Eye-tracking how-to

This document is intended to be a very basic overview of how to use the eye-tracker. For more detailed information on how it works (or what settings/options are available), please refer to the eye tracker manual.

**General information:**

There are two computers in the eye-tracking room:

1. The display computer: this is the computer that the participant sits in front of
2. The host computer (laptop): this is the computer that controls the eye-tracker

Be very careful not to move the eye-tracker. If it gets moved, let someone know ASAP (before running additional subjects).

Set-up in the eye tracking room:

* Plug the eye tracker into the host laptop (using the two USBs)
* Turn on both computers
  + Display: password =
  + Host: click on “Tracker” to start the eye-tracker
* If you are running experiment code (e.g. in MATLAB):
  + Make sure your code is on the display computer
  + Open the program and run your code
  + Your code should have Eyelink commands in it
  + At a minimum, your code should
    - (1) check that the eye tracker is connected
    - (2) run a calibration procedure, and
    - (3) start recording

Calibration/Validation/TIPS:

* Tell the participant to put their chin on the chin rest
* On the host computer:
  + Hit the “Return” key to make the image of their eye show up on the display computer.
    - Use the dial on the underside of the eye-tracker to adjust the focus, if necessary.
    - Hit “Return” again to make the image go away so that they don’t have to stare at their eye for too long.
  + Check their pupil and corneal reflection
    - Click “Auto” and that will automatically adjust the pupil and corneal reflection thresholds
    - The dark blue area should fill up their pupil (and not leak onto other parts of their eye/face)
    - If the dark blue area is too small, click the down arrow next to “Pupil”
    - If the dark blue area is too big, click the up arrow next to “Pupil”
    - These arrows change the threshold for the pupil
  + Click “Calibrate” on right-hand side of the screen
    - Hit enter after each fixation OR click “Auto-Trigger”
    - Evaluate calibration – is it a nice 3x3 square?
      * If so, click “Accept” and go on to the next step
      * If not, click “Restart” to retry with the current settings OR “Discard” to go back to the set-up screen – if you want to change pupil size or switch eyes (remember to click on the new eye in the video, if you switch!)
  + Click “Validate” on right-hand side of the screen
    - Hit enter after each fixation OR click “Auto-Trigger”
    - Evaluate validation:
      * If GOOD (green), click “Accept” and go on to next step
      * If FAIR (grey) or POOR (red), click “Discard” and try to recalibrate
      * If you get FAIR or POOR several times (like, at least 5, it is OKAY to keep going, but make a note of this)
  + Hit the “RECORD” button on the host computer – this will start the eye-tracking part of the experiment for the participant
* TIPS for good calibration (or fixing bad calibration)
  + Tell the participant to keep their head very still and ONLY move their eyes (honestly, this fixes the problem more often than not!)
  + Tell the participant to not move their eyes UNTIL the dot moves. Sometimes people try to guess where the next dot will be and this screws things up.
  + Make sure the video is clear (or adjust the lens focus if need be)
  + Glasses are (usually) not a problem!
    - In fact, it’s often easier with glasses than with contacts!
  + Subjects with lots of dark eye makeup might need to take it off
    - Computer thinks that their makeup is their pupil and gets all screwy
    - Decrease the “Pupil” measure on the left-hand side of the screen as far as you can without losing the pupil
  + Try the other eye
    - For instance, I can only calibrate myself using my right eye because of a weird eye syndrome that I have

Clean-up:

* If an experiment screen is still on the display computer, hit the “ESCAPE” key (or whatever you defined in the code to exit out of it) once on the display computer
* Do NOT shut off either computer during this process (while the “File transfer in progress” box is visible on the host computer)
* Turn things off:
  + Shut down the display computer
  + Unplug the eye tracker USBs from the host comoputer and place the cover on (carefully, so that you don’t move it!)
  + Click “Exit” and then “Shutdown” on the host computer