

# SMI Eye-tracking glasses station – 25min

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## General

Eye-tracking glasses are very good for real-life studies „outside the lab“ – they’re used for example in marketing studies (people buying stuff at shops), human factors (driving a car / riding a bike / piloting a plane studies), etc. Their biggest plus is „ecological validity“. Their drawback is a low sampling rate (30-60Hz, the top ones today can do up to 120Hz). Also, at this point, usually the only possible way to analyze the data afterwards is manually frame-by-frame, which takes a lot of time.

## What to do

- Put glass instead of the paper filling in the glasses
- Connect both the devices with the Y cable, and turn them on
- Wait for the devices to connect and go to Quick settings
- Role play – one of you is the participant and the other the researcher
- The participant puts the glasses on
- The researcher: swipe to the participant setting on the screen and see if you are getting a good image, if not adjust according to the information on the screen (adding nose holds, etc)
- Researcher: Calibrate – ask the participant to look at a clear landmark, corner, etc; tap the screen to freeze it, move the cross to the landmark and tap „done“/“accept“
- Calibrate each other so that everyone tries to be the reseracher and the participant
- No experiment creation in the experiment center – glasses are used in the real world, I’ll prepare the setup for us before the next Lab

# Remote eye-tracking Red250Mobile station –25min

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## General

Remotes are good when you want to play your stimulus on a monitor and have the participants view it naturally. It's handy when you want to measure participants whose head movements would otherwise be hard to control, such as smaller children, or when you cannot have anything around the head of the participant (you are combining with EEG or other methodologies, for example). Remotes come in various sampling rates, ranging from 30Hz (EyeTribe), to about 500 Hz. The accuracy and precision of these eye-trackers is usually worse than those of the Towers, as well as the camera in them is usually not of that high quality, which hinders the gaze estimation and subsequent analysis. The use of remotes is usually not good for finer studies such as reading or neuroscience (microsaccades). Since some of the remotes are also movable (they come along with laptops and can also operate in the „stand-alone“ mode), they make for a great tool of higher data quality recording than glasses and you can also follow the participants out in the real world, e.g. classrooms with children.

## What to do

- Run iView and Experiment Center (Experiment Center needs a dongle, if you don't have a dongle at that moment, just run iView)
- In iView, look around the settings to find how to show the eye-image on the screen
- Role play: one person sits and is the participant, the other is the researcher
- Researcher tries to position the participant so that the eye-tracker can follow the eyes (follow the arrows for sitting closer/further), get a good eye image on the screen, experiment with how large the headbox is and if you can still track the eyes when the participant looks at the corners of the screen
- Researcher calibrates the participant – find the calibration settings (Calibrate now)
- Switch positions so that everyone tries to be a researcher and everyone tries to be a participant
- In Experiment Center, load an experiment – SMI Showing images and/or Reading example
- When you press „dry run“ – it will just run the experiment without calibration and validation (good for future debugging)
- When you press „record“, it will ask you to put in a number of participant, do it, and it will then record the whole experiment
- Calibrate each other so that everyone tries to be the researcher and the participant and finishes the small experiment all the way
- Creating experiment
  - o open a new project
  - o Add a 9-point calibration (values can be changed in properties of each item)
  - o Add 4-point validation
  - o Add a text field which says „Now the experiment begins!“

- Add a picture from the picture gallery, change the duration to 5000 ms
- Add another picture from the picture gallery, change the duration to 5000 ms
- Choose whichever element you wish – explore the options – inserting videos, other images, text fields, adding questions, play with it to see what it can do
- At the end, put a text field which says „end of the experiment, thank you for joining“
- Lock your experiment at the top – now you can „record“
- Save your experiment (in the settings – save) – this can be done only after you have locked your experiment, name it „EH2 *your name*“
- I will go through them later and choose the most creative ones for next week☺

# SMI Hi-Speed – Tower – 25min

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## General

Towers in general give you high quality recording tools - detailed eye image through good camera and a fine resolution of your data due to high sampling speed (500Hz – 2000 Hz). This comes at the cost of fixating the head of the participant. With towers you can measure even the fine eye movements such as microcassades. Due to high resolution it is especially well fitted for reading research, neuroscience and gaze contingent studies. Calibration is absolutely crucial. A drawback is that you need people to come down to the Lab.

## What to do

- Run iView and Experiment Center (Experiment Center needs a dongle, if you don't have a dongle at that moment, just run iView)
- Decide whether you're going to be recording binocularly or monocularly, and set gently by the handle
- Role play: one person sits and is the participant, the other is the researcher
- Researcher: in iView, select the correct eye – find it in the menu
- Play around with the camera so that you get a good eye image, auto balance is a good setting
- Researcher checks if the eye-tracker detects when the participant looks the corners of the screen, plays around until the corners are safe – stable crosshair for the pupil and CR
- Researcher calibrates the participant – find the calibration settings (Calibrate now)
- Switch positions so that everyone tries to be a researcher and everyone tries to be a participant
- Demo: In Experiment Center, load an experiment – SMI Showing images and/or Reading example
  - o When you press „dry run“ – it will just run the experiment without calibration and validation (good for future debugging of the experiment)
  - o When you press „record“, it will ask you to put in a number of participant, do it, and it will then record the whole experiment
  - o Calibrate each other so that everyone tries to be the reseracher and the participant and finishes the small experiment all the way from positioning the participant, getting a good eye image and recording the DEMO
- Creating experiment
  - o open a new project
  - o Add a 9-point calibration (values can be changed in properties of each item)
  - o Add 4-point validation
  - o Add a text field which says „Now the experiment begins!“
  - o Add a picture from the picture gallery, change the duration to 5000 ms
  - o Add another picture from the picture gallery, change the duration to 5000 ms
  - o Choose whichever element you wish – explore the options – inserting videos, other images, text fields, adding questions, play with it to see what it can do
  - o At the end, put a text field which says „end of the experiment, thank you for joining“

- Lock your experiment at the top – now you can „record“
- Save your experiment (in the settings – save) – this can be done only after you have locked your experiment, name it „EH2 *your name*“
- I will go through them later and choose the most creative ones for next week 😊