

Social Interaction Tutorial

- 1) Navigate to autotyping/Social and enter the command SocialGUI at the command window in MATLAB. A screen should pop up that looks like the one below.

The screenshot shows the SocialGUI interface with the following components:

- Video description:**
 - Identifying info:
 - Mouse tag, top half of the vid (na = no mouse)
 - Mouse tag, bottom half of the vid (na = no mouse)
 - Arena dimensions (default 10x20)
 - First 10 minute interval (0'-10'):
 - Start time (min:sec) and Frame #
 - End time (min:sec) and Frame #
 - Second 10 minute interval (10'-20'):
 - Start time (min:sec) and Frame #
 - End time (min:sec) and Frame #
 - Buttons: Apply
- ROI selection:**
 - Left column (red border):
 - Top half of the vid:
 - Floor surface
 - Left chamber
 - Right chamber
 - Left object (0'-10')
 - Right Object (0'-10')
 - Left object (10'-20')
 - Right object (10'-20')
 - Novel Mouse? checkboxes (Yes/No)
 - Right column (purple border):
 - Bottom half of the vid:
 - Floor surface
 - Left chamber
 - Right chamber
 - Left object (0'-10')
 - Right Object (0'-10')
 - Left object (10'-20')
 - Right object (10'-20')
 - Novel Mouse? checkboxes (Yes/No)
 - Button: Show ROIs
- Current Directory:** Listbox containing "Social interaction videos".
- Buttons:** Save & Batch, OR, Process this video

- 2)
- 3) The first step is to load the videos. Click on the button that says “Select a folder containing Social interaction videos” and navigate to a folder containing Social interaction videos. Each video name should appear on the left hand side in the listbox.

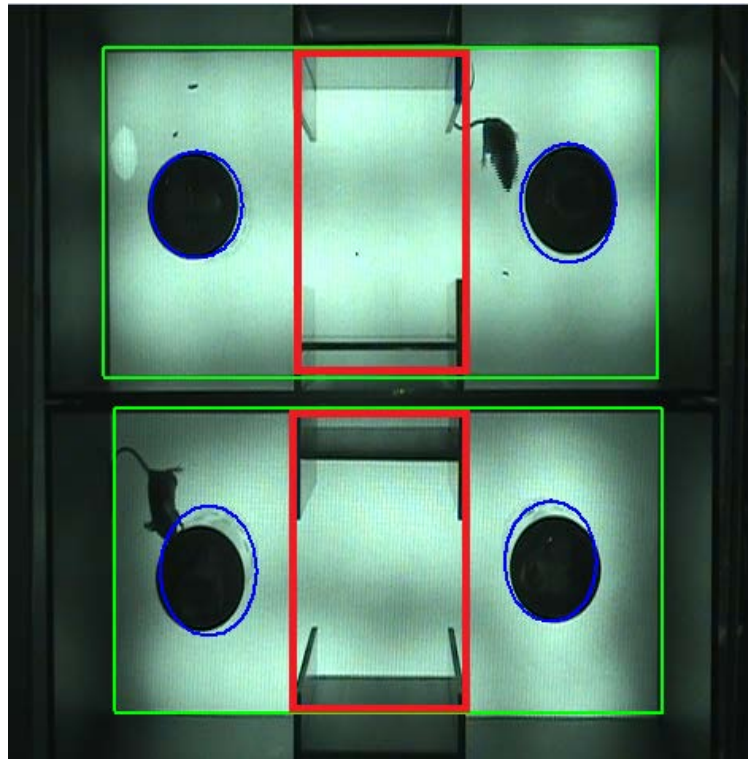
- 4) Double click on the video names to open the video in order to fill out the rest of the information and it will look something like below.

The screenshot shows a 'Video description' window. On the left, under 'Identifying info', there are two entries: 'Mouse tag, top half of the vid (na = no mouse)' with value '2343' and 'Mouse tag, bottom half of the vid (na = no mouse)' with value '2344'. On the right, there are two 10-minute interval sections. The 'First 10 minute interval (0'-10\'' section has 'Start time (min:sec)' set to '0:34' and 'End time (min:sec)' set to '10:34'. The 'Second 10 minute interval (10'-20\'' section has 'Start time (min:sec)' set to '12:15' and 'End time (min:sec)' set to '22:15'. Each interval section also has a 'Frame #' field. An 'Apply' button is located at the bottom center.

