Eye-Tracking

Here you can find information about the EyeLink eye-tracking systems.

- EyeLink Set-up
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- Eye-tracking Protocol

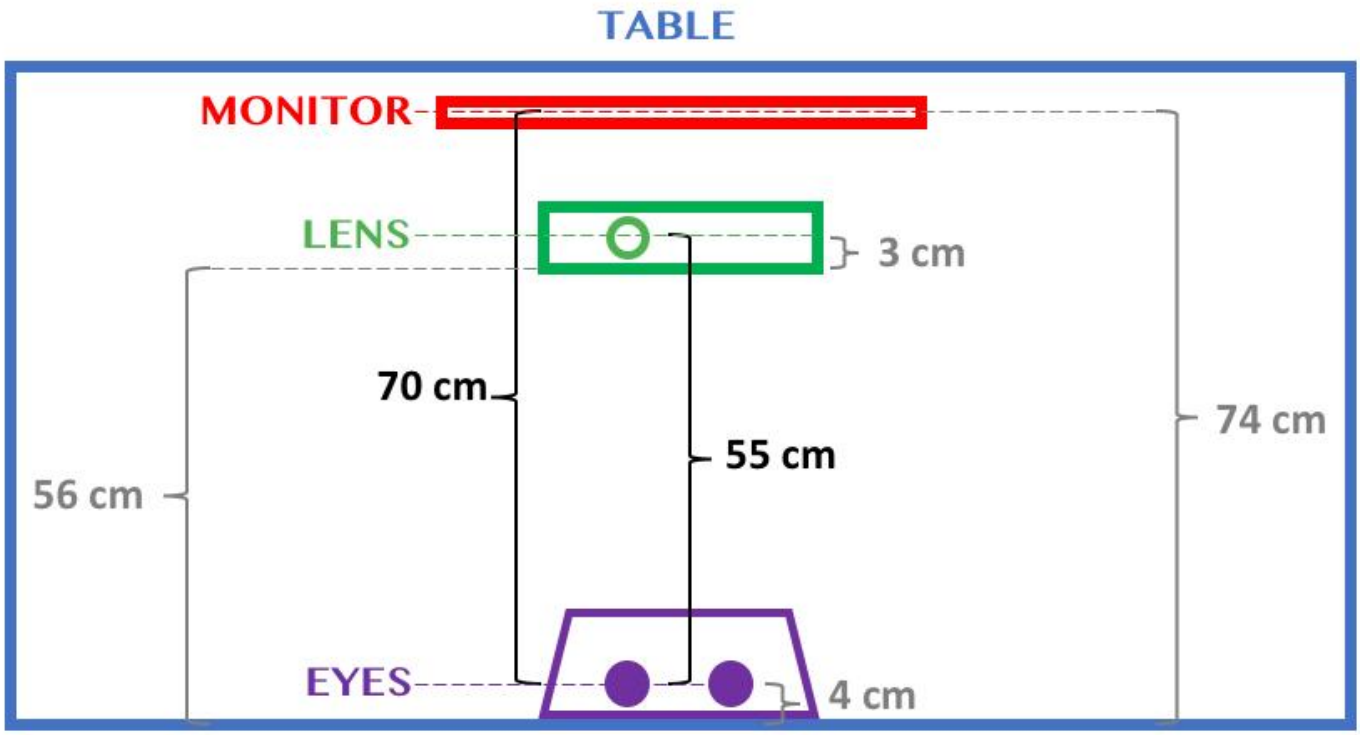
EyeLink Set-up

There are nine rooms with an Eyelink system available. The eye trackers have different models and specs. Please think of what you need for your experiment before you reserve a specific lab.

Example of one the Desktop Mount Eyelink cameras:

All nine Eyelink rooms have black stickers placed on the table. These stickers indicate where to place the equipment for the default set-up of: **eye-to-Eyelink distance of 55 cm**, and **eye-to-monitor distance of 70 cm**. If you prefer to use other distances, please move your equipment relative to these stickers without removing them. Please do not leave tape on the table to mark your personal preference. If you plan to use the same lab for a long period of time, please email bblabs.fgb@vu.nl or the Lab Coordinator so we can place a second set of stickers on the table placed at your personal preference. When you are done using the lab, please place the equipment back on the black stickers.

Visual representation of the default Eyelink set-up (table stickers):



EyeLink Models

The different rooms have slightly different models of the EyeLink devices. Here is an overview. Make sure to consider this carefully!

