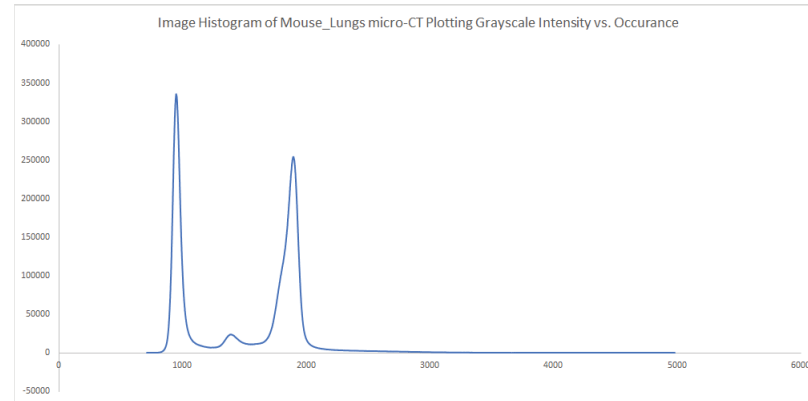# Histogram

The histogram of an image is a function that relates the number of pixels in the image to the range of brightness values of those pixels. This can be expressed in a 2-D graph, plotting brightness vs. number of pixels.

The Histogram Process Type [1] allows users to perform the manipulations to alter the shape of the gray level histogram of an image to reduce noise, enhance contrast, or detect edges.

The Histogram Operations [2] available are:

- Flatten (also known as equalization)

- Preserve

- Normalize

- Match

Histogram Operations

The available histogram operations are Flatten, Preserve, Normalize and Match. These operations can be performed on the entire volume or on selected objects if an object map is loaded.

Histogram Operation	Description	Method
Flatten	maximizes contrast	evenly distributes voxels across the specified intensity output range
Preserve	brightens image while preserving contrast	maps the input intensity range onto a narrower output range in a statistically optimal manner
Normalize	allows comparison of data sets	forces the mean or mode of the histogram to specified values
Match	allows comparison of data sets	matches the intensity distribution to a loaded histogram file or the histogram of another volume