

# Getting started

## System Requirements

- MATLAB 2012 or greater
- Tested on Windows 7, 8 and Ubuntu.
- Most functionality will work on Mac OS. However, you will not be able to play a movie from within MATLAB. Use VLC or other app to play movies.
- Video processing is memory intensive. Recommend at least 4 GB free RAM and a relatively new processor.
- Videos can be in any of the following formats: .wmv, .avi, .mpg, .mp4 or .mov

## Installation

- Download the source code as a zip file from [www.seas.upenn.edu/~molneuro/autotyping.html](http://www.seas.upenn.edu/~molneuro/autotyping.html)
- There are separate folders for each automated behavior test.
- Run MATLAB and add the folder “mmread” and “Inpaint\_nans” to your MATLAB path. See MATLAB documentation for help.
- Download the sample videos to try an analysis.

## Analysis overview

- We have created separate MATLAB routines specific for the analysis of different behavior tasks. Automated tasks include: Barnes Maze, Zero Maze, YMaze, Open field, special and novel object recognition, social interaction and fear conditions.
- Detailed step-by-step instructions for how to analyze a particular behavior experiment are on the website as pdf documents, along with a screencast movie.
- The overall steps are:
  - Navigate to a given behavior analysis folder. For example, autotyping/SOR
  - Run the appropriate graphical user interface (GUI). In this case, SORGUI
  - Put all the SOR videos in a separate folder, call it SOR\_videos.
  - In the SORGUI, select the folder “SOR\_videos”.
  - For each video in the folder, enter video descriptors such as mouse tag, start time, duration, etc.
  - Draw the appropriate regions of interests.
  - Do this for all videos.
  - See the processing of individual videos or submit all videos for batch processing.

- Once finished, results.txt will be generated, summarizing important performance metrics for the given behavior task. A summary figure for each video file is also generated.
- View the accuracy of automated scoring by running INSPECT (only applicable for SOR, social interaction and fear conditioning experiments)

## General comments

- When acquiring videos, ensure that the camera is securely mounted so that the only thing moving is the test mouse and not the entire scene.
- Allow sufficient contrast between the test mouse and the background. Tracking a white mouse on a white background (white maze/box) can be challenging. Try changing the background color in such situations.
- If possible, record a short video of an empty arena before introducing the test mouse. This can serve as the background and will make segmentation easier and faster. If this is not possible, the algorithm will estimate the background scene - it will just take little longer.
- Stay-tuned for updates and improvements. Implementation in C coming soon.

Send questions or suggestions for improvement to [tapanp@mail.med.upenn.edu](mailto:tapanp@mail.med.upenn.edu)