Space B449 & EyeLink Cubicles

The rooms in B449 (a, b, c, and d) and the EyeLink cubicles (A437m/n & A437p/o) make use of:

EyeLink 1000 Plus Desktop Mount
Stabilized: Up to 2000 Hz monocular and binocular. Remote: Up to 1000 Hz monocular and binocular.

Space B447

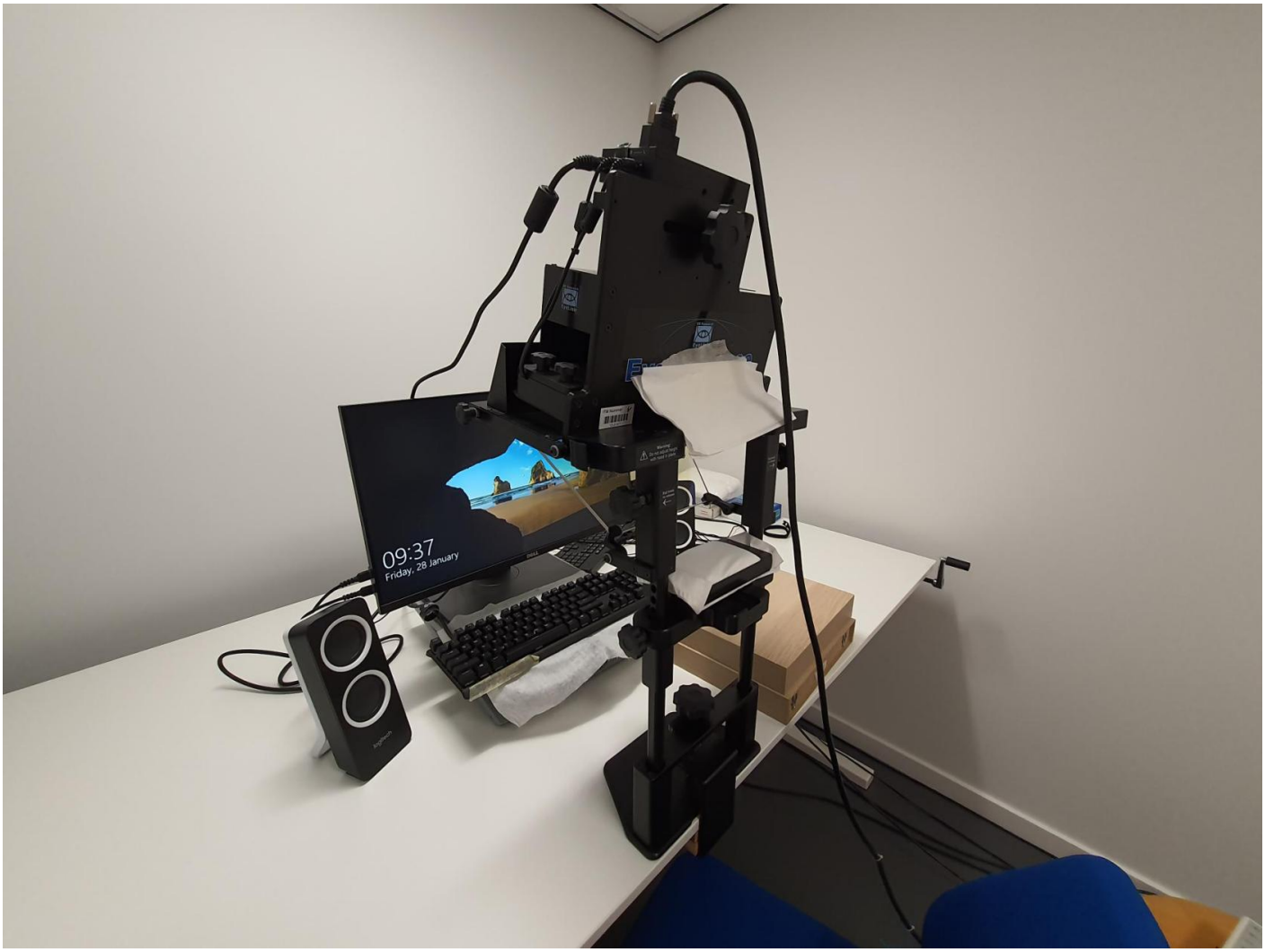
The rooms in B447 (a, b, and c) and the EyeLink cubicles (A437m/n & A437p/o) make use of:

EyeLink 1000 Plus Desktop Mount
Stabilized: Up to 2000 Hz monocular and up to 1000 Hz binocular. Remote: Up to 500 Hz monocular and binocular.

