Flow Chart

Liangyu

Input: User selected image1 and image2

Output: Grayscale, max intense images

imgselect.m: Converts images to grayscale, performs maximum intensity projection, and displays the new image. If using LSM files, a community developed script (lsmread.m) will be used to read it in.

Liangyu

Input: Grayscale, max intense images (output of imgselect.m)

Output: Images with specified channel

channelselect.m: Links scrollbar to multiple channels of input image.

***Optional step**

Input: Images with specified channel (output of channelselect.m)

Output: Rotated image

preprocess.m: Rotates images based on mutual information. Mutual information is calculated in calcMI.m.

Jamie

Input: Images with specified channel (output of channelselect.m) or rotated images (output of preprocess.m), user defined ROI and threshold

Output: Revised image with specific regions boxed

preimgreg.m: Create box around region

Liangyu

Input: Revised image with boxed regions (output of preimgreg.m)

Output: Registered image

runimgreg.m: Uses imregtform to get transformation matrix which will be applied to all channels of image2.

Jamie

Input: Registered image (output of runimgreg.m), user defined intensity threshold, minimum size of cells

Output: Number of cells in each image and number of overlapping cells

celldetect.m: Performs image processing

Jamie

Input: Date, image file names, number of cells in images

savedatabase.m: Stores information provided by user through GUI interface

***Optional step**

Adjust channel of images via scrollbar on GUI interface.

Function/Feature Name	Description	Responsibility
imgselect.m	Select image file, convert to grayscale image, perform maximum intensity projection, and display image.	Liangyu
channelselect.m	Link scrollbar to multiple channels of image.	Liangyu
preprocess.m	Optional step which allows the user to rotate the image based on mutual information.	Liangyu
preimgreg.m	Takes ROI defined by user and displays a box around specified region. Then takes threshold defined by user and displays a new image.	Jamie
runimgreg.m	Runs multimodal image registration using *imregtform* (built-in matlab function) to get transformation matrix. This is done using the current displayed channels. The transformation matrix will be applied to all channels of image 2.	Liangyu
celldetect.m	User inputs custom intensity threshold and minimum size of cell and outputs number of cells in each image and the number of overlapping cells for the merged image.	Jamie
savedatabase.m	The database will store the date inputted by the user, the image file names, the number of cells found in each image, and the number of overlapping cells found in the merged image. If no date is specified, the current date will be used.	Jamie