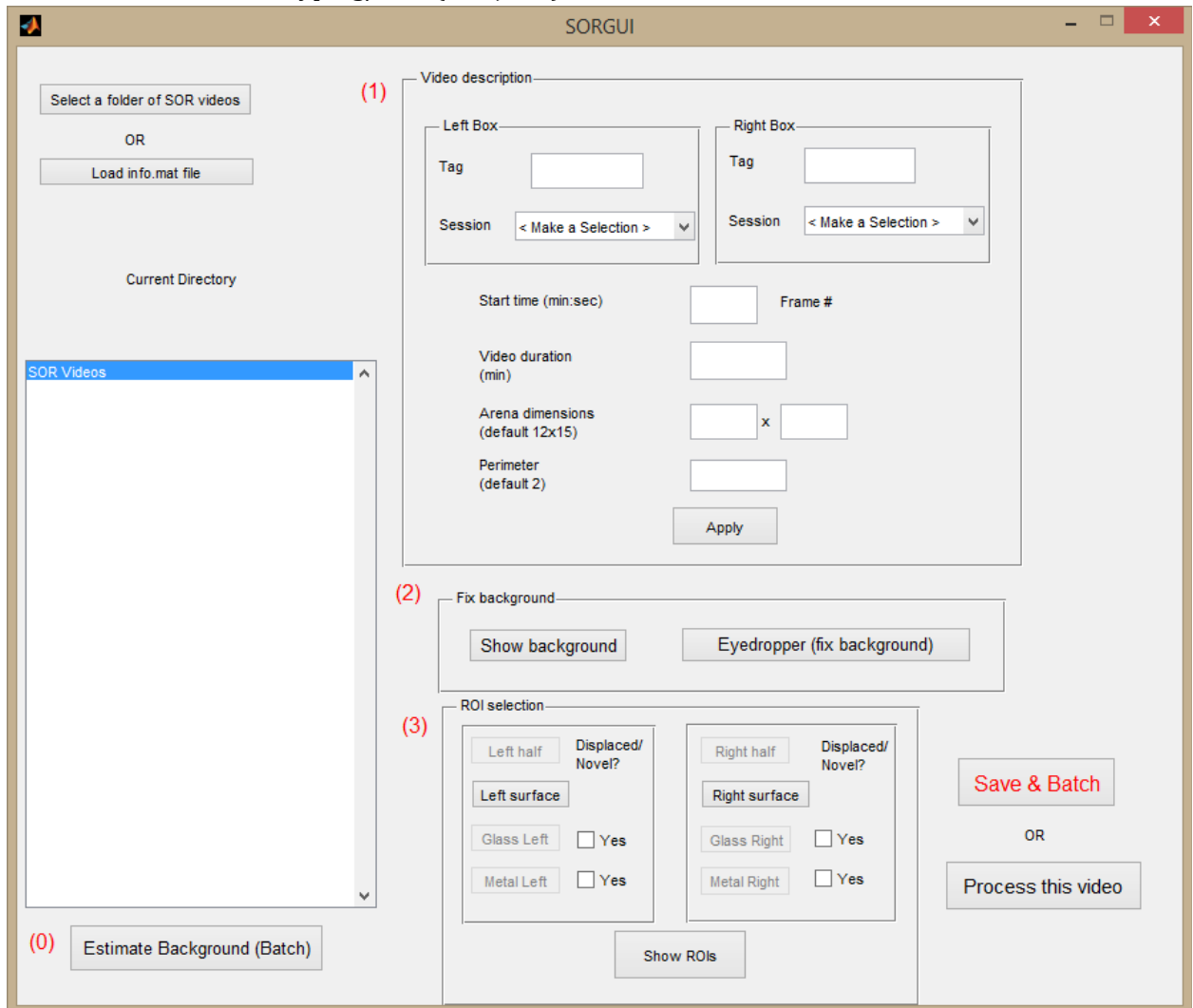
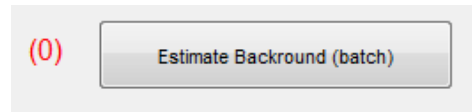


# SOR Tutorial

- 1) If your SOR/NOR experiment contains 2 objects, navigate to autotyping/SOR. If your experiment contains 3 objects, navigate to autotyping/SOR3.
- 2) Enter the command SORGUI at the command window in MATLAB. A screen should pop up that looks like the one below. The GUI for SOR3 just have one more object. For demo, I will focus on the GUI in autotyping/SOR (2 objects).



