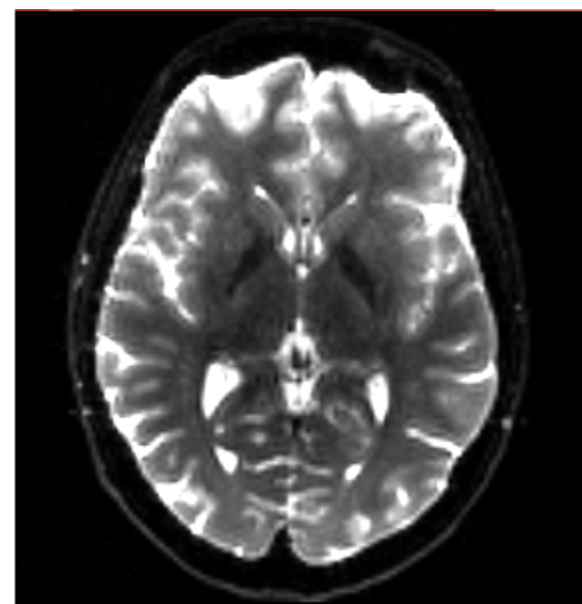
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DICOM to NRRD Tutorial

This tutorial guides you through the process of converting DICOM files from a DWI acquisition into a NRRD volume, load that DWI volume into 3D Slicer for further processing.





Dataset

For this tutorial you will need some DICOM data files that can be found on this link :
<http://hdl.handle.net/1926/1759>



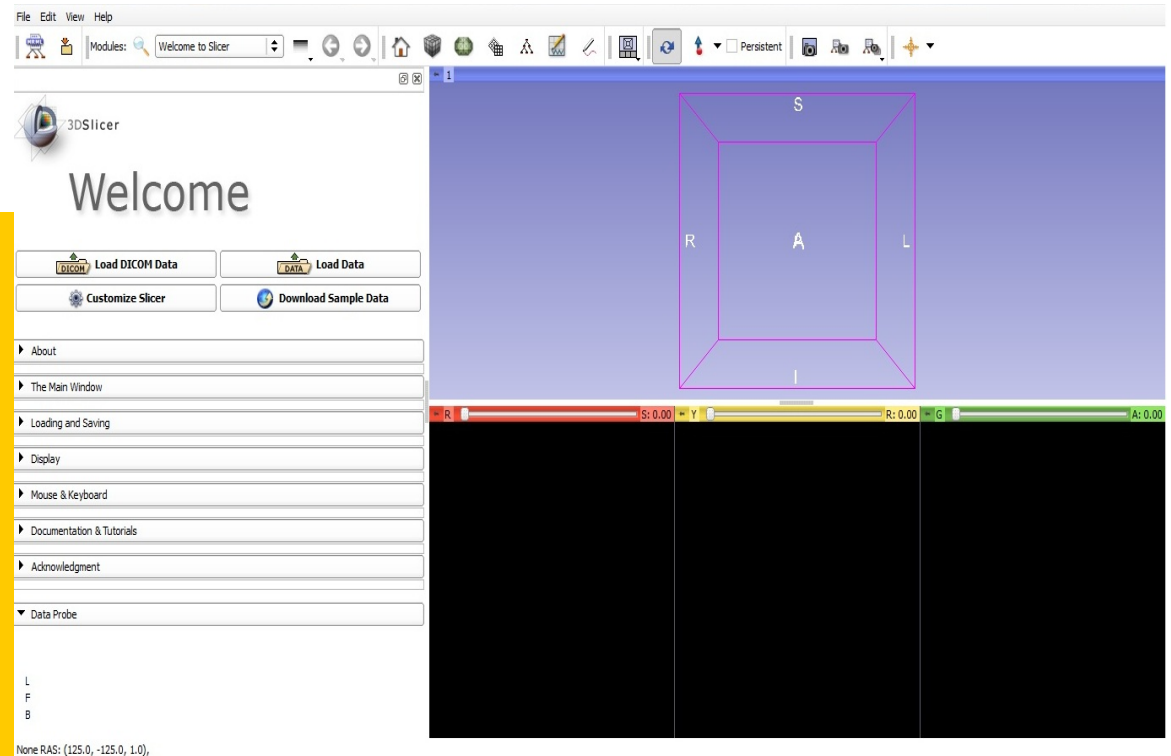
Start Slicer 4

Linux/Mac users :

