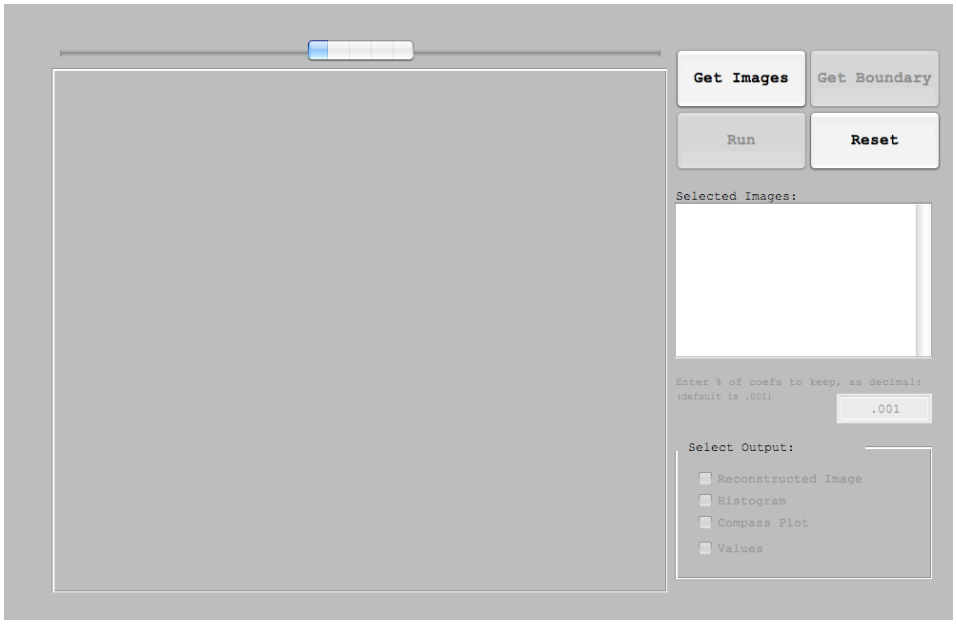
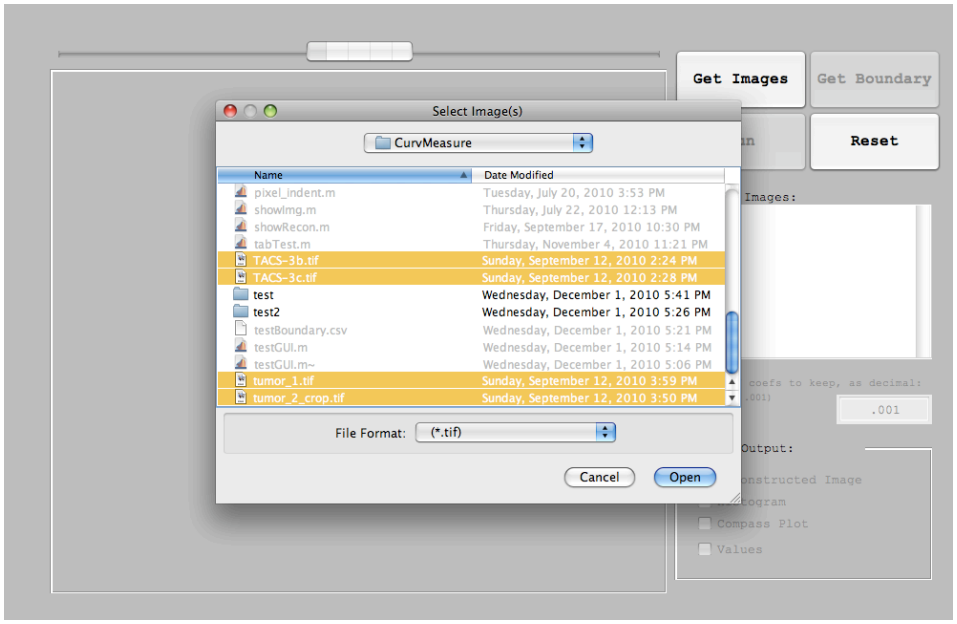
User Guide