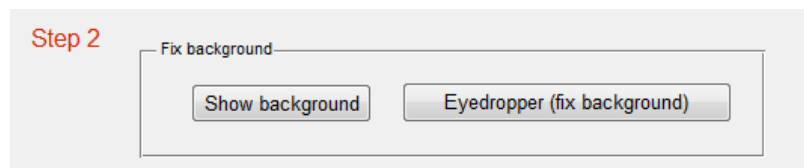
- 3) The first step is to load the videos. Click on the button that says “Select a folder containing SOR videos” and navigate to a folder containing SOR videos. Each video name should appear on the left hand side in the listbox.
- 4) Once all the videos are loaded, click the “Estimate Background (batch)” button that looks like the one below. It is found under the list of video names



- 5) As MATLAB is batching the background, it will appear that the GUI is frozen. It will say on the main screen which video it is batching. Once it is complete you will be able to use the GUI interface again.
- 6) The next step is to fill out the video information like shown below.

 A screenshot of a "Video description" dialog box. It contains two columns of input fields: "Left Box" and "Right Box". Each box has a "Tag" text input and a "Session" dropdown menu. Below these are shared fields: "Start time (min:sec)" with a value of "0:33" and "Frame # 490", "Video duration (min)" with a value of "15", "Arena dimensions (default 12x15)" with values "12" and "15", and "Perimeter (default 2)" with an empty text input. An "Apply" button is at the bottom center. A red "(1)" is in the top left corner.

- 7) Mouse Tag is the mouse number.
- 8) Session will depend on the video being run. Session 1 = no objects, sessions 2-4 and Test contain objects.
- 9) The video duration is usually 15 (for fifteen minutes)
- 10) The arena dimensions are 12x15 (for the SOR/NOR box)
- 11) The perimeter does not need to be filled out because the default (2) is correct.
- 12) Once all the video description information has been entered, hit the "Apply" button.
- 13) Once that is finished, check the background using the "Show Background" button and make sure that it looks good.



- 14) If there is something that needs to be fixed, use the "Eyedropper" button. This allows you to draw on an area where the background is correct, and then paste that region over the area that has problems.

15) The next step is to draw the ROIs (regions of interest)

(3)

ROI selection

Left half	Displaced/ Novel?	Right half	Displaced/ Novel?
Left surface		Right surface	
Glass Left	<input type="checkbox"/> Yes	Glass Right	<input type="checkbox"/> Yes
Metal Left	<input type="checkbox"/> Yes	Metal Right	<input type="checkbox"/> Yes