Launch the Slicer executable located in the Slicer4 directory

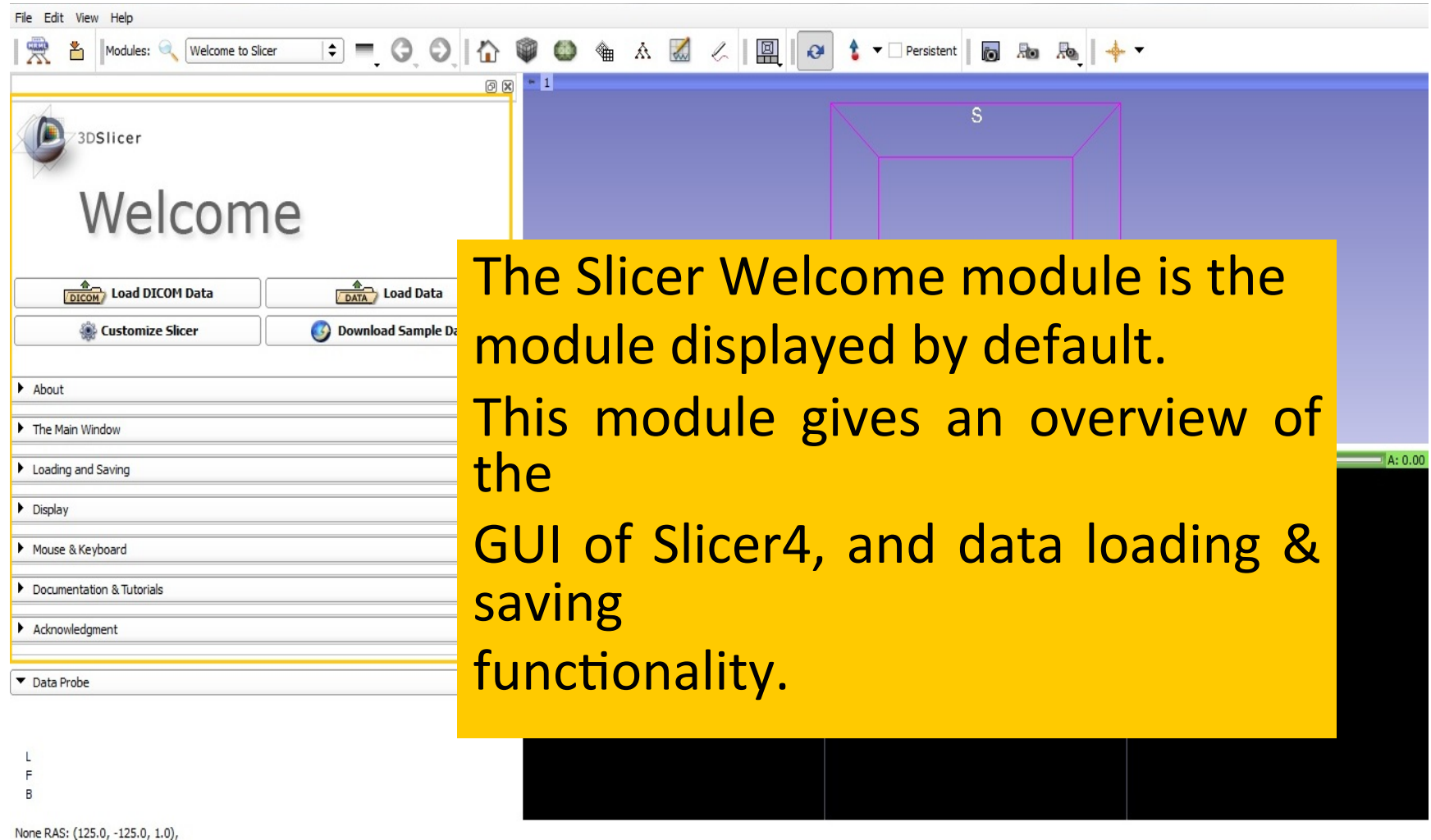
Windows users :

Select Start → All Programs → Slicer4.0.1 → Slicer
Or launch the Slicer executable from Slicer4 directory





