

Exercise 44 : Region of Interest Histogram Analysis

This exercise will provide instructions on how to generate a histogram for an individual slice within a volume, an entire volume, and for a defined object.

Sampling a Single Slice



1. Load the **MRI_3D_Head.awv** data set from the **\$(\BIR\images\TutorialData** directory.
2. Open the **Region of Interest** module from the Measure menu (**Measure > Region of Interest**).
3. Use the slice slider directly below the image, and move to slice 97.



4. Open the Histograms window (**Generate > Histograms**).
5. In the Histograms window, set **Histogram Display** to **On** and set **Log Histogram** to **On**.
6. In the main ROI window click on the image. The module will sample voxel intensity vs. occurrences. The results will be displayed as a histogram and saved to a Histogram Log file. The Histogram Log file can be saved by right-clicking in it and selecting **Save Log**.
7. Close all windows associated with the ROI module.

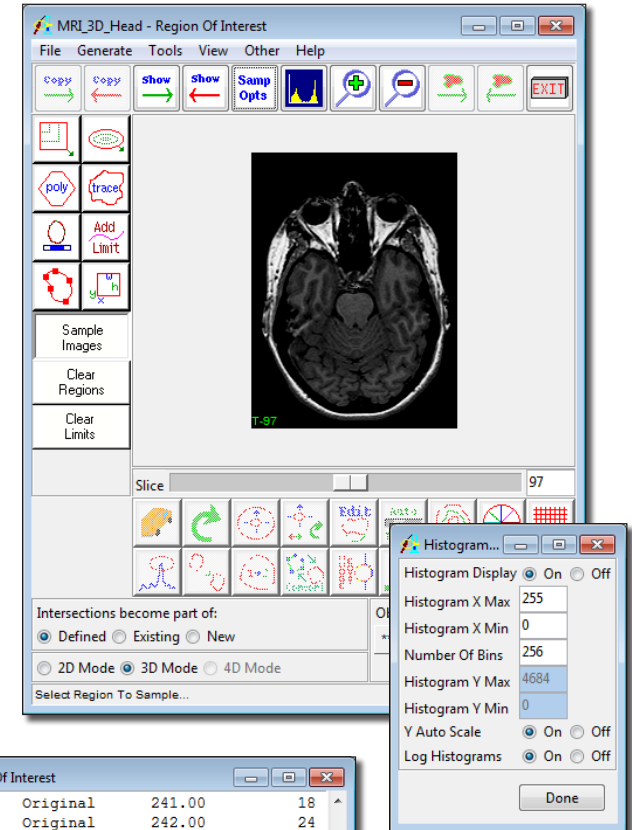


Figure 1

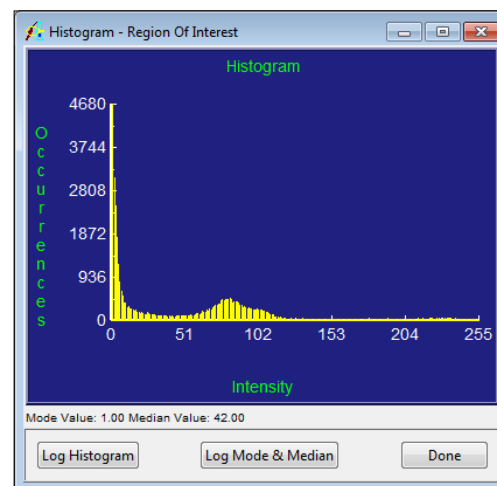


Figure 2

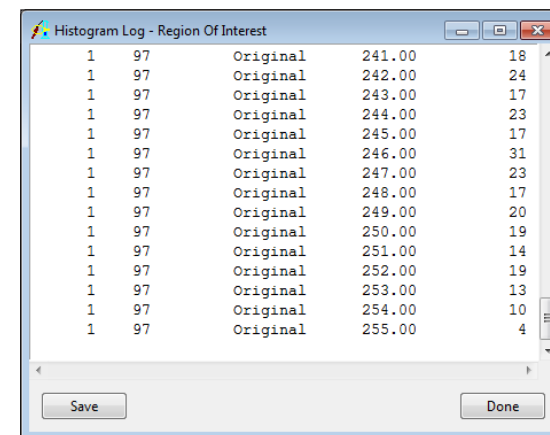


Figure 3

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Sampling a Volume



1. Select the **MRI_3D_Head.avw** data set and open the **Region of Interest** module.
2. In the Histograms window, set **Histogram Display** to **On** and set **Log Histogram** to **On**.
3. Next open the **Sample Options** window (**Generate > Sample Options**).
4. In the Sample Options window, set **Summing** to **On** and set **Sample** to **All Slices** (figure 4).
5. In the main ROI window click on the image display to start the sampling process. The module will sample voxel intensity vs. occurrences for the entire volume. The results will be displayed as a histogram and saved to a Histogram Log file (figure 5). The Histogram Log file can be saved out of Analyze by right-clicking in it and selecting Save Log.

