

Using the REQ Segmentation Code:

1. You need MATLAB R2014a or higher to use this code. You also need the MATLAB Image Processing Toolbox.
2. This code uses SLIC as part of the segmentation algorithm. You must first compile slicmex.c. Type the following in the MATLAB command window.

mex slicmex.c

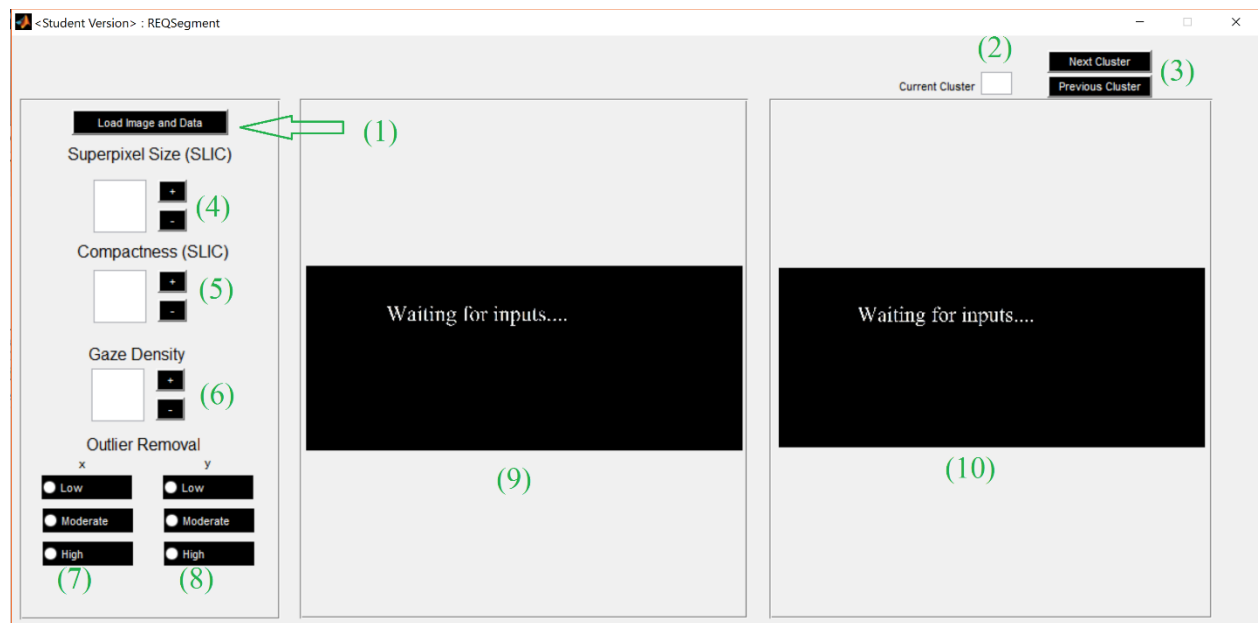
For more information on mex files, see:

https://www.mathworks.com/help/matlab/matlab_external/introducing-mex-files.html

Note: A Windows executable is part of the toolbox, so if you do not have a C compiler, you *may* still be able to use the toolbox on a Windows machine.

3. Run REQSegment.m. In the Graphical User Interface (GUI) window that opens up, click on the “Load Image and Data” button. (Marked (1) in Reference Figure).

Reference Figure:



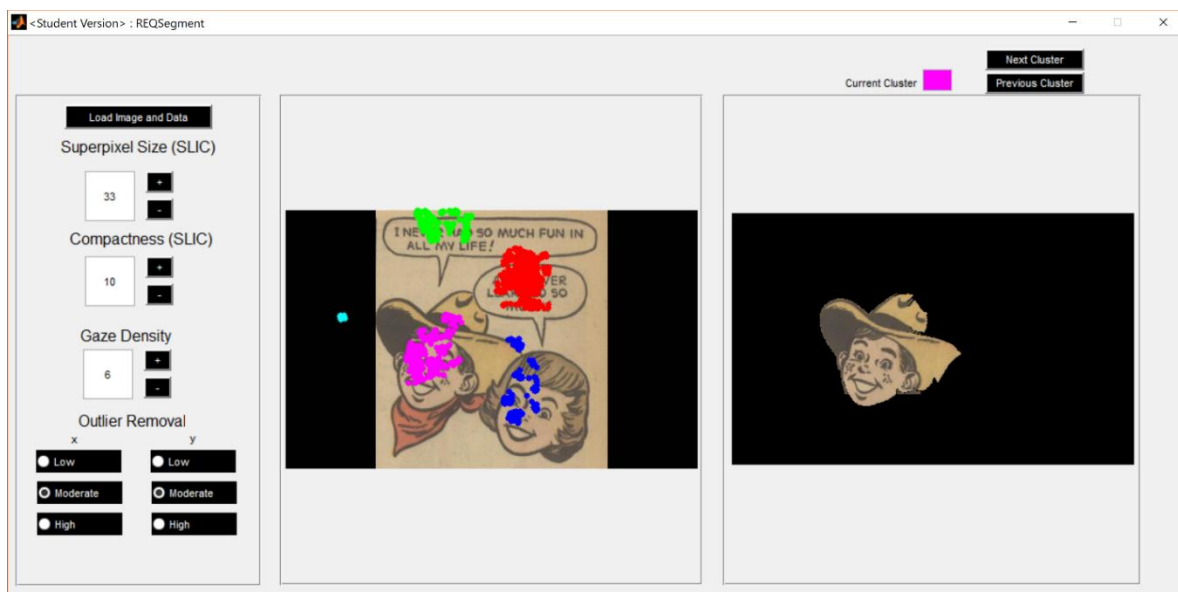
4. Load the input image in jpg, png or bmp format and the eyetracking data in xls, xlsx or csv format. The eyetracking data file must contain the x locations in column 1 and y locations in column 2. For examples, please see sample data provided.
5. The code will compute an initial segment based on default parameters. These are displayed in the GUI. The typical wait times for an initial result for our examples, on a computer running 64 bit Windows 10 with the Intel i5 processor and 4GB RAM is given in Table 1 below. The runtime may vary on different computers. Please wait for a maximum of 15 minutes before trying to re-run the code.

Table 1: Approximate runtimes on a 64-bit Windows machine with Intel i5 Processor:

Image	Approximate runtime in minutes
BlkHood_p29_003	3
BlkHood_p45_002	4
BlkHood_p49_003	3.5
HBomb_p2_001	3
RR_p10_002	3
Wyom_p17_002	4
Wyom_p17_005	5

- The clustering results appear in the region marked (9) in the Reference Figure. The clusters are color coded. Therefore, points of the same color belong to the same cluster. Each color represents a different cluster.
- The segmentation result is displayed in the region marked (10) in the Reference Figure. The cluster from which the segment was obtained is displayed in the region marked (2). To see the results of different clusters, use the “Next Cluster” and the “Previous Cluster” buttons marked (3) in the Reference Figure.
- If the default parameters do not produce the desired segmentation results, use the + and – buttons for the different parameters marked (4), (5) and (6). You may directly enter a value in the box, however you will still need to press + or – to activate the code. These changes will reflect in the result in near real-time.
- The outlier removal bounds can be set separately for the X and Y directions using the appropriate radio buttons shown in (7) and (8) in the Reference Figure.
- It is advisable to close the GUI and re-run the program for each new image.

Sample Output:



Examples

The *Examples* folder contains images and eyetracking data that can be used to test our segmentation code.

Complete Database

The images and eyetracking information used in our work “Creating Segments and Effects on Comics by Clustering Gaze Data” is available in the *Data* folder. The eyetracking data files are named after the image filename, therefore the correspondence is easily identified. The first column in each xlsx file is the x locations and the second column is the y locations of the raw gaze data.

Using your own data:

Our data was collected on a 1680 x 1050 monitor with the image displayed to fit the screen height. Lines 105 – 114 of REQSegment.m resize the image so that the eyetracking data can be appropriately superimposed. If this resizing is not applicable to your data, please comment out these lines and uncomment line 115.

OtherResults:

The *OtherResults* folder contains the clustering outputs and segmentation results for images out of our database of 23 for which the results are not shown in the manuscript.

Groundtruths:

The biased and unbiased groundtruth segments for the images are also provided in the *Data* folder. Biased groundtruths were generated by two of the authors who were fully aware of the kind of effects they wanted to apply to the segments. Unbiased groundtruths were generated by two volunteers who did not have any information on the effects. The task given to them was “Pick the object in the image that you would like to see animated.”