- 5) Mouse tag is just the mouse number (usually found written on an index card in the beginning of the video)
- 6) In a typical social interaction experiment, a test mouse is allowed to explore the arena with 2 empty objects for the first 10 minutes. Then, a novel mouse is introduced into one of the two objects and the interactions of the test mouse with the two objects is again recorded for 10 minutes. In the GUI, enter the start and end time for the two 10 minute intervals. If you wish to skip either of the intervals, enter 0:0 for the time.
- 7) Start time for the First 10 minute interval is once the mouse is loaded into the arena and the hand leaves the frame.
- 8) End time is 10 minutes after the start time.
- 9) Start time for the Second 10 minute interval is after the mouse and object are placed into their respective cylinders and once the hands leave the frame.
- 10) Once all the video description information has been entered, hit the “Apply” button.
- 11) The next step is the ROI (region of interest) selection.

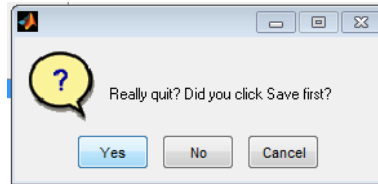
The screenshot shows an 'ROI selection' window. It is divided into two main sections: 'Top half of the vid' (outlined in red) and 'Bottom half of the vid' (outlined in purple). Each section contains a list of ROI categories: 'Floor surface', 'Left chamber', 'Right chamber', and 'Right object'. For each 'Right object' entry, there are two time intervals: '0'-10\'' and '10'-20\'. Next to each 'Right object' entry is a 'Novel Mouse?' checkbox with a 'Yes' option. The 'Right object' entries are also grouped by time interval.

- 12) The “floor surface” should look like the green rectangles below. The top and bottom one will be drawn separately. If the surface is crooked then it can be drawn “free-hand”, but usually the “rectangle” option works best.
- 13) Draw a rectangle over the left and right chambers.
- 14) The “objects” should look like the blue ellipses below.
- 15) Indicate which object contains the novel mouse for the second 10 minute interval. It is best to also check that same box for the first 10 minute interval so it will be obvious in the resulting results.txt file. The interaction times with these objects will be displayed with **.