note If you want to sample all slices at the same time, but do not want to 'sum' the information, simply set Summing to Off, intensity vs. occurrence will be reported for each individual slice in the volume. For a quicker sampling time, set Sequence Display to Off.

6. Close all windows associated with the ROI module.

Sampling an Object



1. Select **MRI_3D_Head.avw** and open the **Region of Interest** module.
2. Select **File > Load Object Map** and load **MRI_3D_Head.obj** from the **\$(\BIR\images\TutorialData** directory.
3. Open the Histogram window (**Generate > Histogram**).

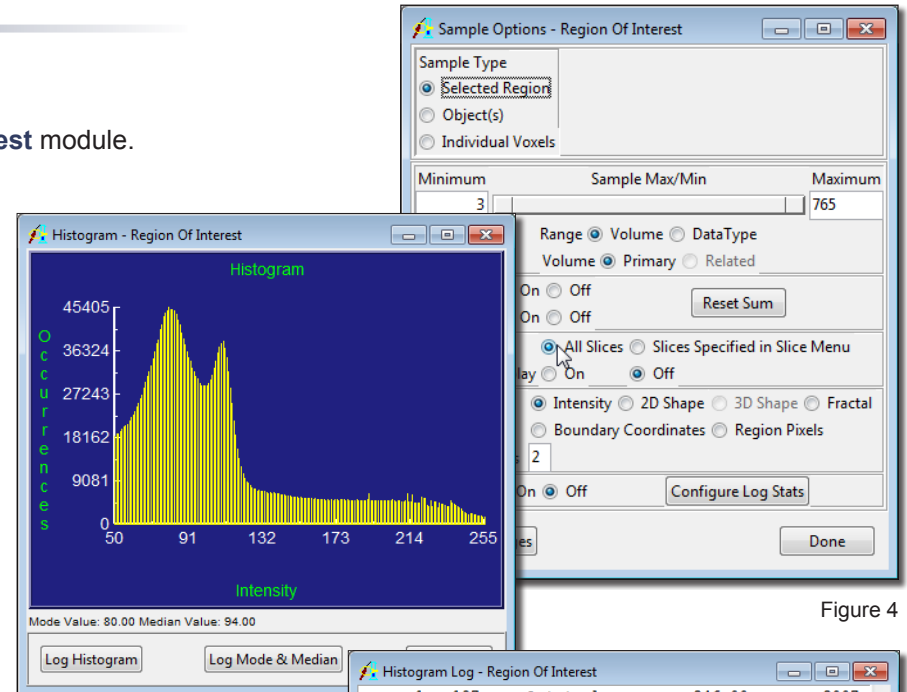


Figure 4

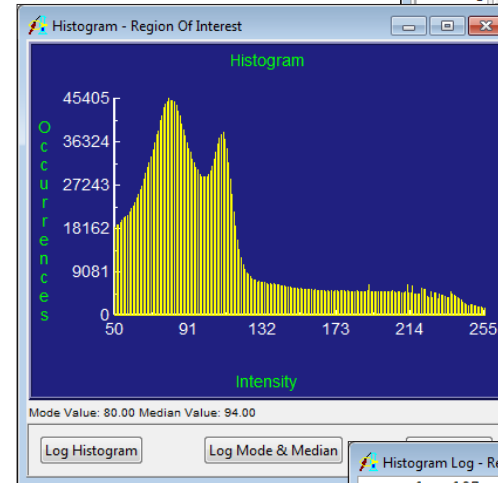
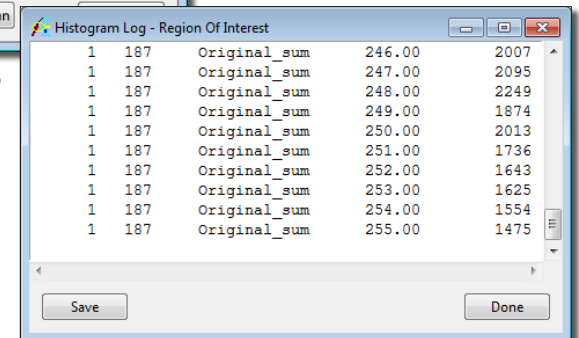