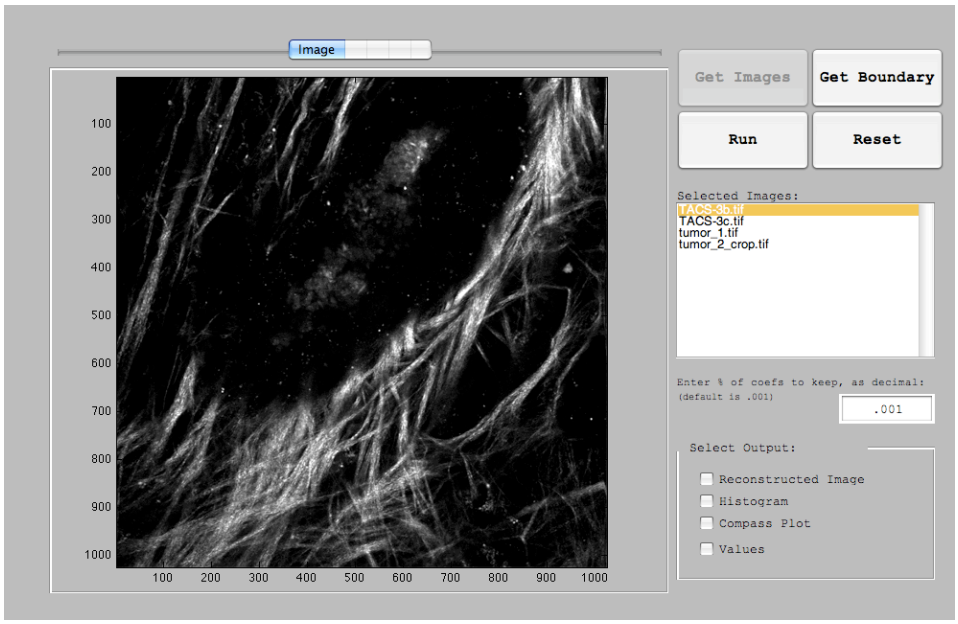
1. Launch program



2. Load in image(s) to be measured by clicking the “Get Images” button. You may select more than one image, but each image must be a single image rather than a stack. Stacks will not be processed correctly.

