

# Watershed: Automated Segmentation

The goal of this exercise is to demonstrate how to automatically strip the skull from in a T1- or T2-weighted MRI scan.

1. Load the **MRI\_3D\_Head.avw** data set from the **\$:\BIR\images\TutorialData** directory.
2. Open the **Watershed** module (**Segment > Watershed**).
3. The Watershed module default parameters usually allow for a successful segmentation of the brain. Check the **Always Display** option and view the red pixels that define the 'Pre-Fill' level on different slices and orientations. Do not change the Pre-Fill Value (49).
4. Click **Watershed Segment Volume** to initialize the automatic segmentation.
5. After the automatic segmentation process has completed, the **Results** tab is automatically selected (figure 1). Each segmented object will appear as a different random color in the image display.
6. With the **Render Selected Object** option selected, click on the object that represents the brain in the image display.
7. The Render Tool will automatically be returned (figure 2), allowing you to review the segmented objects from difference orthogonal orientations. You can also click and drag the rendering to a new view in the Render Tool image display.
8. Select the **Create Masked Volume from Selected Object** option from the Results tab. Then, click again on the object that represents the brain. The Compare window that appears allows you to review the original and segmented volume side-by-side, slice-by-slice in different orthogonal views.
9. The File menu provides options to save the segmented volume, the masked volume, and create an object map of the segmented object.
10. Choose **File > Save Masked Volume**. In the window returned, set Destination to Analyze Workspace and then click **Save Volume**. The object clicked on in step 8 after selecting 'Create Masked Volume from Selected Object' will be saved to the Analyze workspace. Click **Done** to dismiss the Save Masked Volume window.
11. Close all windows before proceeding to the next exercise.

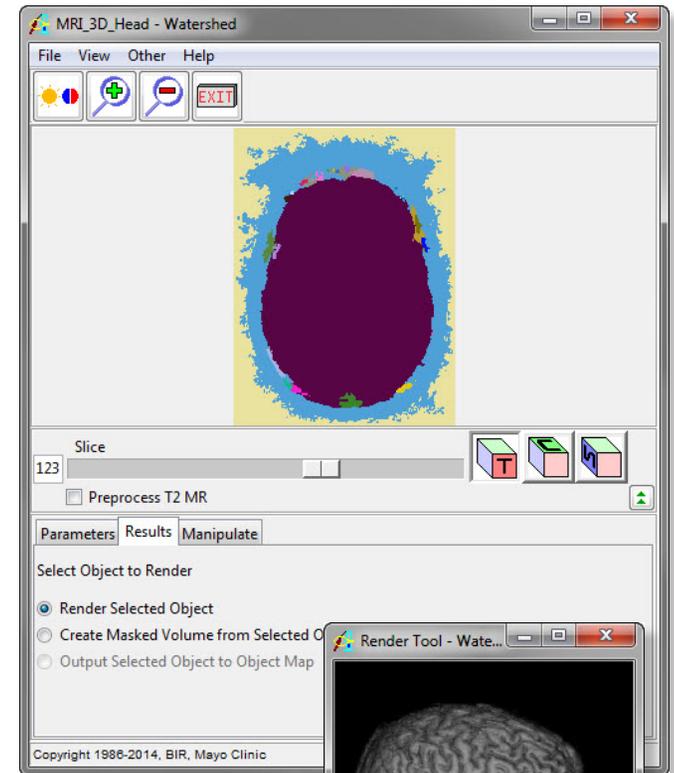


Figure 1

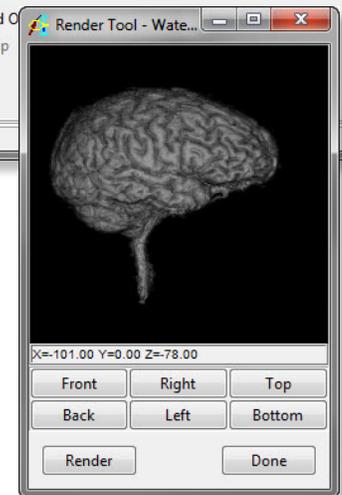


Figure 2