

Exercise 10 : Oblique Sections Manual AC-PC Realignment

This exercise will review additional manual realignment tools available in the Oblique Sections module. The exercise will explain how to use these tools by demonstrating how to realign the brain along the AC-PC. Please note that the Mayo 3D Brain Atlas add-on provides an interactive AC-PC based alignment tool for realignment of volume image data to the Talairach-Tournoux coordinate and proportional grid system, for more information please review the Mayo 3D Brain Atlas exercise.



1. Load the **MRI_3D_Head.avw** data set from the **\$(\BIR\images\TutorialData** directory. Then open the **Oblique Sections** module (**Display > Oblique Sections**).



2. Once the Oblique Sections module is open, select the **Orthogonals** (**Tools > Orthogonals**).

3. In the Orthogonals window (figure 1), move to the mid-sagittal slice where the AC and PC can be identified using the slider bar under the sagittal display pane [A]. It may be helpful to increase the display size of the sagittal slice. To do this, right-click on the pane and select the Size option [B].

4. At the bottom of the Orthogonal window, select the **Interactive Perp Axis** option [C] to turn on the interactive generation of the perpendicular axis and the perpendicular oblique.

5. Now, on the sagittal image, move your cursor to either the AC or PC points and select this point with your mouse button. Hold the mouse button down as you drag the line from this point to the other AC or PC point. Release the mouse button when the other point has been selected [D].

6. This provides the AC-PC axis and generates an oblique image, which is perpendicular to the midpoint of this axis - essentially a coronal image.

7. The Perpendicular Axis window automatically opens (figure 2). This will allow you to note the coordinates of the AC and PC points (Point 1 and Point 2) if desired.



8. Open the **Fly** tool from the **Generate** menu in the main Oblique Sections window (**Generate > Fly**).

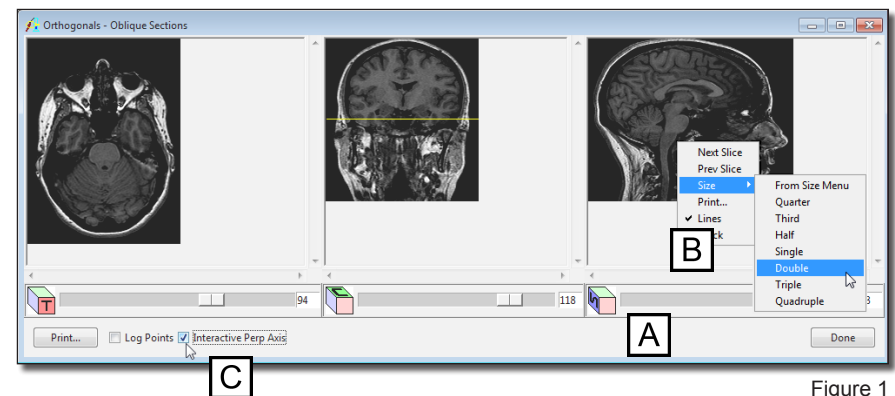


Figure 1

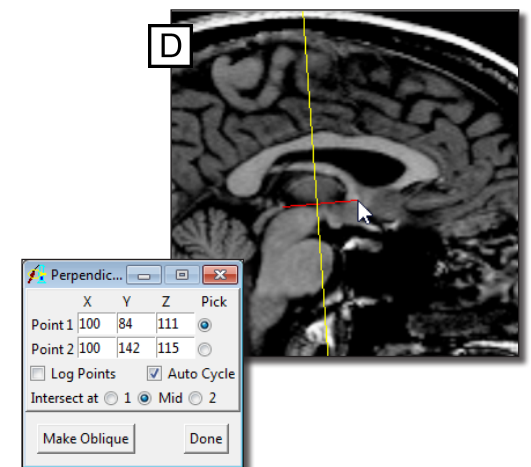


Figure 2

Exercise 10 : Oblique Sections Manual AC-PC Realignment

- Change the **Fly Value** to **90** (figure 3), and do a Pitch maneuver. This **90** degree pitch places the current oblique image in the plane of the AC-PC line.
- Now change the **Fly Value** to a smaller value (e.g. 1 to 5 degrees).

note | The anterior part of the brain should be at the top of the oblique image. If it is not, then you can do two more 90 degree pitch maneuvers to flip this oblique plane around 180 degrees.

- Viewing the main oblique image, you can use the **Roll** and **Yaw** maneuvers to attempt to accommodate brain symmetry in this oblique plane. This is an entirely visual process and shouldn't require much manipulation. Note that you may have to do other smaller manipulations along the way to adjust for the volume being tilted slightly, but you can do this at any time.
- When satisfied with this 'transverse-oblique' along the AC-PC plane, select **File > Output**.
- Change the **Method** to **Reformat Entire Volume** to generate the output volume at this new orientation. It is up to you to reformat this back into the original volume size (Maintained), or new output volume that can hold the entire span of the rotated original volume (Change to best fit data).
- Select **Generate Slices** to save the AC-PC aligned volume to the Analyze workspace.
- Close the Oblique Sections module before proceeding to the next exercise.