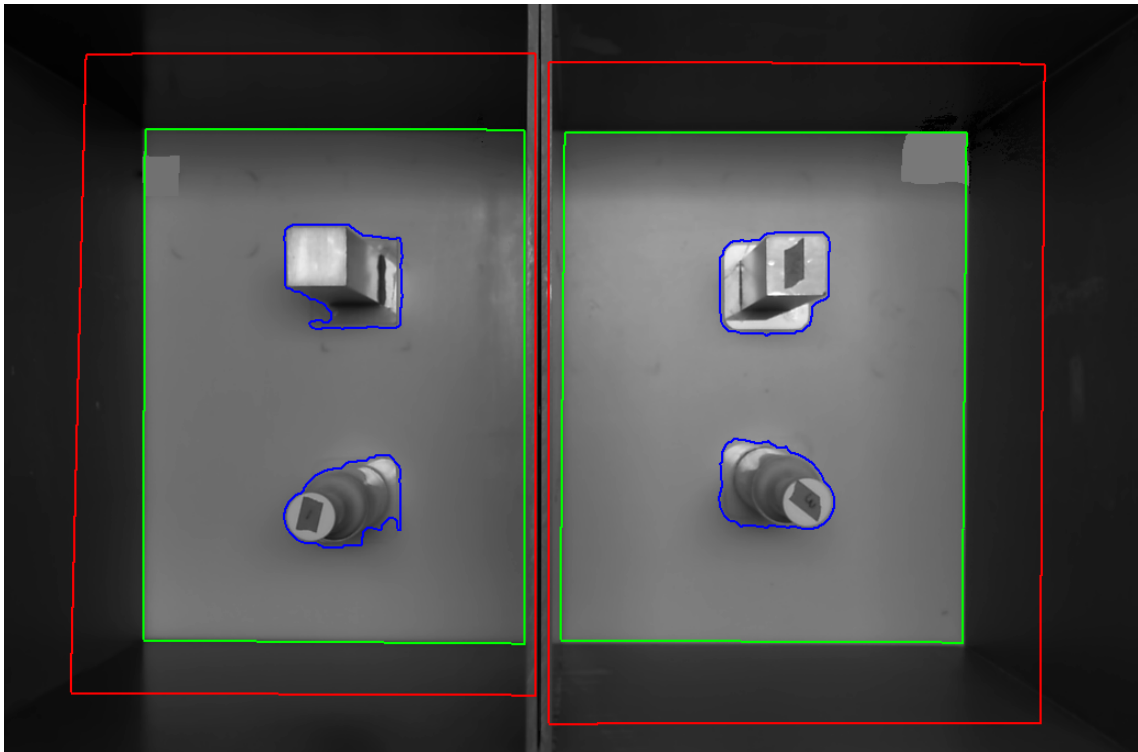
Show ROIs

16) Left and Right half are the outline of the entire left and right box and will be drawn like the red rectangles below. If you click the “rectangle” option you can connect four points to create the outline. Left and right surface are the white surfaces of the arena.

17) Glass left/right and metal left/right will be drawn like the blue outlines below. The “auto” function can be used by simply clicking on the object and it will draw the outline. However, sometimes it does not detect the object or the drawing is off. In those cases the freehand mode may be a better choice.

18) Select the checkbox if either glass or metal object is displaced or novel. The interaction time with this object will be denoted by \*\* in the resulting results.txt file.

19) The left/right surface options should look like the green rectangles below. They can also be drawn with the “rectangle” option.