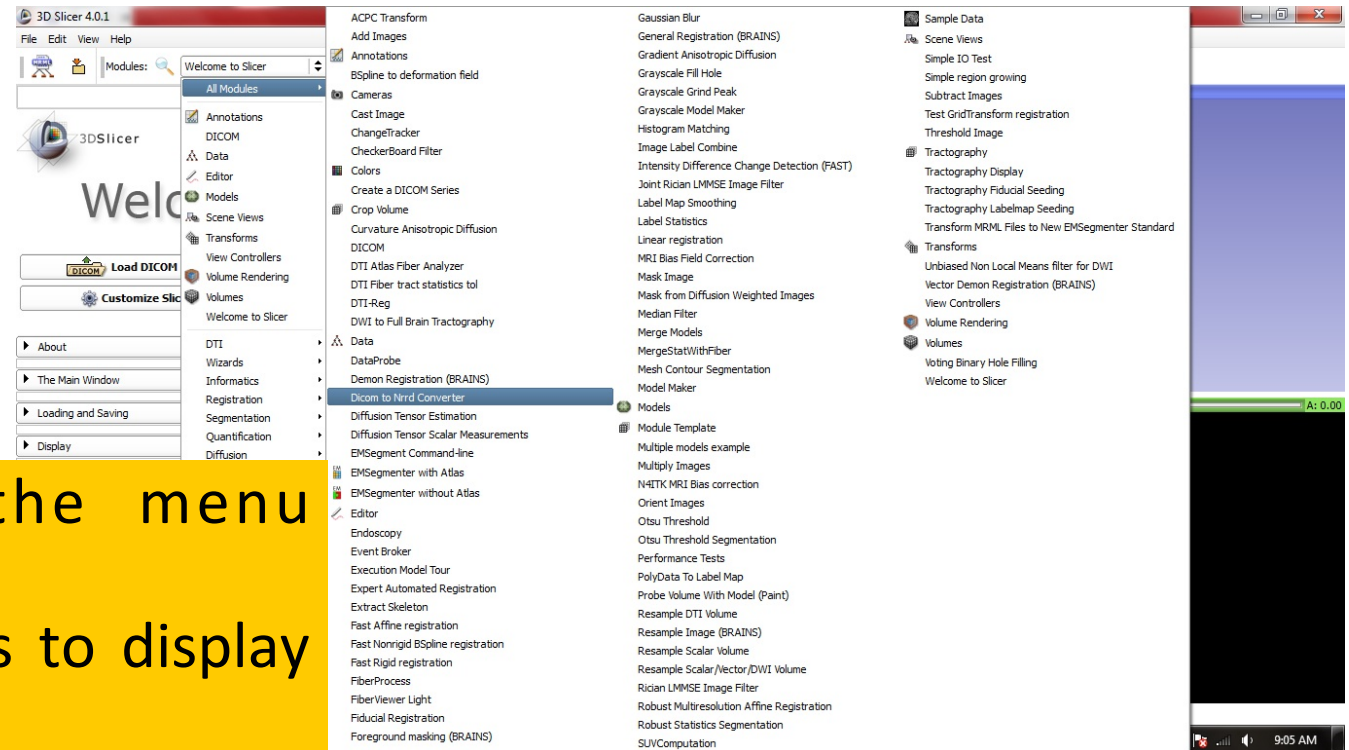
Welcome Module



The Slicer Welcome module is the module displayed by default. This module gives an overview of the GUI of Slicer4, and data loading & saving functionality.