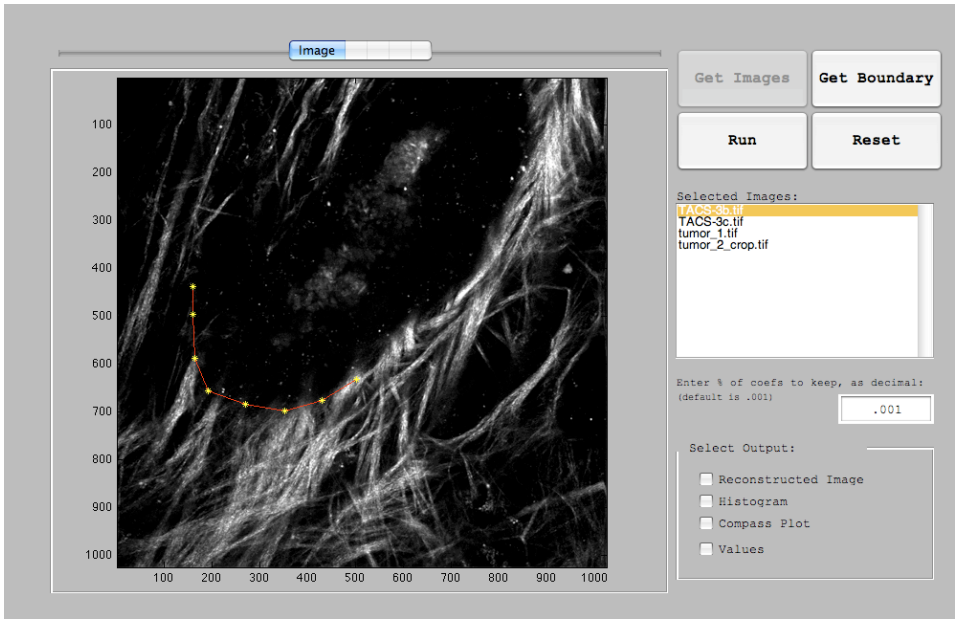


The selected images will be displayed in the center panel. Navigate between multiple images by selecting them in the list at the right hand side of the window.



4. (For measurement without a boundary, go directly to step 5)
A boundary be either drawn or read from a file. A .csv file containing pairs of points can be selected using the "Get Boundary" button. The points will be read in and treated as the endpoints of line segments making up the boundary. IMPORTANT: the scale of the points in the file must match the scale of the image – if your image is 512x512 and one of your points is (600,704) it will cause an error.

To draw a boundary, hold down the Alt key (Option key on Macs) and click points along the desired path of the boundary. Release the Alt/Option key when finished.



5. Enter the threshold level (optional) and select the desired output using the checkboxes in the bottom right corner of the window.

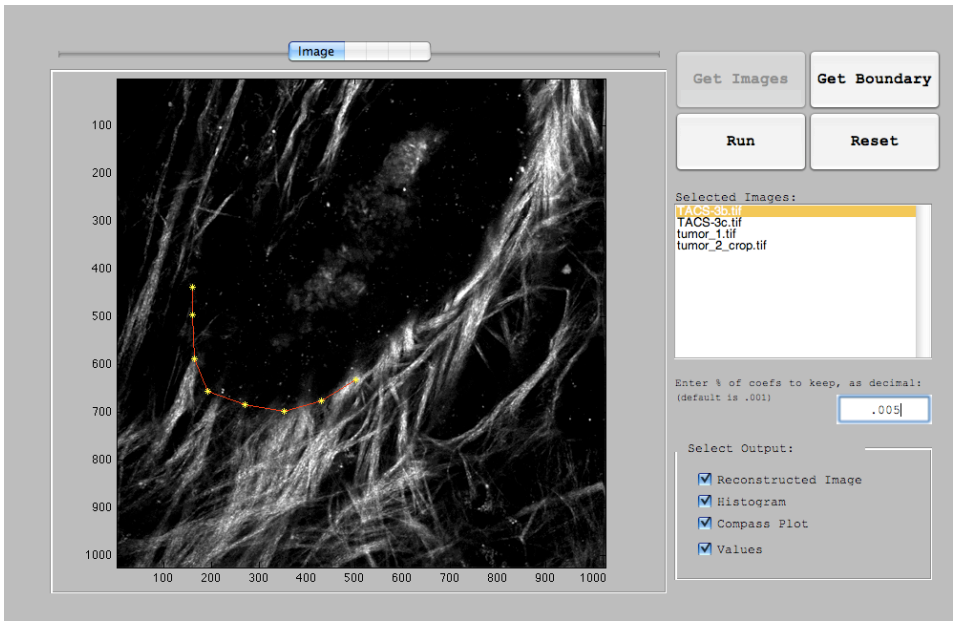
The text box at the right of the window is for setting a threshold for the edges measured. The higher the threshold value, the more edges will be included in the measurement. The default value is .001.