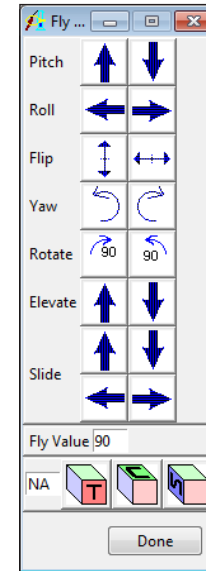


Figure 3

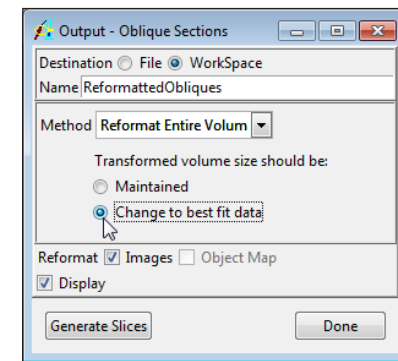


Figure 4

Exercise 11 : Volume Compare

The Volume Compare module provides the ability to compare data sets images that have the same spatial resolution. This exercise will provide an overview of the module.

1. Load the **MRI_3D_Head.avw** and **MRI_3D_Brain.avw** data sets from the `$(BIR)\images\TutorialData` directory. Select both data sets, **MRI_3D_Head.avw** first and **MRI_3D_Brain.avw** second.
2. Open the **Volume Compare** module (**Display > Volume Compare**).
3. Open the **Blend** window, select **Yellow-Cyan**. Click on any of the images and drag your cursor to move through the image display. Alternatively, use the arrow keys and the page up, page down keys to move through the data.
4. From the **File** menu, select **Load First Object Map** and load the **MRI_3D_Head.obj**.
5. Next, load the **MRI_3D_Brain.obj** object map for the second volume (**File > Load Second Object Map**).
6. Use the crosshairs to navigate through the data (figure 2).
7. Double click in any pane to log points. To save the **Point Log**, click **Save** (figure 3).
8. To save the **Fused Volume**, select **File > Save Fused**.
9. Close the Volume Compare module before proceeding to the next exercise.

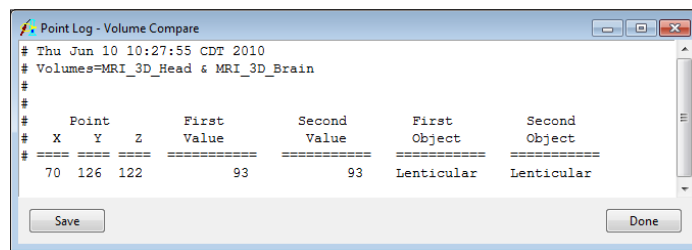


Figure 3

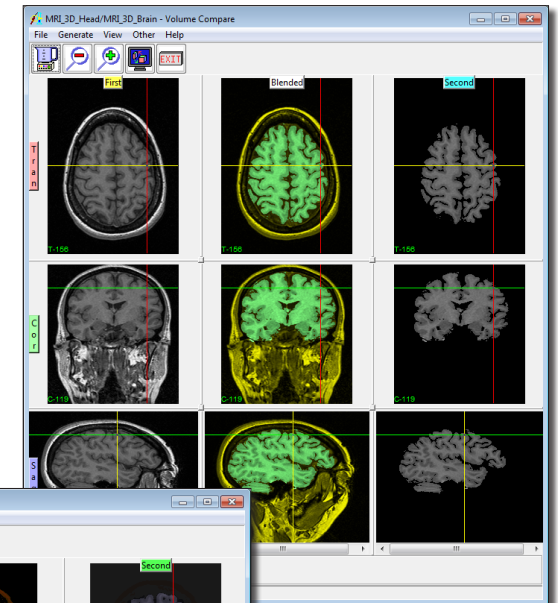


Figure 1

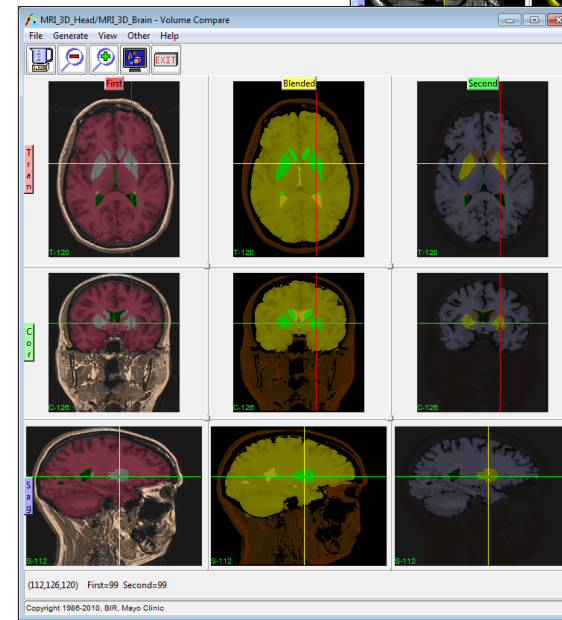


Figure 2