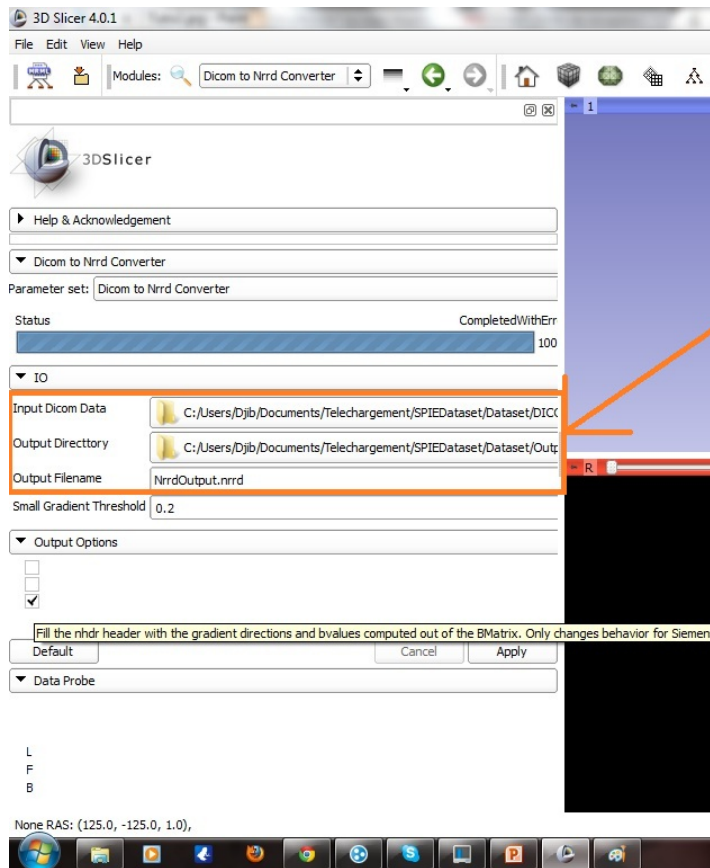
DICOMtoNRRD Module



Left click on the menu Modules and select All Modules to display the list of modules available for image analysis and 3D visualization. Select the module Dicom to Nrrd converter



DICOMtoNRRD Module



Select the Input DICOM directory

Select the Output directory

Choose an Output name for your Nrrd file



DICOMtoNRRD Module

3D Slicer 4.0.1

File Edit View Help

Modules: Dicom to Nrrd Converter

3DSlicer

Help & Acknowledgement

Dicom to Nrrd Converter

Parameter set: Dicom to Nrrd Converter

Status CompletedWithErr 100

IO

Input Dicom Data C:/Users/Djib/Documents/Telechargement/SPIEDataset/Dataset/DICOM/

Output Directory C:/Users/Djib/Documents/Telechargement/SPIEDataset/Dataset/Output/

Output Filename NrrdOutput.nrrd

Small Gradient Threshold 0.2

Output Options

Fill the nhdr header with the gradient directions and bvalues computed out of the BMatrix. Only checked

Default Cancel Apply

Data Probe

L
F
B

None RAS: (125.0, -125.0, 1.0),

EN 10:29 AM

Left click on Output Option to get it extended

Left click on the 3rd check box (If you leave the mouse near it, it will display the ToolTip)