The available outputs are:

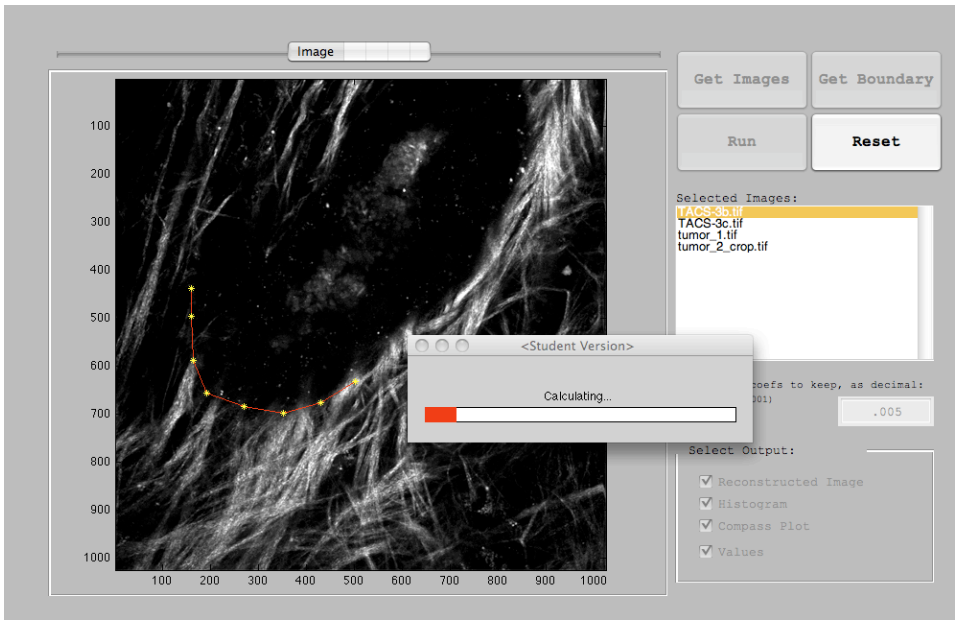
1. Reconstructed Image – this is an image reconstructed from the thresholded curvelets. It shows all of the edges in the image that were measured. *Selecting this option will significantly increase the processing time, but it is a good way to determine if your threshold is adequate.*
2. Histogram – a bar histogram of the measured angles, either with respect to the boundary or to the horizontal axis if no boundary is used.
3. Compass Plot – an angular histogram of the measured angles
4. Values – the values of the measured angles as well as basic descriptive statistics

The threshold, boundary (if used) and the choice of outputs will be applied to all of the input images.

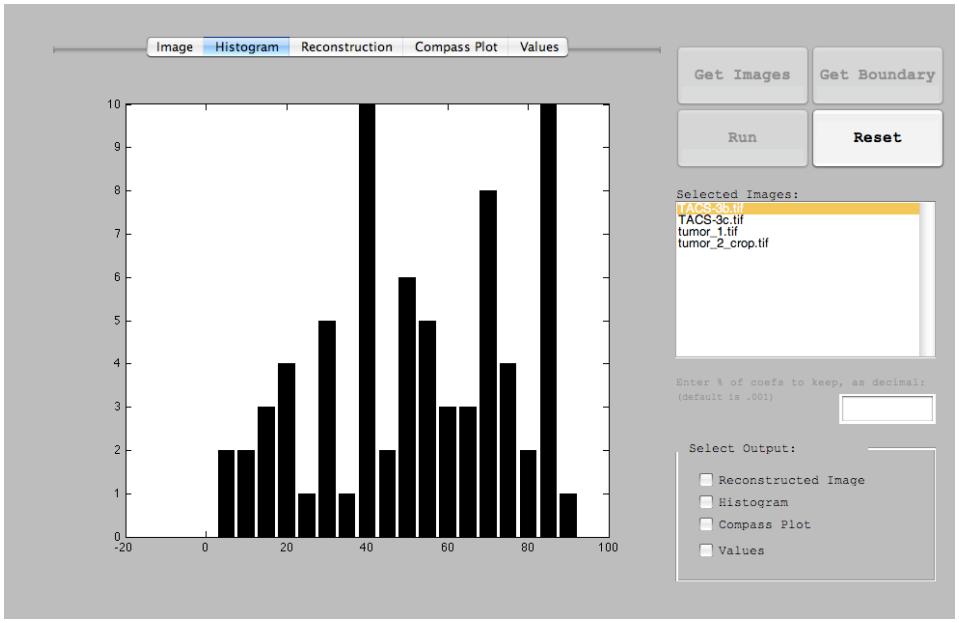
Output is saved automatically. Images are saved in the same format as the input images. Histograms, Compass plots, values and statistics are saved in .csv files. Histograms are saved as a row of counts above a row of bins, Compass plots are the x and y components of the angular vectors. The naming scheme is as follows: imagename_hist.csv, imagename_compass.csv, etc.