Figure 5



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4. In the Histograms window set **Histogram Display** to **On** and set **Log Histogram** to **On**.
5. Next open the **Sample Options** window (**Generate > Sample Options**), and set the following parameters:
 - **Sample Type** to **Object(s)**
 - Uncheck all objects except the **Brain**
 - **Summing** to **On**
 - **Sample** to **All Slices**
6. Click on the **Sample Images** button to start the sampling process. The module will sample voxel intensity vs. occurrences for the brain object. The results will be displayed as a histogram, and also saved to a Histogram Log file (figure 7). The Histogram Log file can be saved out of Analyze by right-clicking in it and selecting Save Log.
7. Close all windows associated with the ROI module before proceeding to the next exercise.

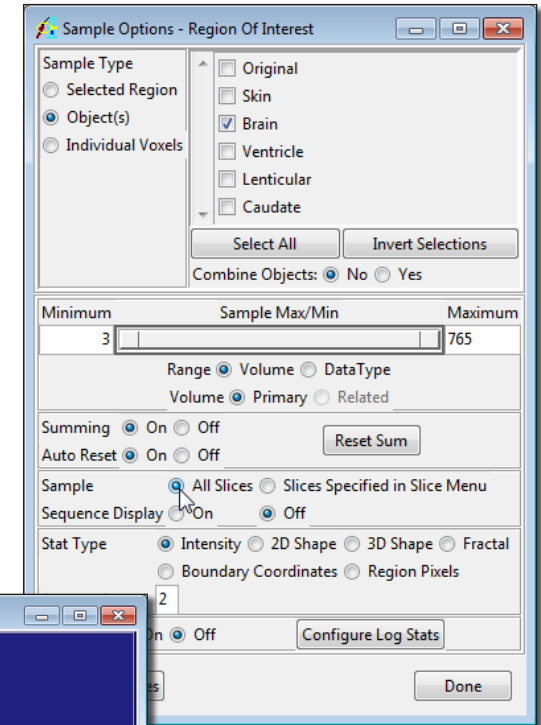


Figure 6

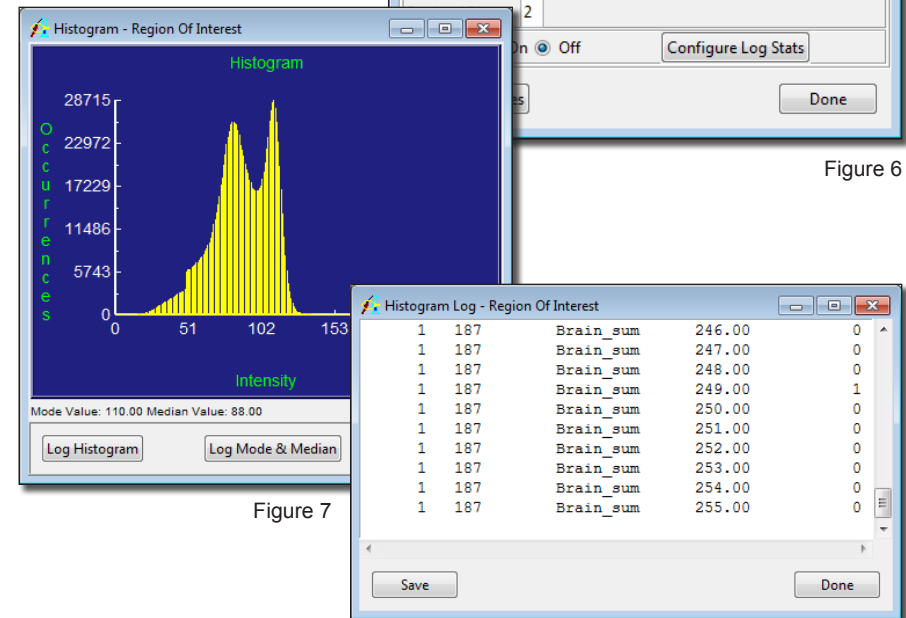


Figure 7