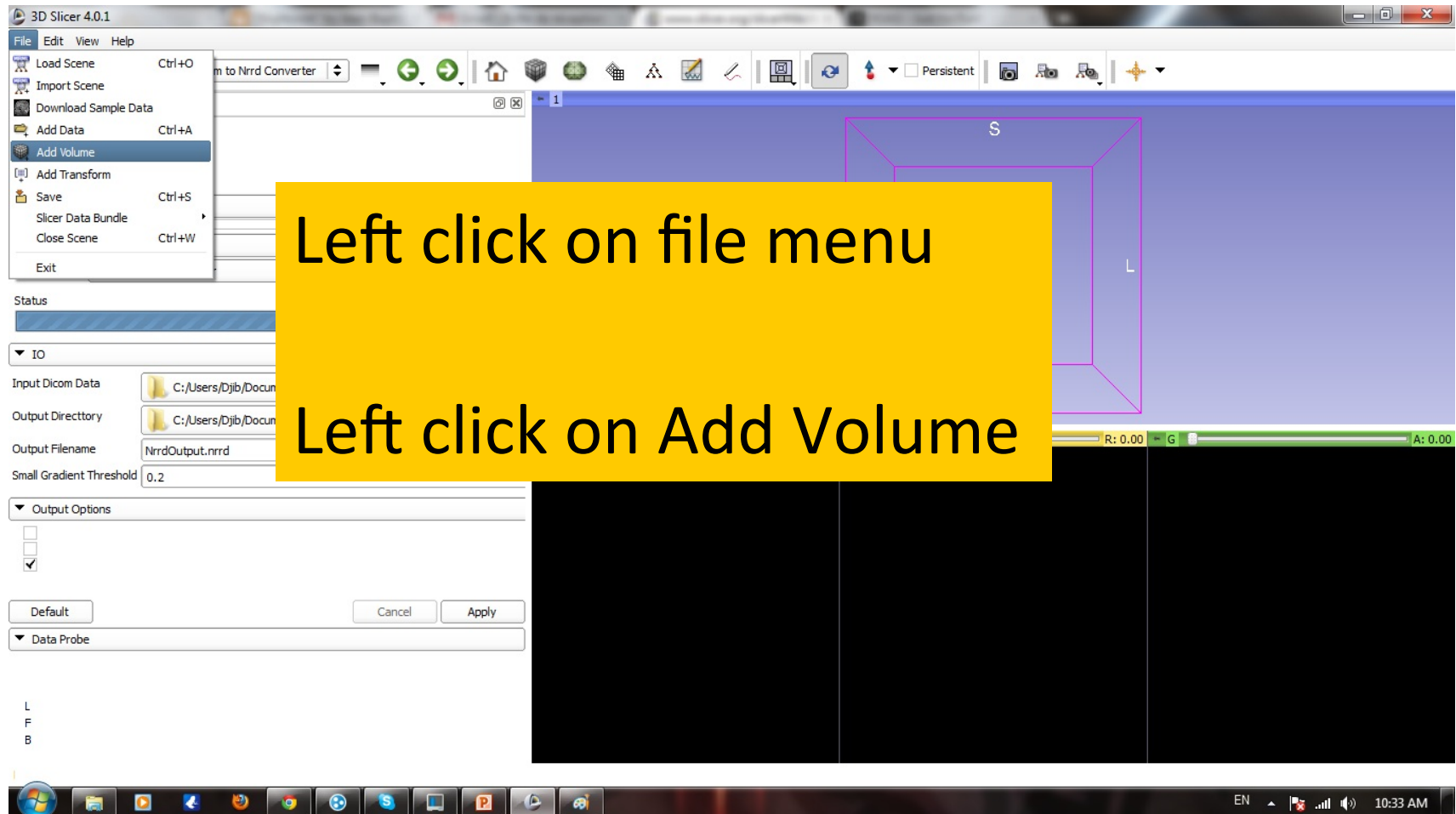
Left click on Apply button

What does this 3rd box do?

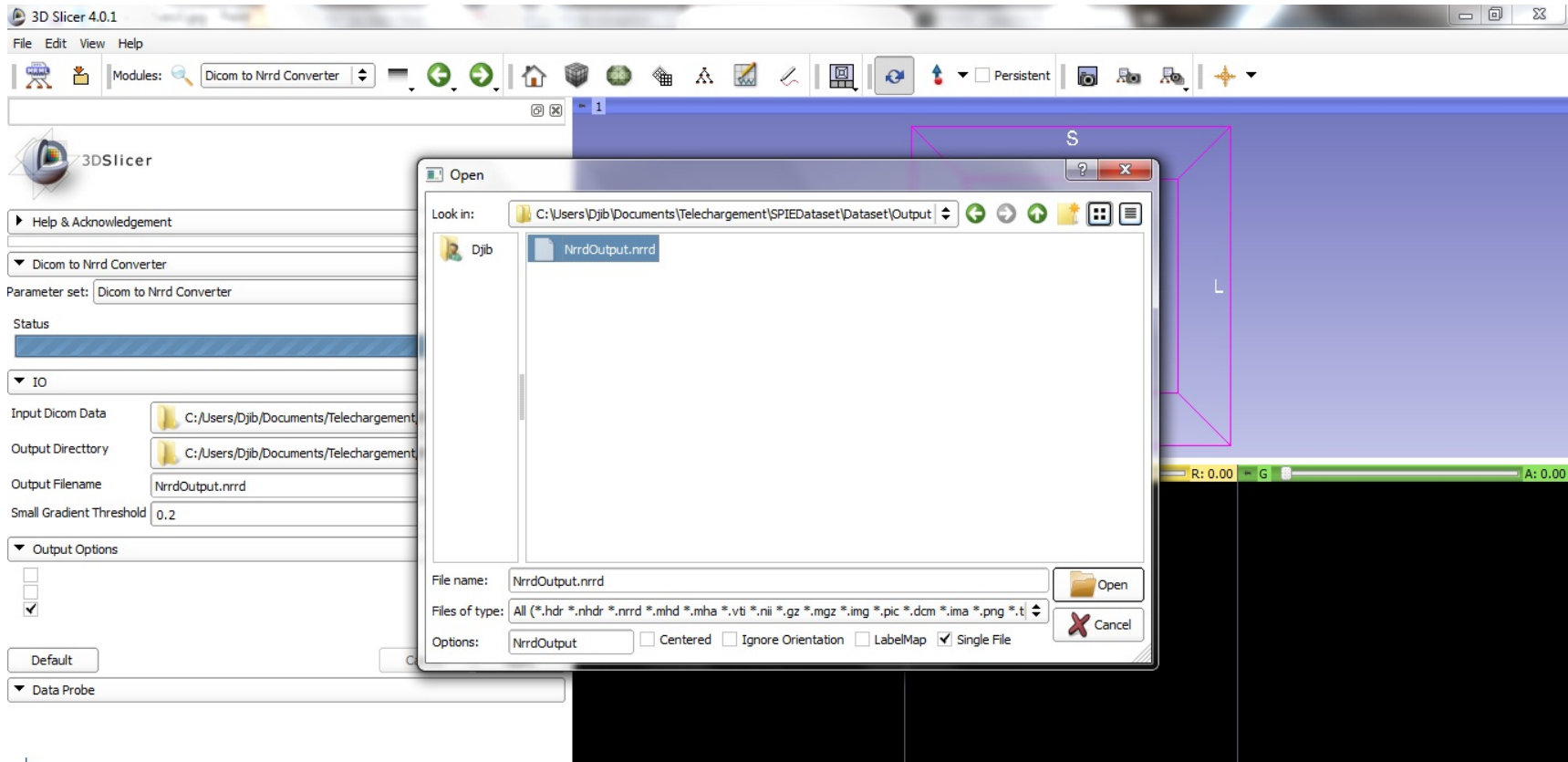
- Uses B-matrix to compute the diffusion gradient information
 - B-Matrix is the actual diffusion matrix applied during acquisition
 - Principal eigenvector of B-Matrix is the diffusion gradient direction
- Potential for incorrect/inadequate information in the diffusion gradient direction
 - B-Matrix use is safest, if present
 - Siemens DICOM provide B-Matrix information