6. Click the “Run” button. As soon as the button is pushed, you’ll be prompted to select a directory in which to save the output files. FILES OF THE SAME NAME WILL BE OVERWRITTEN WITHOUT WARNING. If you are performing measurements on the same set of images more than once, it’s a good idea to save the results of each run in a separate directory. If you drew a boundary, you will also be prompted to select the name and location to save the boundary in a .csv file.



7. Your selected outputs will be displayed in tabs in the center panel when completed. You can view all outputs for a particular image by selecting the image from the list on the right and then clicking the tabs for each output.



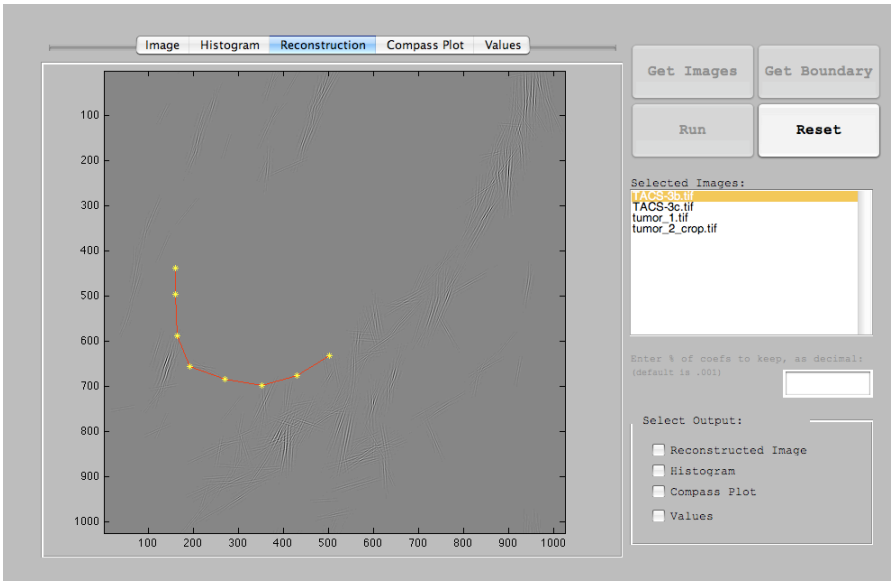


Image
Histogram
Reconstruction
Compass Plot
Values
100
200
300
400
500
600
700
800
900
1000
Get Images
Get Boundary
Run
Reset
Selected Images:
TACS-3b.tif
TACS-3c.tif
tumor_1.tif
tumor_2_crop.tif
Enter % of coefs to keep, as decimal:
(default is .001)
Select Output:
Reconstructed Image
Histogram
Compass Plot
Values