Tower EyeLink System

There is also the option to use the **Eyelink 1000 Tower Mount** system (for example for experiments including touch screen). It can go up to 1000 Hz with one eye.
Please send an email to the Lab Coordinator in advance, as this system is not a default set-up. It will need to be set-up before use.

The EyeLink 1000 Tower Mount camera: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Friday, 28 January

Eye-tracking Protocol

Here we describe the general procedure when conducting eye-tracking experiments.

Steps

1. Check that the participant is not wearing eye make-up like mascara or hard contact lenses since these will both interfere with the measurement of eye movements. If they are wearing make-up you can ask them to remove it with the make-up remover found in all the eye tracking labs.
2. Sit the participant down in the chair in front of the eye-tracker. Ask them to adjust the chair in such a way that they can put their head in the headrest comfortably. If necessary you can also make some finer adjust by using the knobs on the side of the headrest, but preferably keep this at the same height across participants.
3. Turn on both the stimulus computer and the Eyelink computer. If the Eyelink computers gets stuck during startup, turn it off and on again.
4. Start up the experiment. When using opensesame, make sure that eyelink_mode function says “tracker attached” and not dummy mode. Also check that the settings on the eye-tracking computer are set to default. Enter the camera setup in opensesame by pressing ENTER or by pressing the camera setup button on the eye- tracking computer.
5. Set up the eye tracker by aiming the camera in such a way that the participants’ eye is in the center of the image. Make sure that the other eye (the one that’s not being tracked) is not in the image. On the participant computer you can cycle through 2 different points of view by using the arrow keys. The first one shows you an overview of where the camera is aimed. The second one shows you the individual eye. If the computer doesn’t select the eye automatically you can do this manually by click the eye on the eye-tracking computer. Check if the eye is in focus and adjust the focus of the eye-tracker lens if necessary.
6. Once the eye is selected you can set the threshold by pressing A (auto threshold). Check if the entire pupil is selected. If this is not the case you can adjust the threshold manually by pressing the up and down arrows on the keyboard.
7. Calibrate the eye tracker. You can do this by pressing C and V (to validate the calibration). During this process, the participant should follow the dot with their eye. The calibration trace should roughly look like a square.
8. When the eye tracker is properly calibrated (max 1 dva difference between calibration and validation) you can start the experiment by pressing OUTPUT/RECORD button on the eye tracking computer or the Q on the participant’s computer.
9. Give the participant the instructions for the experiment and make sure that everything is clear. It is important that they keep their head stable in the headrest and try to keep their blinking to a minimum. Also tell them when to rest and blink as much as they want during the experiment, if applicable.

10. If the calibration gets messed up during the experiment for any reason you can just enter the camera setup again to recalibrate. After you've done this you can continue the experiment by pressing OUTPUT/RECORD.

Additional Information

If you decide to change any aspect of how the equipment is set up in the cubicle, this may have to be changed in the settings of the Eyelink computer.

Examples include drastically changing the height or distance of the monitor to the participant, changing the distance from the Eyelink camera to the monitor or using a different monitor than the one the lab provides. Changing any of these things can have an effect on how the Eyelink computer computes the saccade amplitude and velocity (spatial accuracy remains unaffected). If you do not use the values that are calculated by the Eyelink computer, you do not need to worry about these settings.

Small changes to the monitor positions should be okay and not affect your measurements by too much. If you do decide to change the screen configuration settings of the Eyelink pc, make sure to change the settings and monitor position back to how they were when you finish data collection.

How to change the screen config settings for Eyelink 1000 Plus systems:

1. Turn on the Eyelink pc.
2. Exit the eye tracker by pressing CTRL+ALT+Q. This takes you to the file manager.
3. Find the settings gear icon.

Afbeelding10.png
And find the "screen settings" option.

Afbeelding11.png

4. Change any of the settings according to how you have placed the equipment and click save. The different settings include screen dimensions, display resolution, eye-to-screen distance and camera-to-screen distance. See below for an example of one of the settings:

Afbeelding12.jpg

5. Now you can continue collecting data with the right settings.

If you forgot to change the settings and believe this is crucial for your data, you can recalculate saccade amplitude and velocity with a correction. Use the automatic reparsing functionality in the Eyelink Data Viewer software to do this. A dongle with a license for the software is available in the storage closet in B-449.

If you are using any of the two older Eyelinks (room B449-b or B-449c), changing the settings is a bit different. Ask the technical staff to help you with this.

Original Settings