Loading DWI NRRD Volume

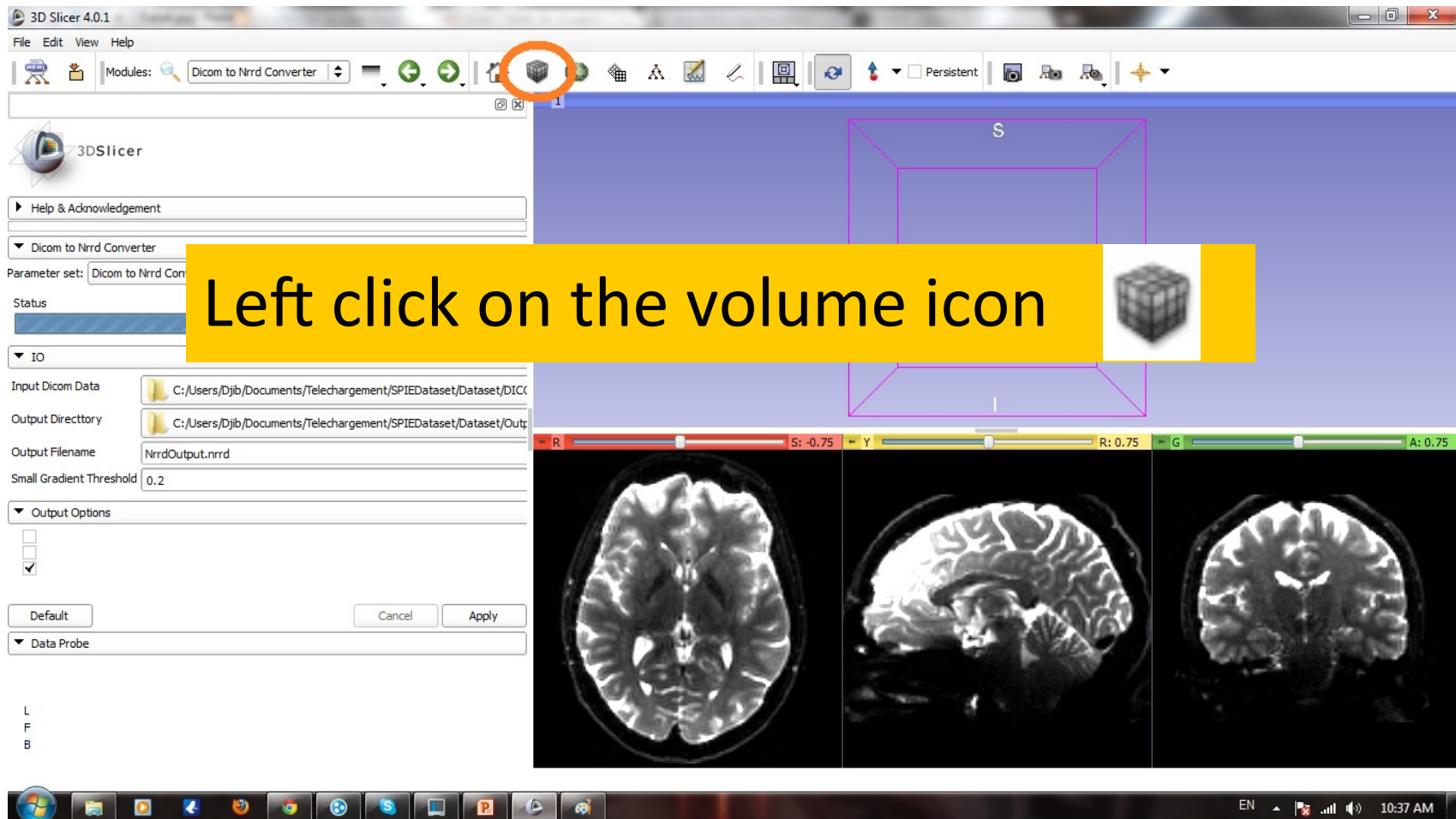


Adding Nrrd Volume



Select your previously created Nrrd volume

Volumes



3D Slicer 4.0.1

File Edit View Help

Modules: Dicom to Nrrd Converter

3DSlicer

Help & Acknowledgement

Dicom to Nrrd Converter

Parameter set: Dicom to Nrrd Converter

Status

IO

Input Dicom Data: C:/Users/Djib/Documents/Telechargement/SPIEDataset/Dataset/DICOM/

Output Directory: C:/Users/Djib/Documents/Telechargement/SPIEDataset/Dataset/Output/