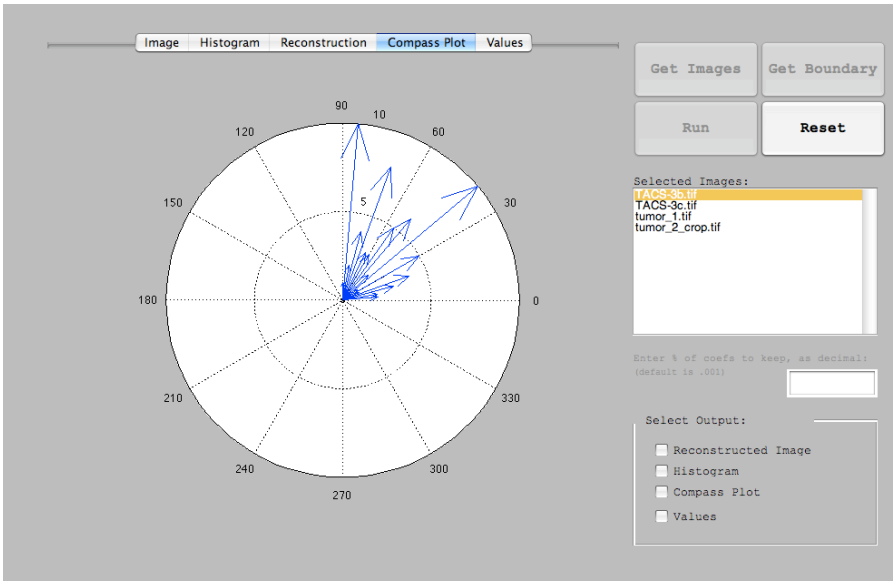


Image
Histogram
Reconstruction
Compass Plot
Values
90
10
60
30
0
330
300
270
240
210
180
150
120
5
Get Images
Get Boundary
Run
Reset
Selected Images:
TACS-3b.tif
TACS-3c.tif
tumor_1.tif
tumor_2_crop.tif
Enter % of coefs to keep, as decimal:
(default is .001)
Select Output:
Reconstructed Image
Histogram
Compass Plot
Values

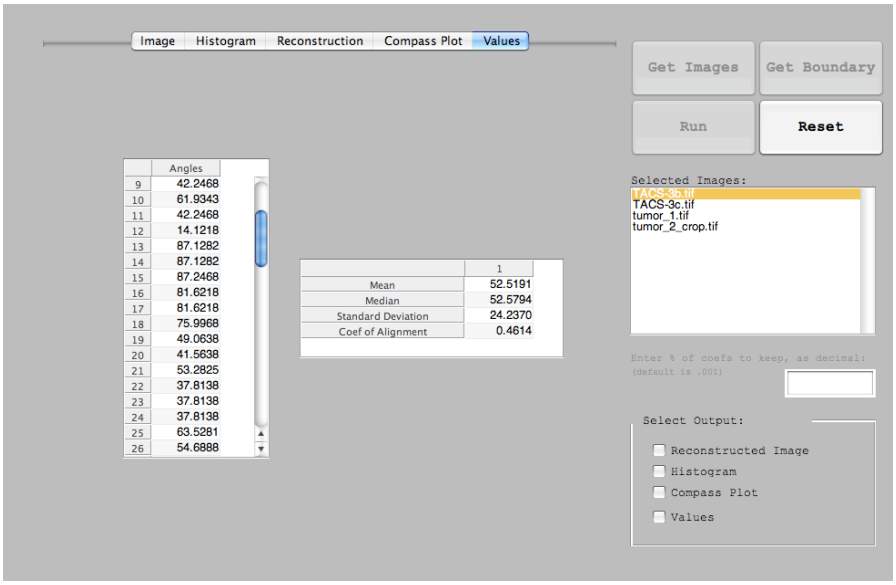


Image
Histogram
Reconstruction
Compass Plot
Values
Angles
9 42.2468
10 61.9343
11 42.2468
12 14.1218
13 87.1282
14 87.1282
15 87.2468
16 81.6218
17 81.6218
18 75.9968
19 49.0638
20 41.5638
21 53.2825
22 37.8138
23 37.8138
24 37.8138
25 63.5281
26 54.6888
1
Mean 52.5191
Median 52.5794
Standard Deviation 24.2370
Coef of Alignment 0.4614
Get Images
Get Boundary
Run
Reset
Selected Images:
TACS-3b.tif
TACS-3c.tif
tumor_1.tif
tumor_2_crop.tif
Enter % of coefs to keep, as decimal:
(default is .001)
Select Output:
Reconstructed Image
Histogram
Compass Plot
Values