Histogram Operations: Histogram Normalization

The Histogram Operations module provides the ability to do histogram processing, such as histogram matching, flattening, and equalization (normalization). The goal of this exercise is to demonstrate how to normalize the histograms of SPECT images taken under different conditions.

1. Load both the SISCOM_Ictal_SPECT.avw and SISCOM_Interictal_SPECT.avw data sets from the $:/BIR/images/TutorialData directory.
2. With only the SISCOM_Ictal_SPECT data set selected in the Analyze workspace, open the Histogram Operations module (Process > Histogram Ops).
3. Open the Function window (Generate > Function).
4. In the Function window select Histogram Normalize and set the following parameters (figure 1):
   - Use Histogram: Median
   - Target Value: 150
   - Image Display: Original and Filtered
   - Histogram Display: On
5. Click Filter. An Input and Output Histogram will automatically be returned. The filtered result will be displayed in the main Histogram Operations window.
6. In the Function window change Action to Memory and click Filter again. A dialog box will be returned stating that the action modifies the loaded volume, click Change a Copy of the Loaded Volume.
7. Drag-and-drop the SISCOM_Interictal_SPECT data set from the Analyze workspace into the main Histogram Operations window.
8. Press the Filter PowerBar button. In the dialog box returned, click Change a Copy of the Loaded Volume.
9. The two new volumes you have created have been normalized to the same value, so equivalent numbers in the images now indicate levels of metabolic activity (figure 2). Additionally, both normalized volumes have automatically been saved to the Analyze workspace.