Output Filename: NrrdOutput.nrrd

Small Gradient Threshold: 0.2

Output Options

Default Cancel Apply

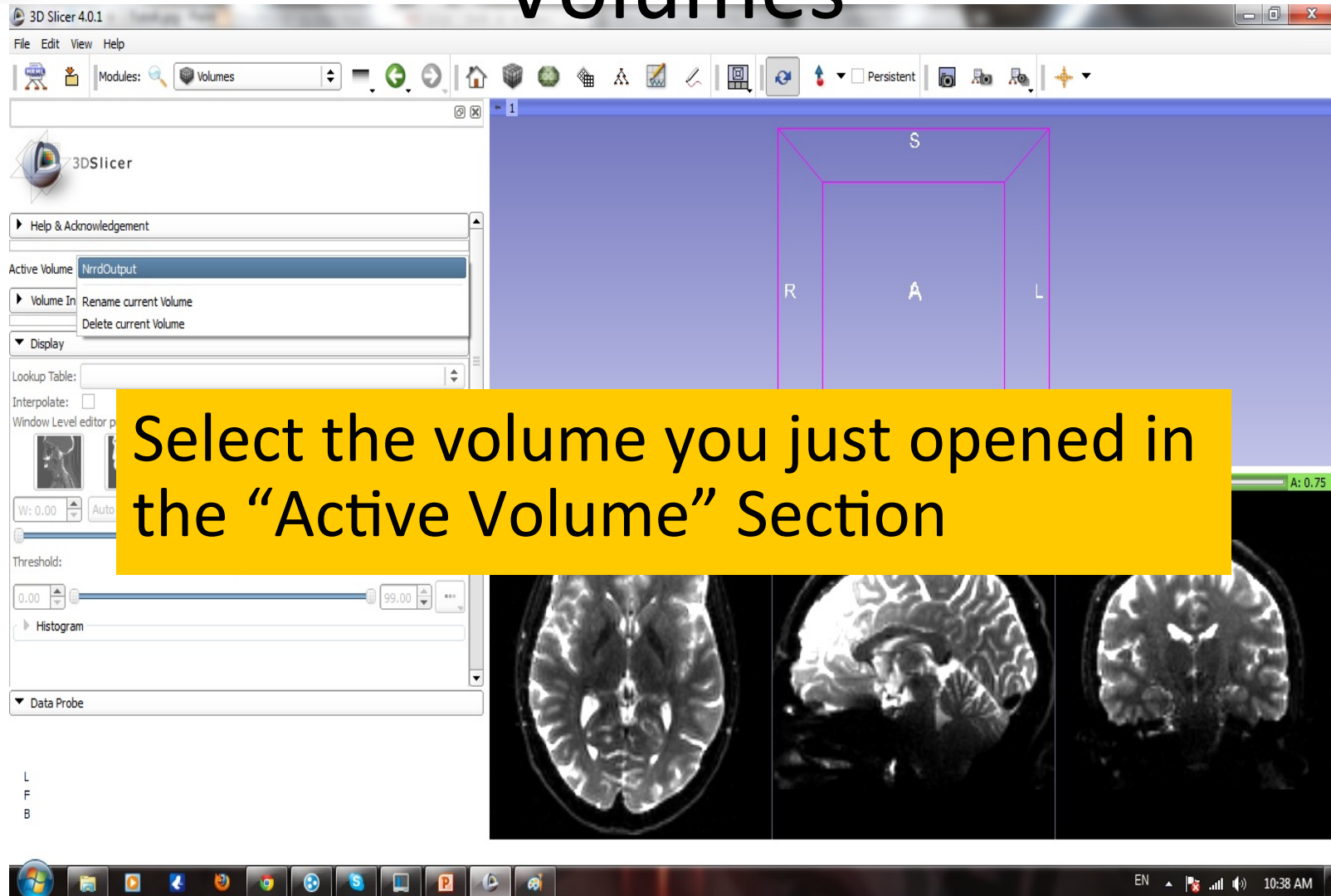
Data Probe

L
F
B

R: 0.75 S: -0.75 Y: 0.75 G: 0.75 A: 0.75

EN 10:37 AM

Volumes



The screenshot shows the 3D Slicer 4.0.1 interface. The main window displays a brain volume with a yellow callout box containing the text: "Select the volume you just opened in the 'Active Volume' Section". The callout box is positioned over the central 3D view and the left sidebar. The sidebar shows the "Active Volume" section with "NrrdOutput" selected. The 3D view shows a brain volume with a yellow box highlighting the "Active Volume" section. The volume is labeled with "S" (Superior), "R" (Right), "A" (Anterior), and "L" (Left). Below the 3D view are three axial slices of the brain. The Windows taskbar is visible at the bottom, showing the time as 10:38 AM.



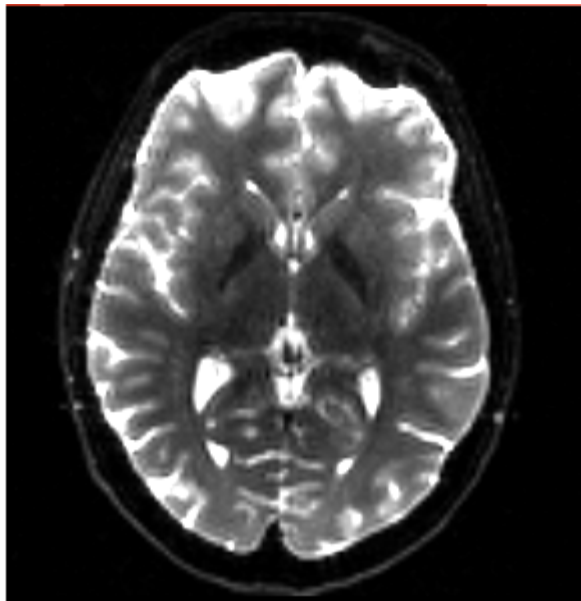
Volumes

Choose the Lookup Table that suits best your needs

The screenshot displays the 3D Slicer 4.0.1 software interface. On the left, the 'Display' panel is visible, showing the 'Scalar Display' section with a 'Lookup Table' set to 'Grey'. Below this, there are 'Window Level editor presets' with several icons representing different image processing styles. The 'Threshold' is set to 'Off' with a range from 0.00 to 4095.00. The 'Active Volume' is 'NrrdOutput'. The main 3D view shows a brain slice with a purple wireframe box indicating the current view. The axes are labeled R (Right), A (Anterior), L (Left), and I (Inferior). Below the 3D view, there are three 2D viewports showing the same slice in different orientations: axial, sagittal, and coronal. The bottom of the interface shows a Windows taskbar with various application icons and a system tray with the time 10:47 AM.



Conclusion



This tutorial guided you through the conversion from DICOM to NRRD file using Slicer 4 Software

Acknowledgment

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