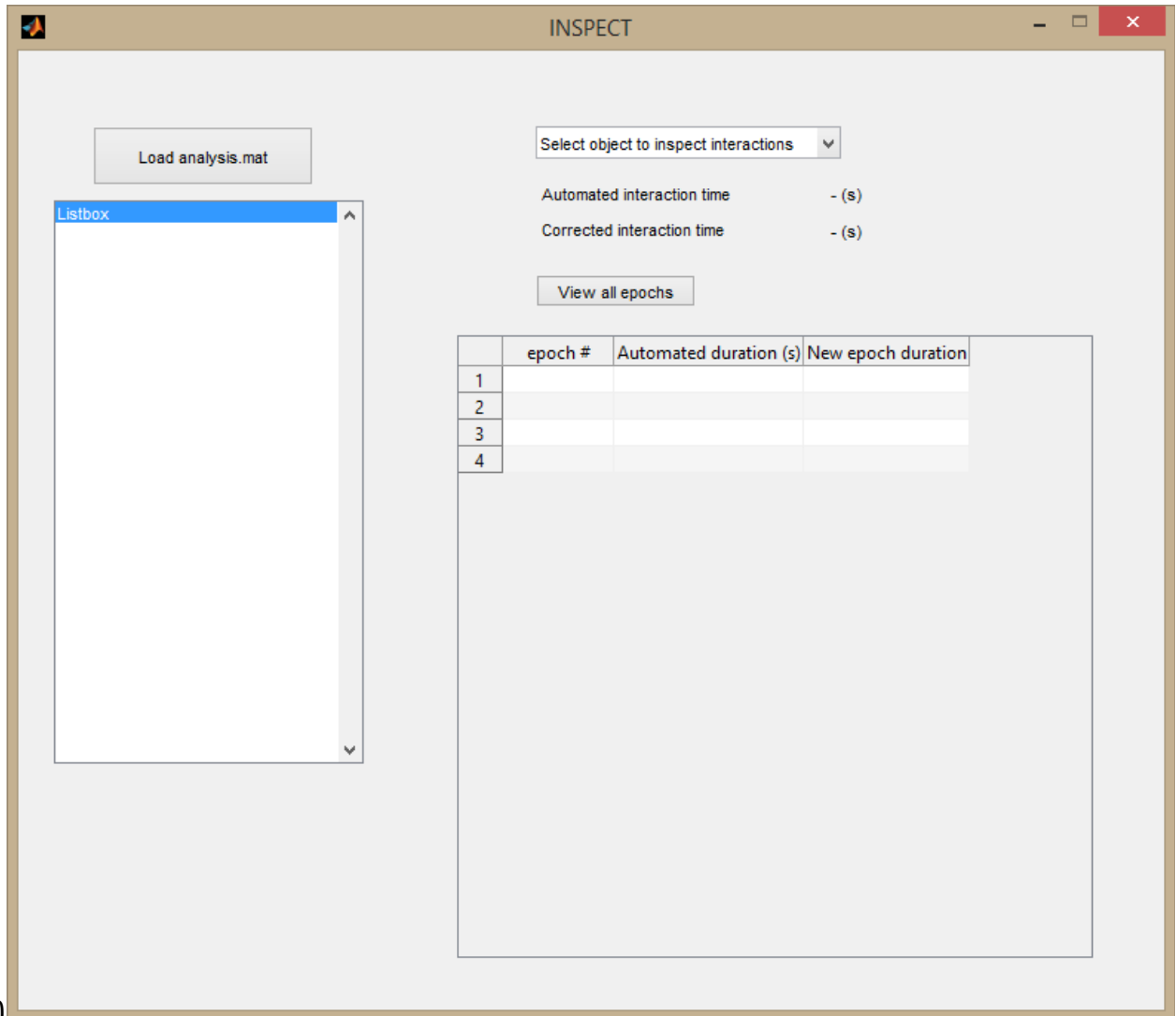


- 20) At this point, you may click “Process this video” to see the tracking and scoring of SOR. The mouse’s centroid indicated by red dot and interactions with objects are highlighted with a blue boundary around the object. Once satisfied, click Ctrl+C in the command window to stop the visualization.
- 21) Move onto the next video in the listbox.
- 22) Once you are finished initializing all videos, click “Save& Batch” button. An info.mat file will be generated in the experiment folder.
- 23) You may either start processing these videos in batch now or later. If you choose the later option, close the SORGUI portion
- 24) After clicking the “X” to close out, this box will come up to make sure everything was saved. In order to exit click “Yes”



- 25) Go back to the home screen for MatLab. It should still say SOR in the top bar.
- 26) Type: “edit Read\_Fnames” into the command window.
- 27) Go to the folder where the videos were and once again copy the pathway (it will be pasted into the Read\_Fnames screen).

- 28) Paste the folder name in the Read Fnames screen and apostrophes at the beginning and end of the text. It should look something like: 'C:\Users\admin\SOR\_videos\''. The text will be in purple. You can add more than one folder, each on a new line.
- 29) In the command window type: SORBatch
- 30) It should say "Busy" in the bottom left corner
- 31) The videos are now being analyzed and there will be a results folder made within each of the files.
- 32) The results are saved in SORanalysis.mat file and a summary figure is generated for each SOR video. A summary text file also lists the interaction times for each mouse with 2 or 3 objects. If you specified that one of the objects was displaced or novel, the interaction time for that object will be displayed with \*\* next to it. For example, if you specified that the glass object in the left box was displaced, the interaction time in results.txt for that video will be something like 23\*\*.
- 33) At the end of analysis, the interaction bouts with each object will also be generated. You can view the accuracy of SOR results by typing INSPECT at the command prompt. You should get a screen like the one below.



- 34)
- 35) Click on “Load analysis.mat” and select the SORanalysis.mat file that was generated after SORBatch completed.
- 36) Video files will be populated in the listbox. Click on a video file to load its interaction bouts.
- 37) Use the dropdown menu to pull up the interactions with a specific object: glass left, metal left, glass right, etc.
- 38) The table will be populated with bouts or epochs of interaction with the selected object, along with the duration of the epoch.
- 39) You may click “View all epochs” to see all bouts of interaction with the selected object.
- 40) Alternatively, click on individual epoch number in the table to view just that epoch. If you disagree with the automated duration of interaction bout, enter a new value in the third column (New epoch duration). Corrected interaction time field will be updated appropriately.