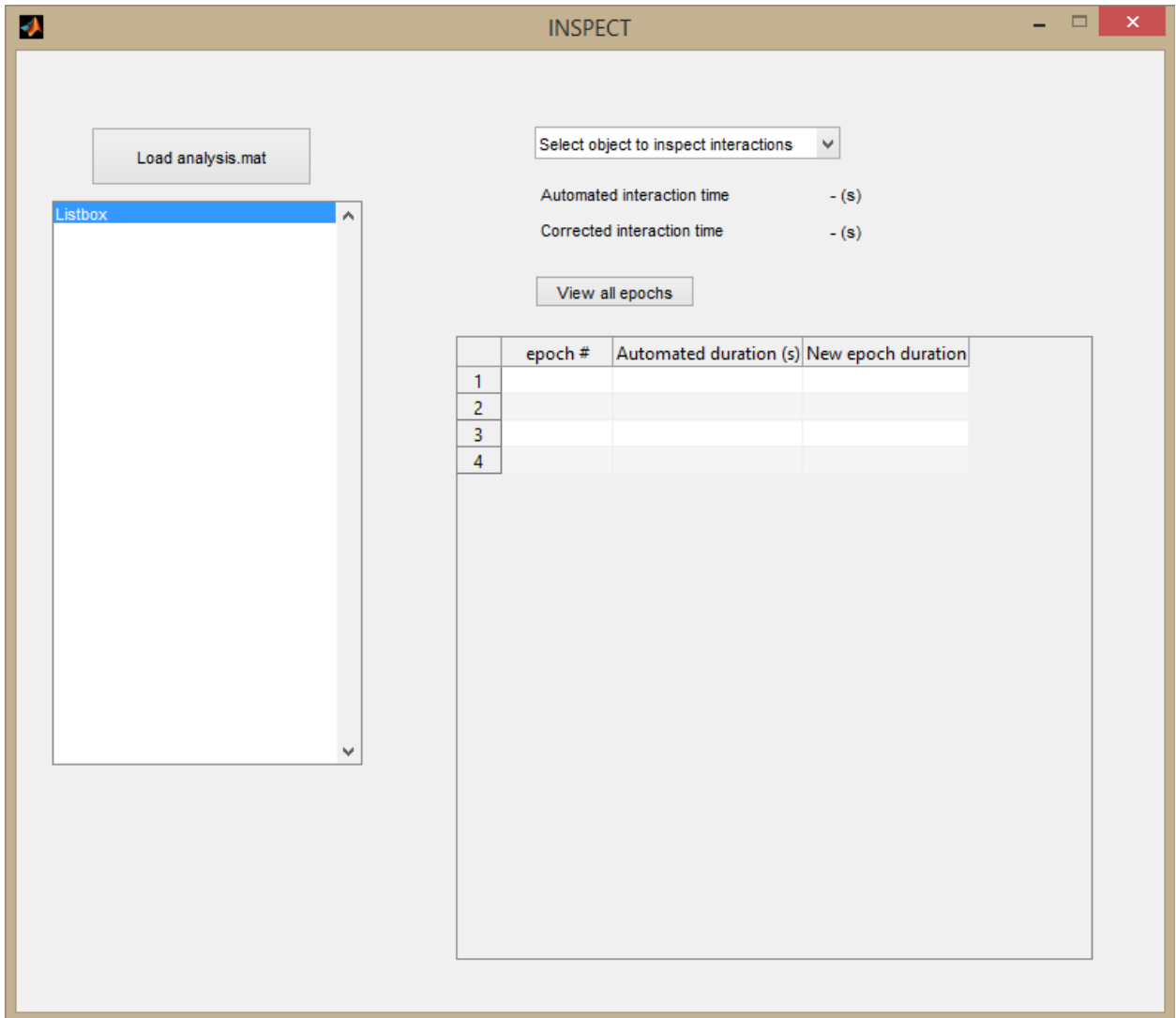


- 16) At this point, you may click “Process this video” to see the tracking and scoring of Social Interaction. The mouse’s centroid indicated by red dot and interactions with objects are highlighted with a blue boundary around the object. Once satisfied, click Ctrl+C in the command window to stop the visualization.
- 17) Move onto the next video in the listbox.
- 18) Once you are finished initializing all videos, click “Save& Batch” button. An info.mat file will be generated in the experiment folder.
- 19) You may either start processing these videos in batch now or later. If you choose the later option, close the SocialGUI portion

- 20) After clicking the “X” to close out, this box will come up to make sure everything was saved. In order to exit click “Yes”



- 21) Go back to the home screen for MatLab. It should still say Social in the top bar.
- 22) Type: “edit Read_Fnames” into the command window.
- 23) Go to the folder where the videos were and once again copy the pathway (it will be pasted into the Read_Fnames screen).
- 24) 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\Social_videos\’. The text will be in purple. You can add more than one folder, each on a new line.
- 25) In the command window type: SocialBatch
- 26) It should say “Busy” in the bottom left corner
- 27) The videos are now being analyzed and there will be a results folder made within each of the files.
- 28) The results are saved in SI_analysis.mat file and a summary figure is generated for each SI video. A summary text file also lists the interaction times for each mouse with the 2 objects for the first and second 10 minute intervals. If you specified that one of the objects contained a novel mouse, the interaction time for that object will be displayed with ** next to it.
- 29) At the end of analysis, the interaction bouts with each object will also be generated. You can view the accuracy of SI results by typing INSPECT at the command prompt. You should get a screen like the one below.



- 30)
- 31) Click on “Load analysis.mat” and select the SI_analysis.mat file that was generated after SocialBatch completed.
 - 32) Video files will be populated in the listbox. Click on a video file to load its interaction bouts.
 - 33) Use the dropdown menu to pull up the interactions with a specific object.
 - 34) The table will be populated with bouts or epochs of interaction with the selected object, along with the duration of the epoch.
 - 35) You may click “View all epochs” to see all bouts of interaction with the selected object.
 - 36) 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.