24.02.2020

Experiment Protocol

Short Protocol

Install devices

1) **Computer and Table**
   - Place computer at a suitable place and find a spot to prepare the papers for the later questionnaire and lay down pens.
   - Plug all adapters to power the electronic devices
   - Make sure enough space is free on the SSD
2) **Microphones: Zoom and Senheiser**
   1) Turn on Zoom and check batteries
   2) Turn on Senheiser and check batteries
      - Connect cables (TC + Zoom, TR+mic)
      - Check wireless connection
   3) Check if Zoom audio-recorder receives audio from Sennheiser
   4) Check audio sensitivity of the Senheiser microphone
3) **Eye-tracker**
   1) Turn on computer, start needed programs, connect USB to eye-tracker
   2) Turn on Eye-tracker and brightness device
   3) Check if data get received
4) **GoPro**
   1) Plug GoPro to the USB power-supply
   2) Check if SD card has still enough storage (change if necessary)
   3) Put on the tripod and check camera angle

Experiment

1) **Greeting**
   1) Greet participants and explain the experiment*
   2) Hand out the consent forms and note down experiment No.
2) **Prepare**
   1) Hand out devices (mic and eye-tracker) including the belt to put on
   2) Clip mic to the shirt and put all dongles into the belt. Clip ET-cable to the back
   3) Start recording all devices: GoPro, Zoom, PupleLab, Brightness-Dongle
3) **Start and during the experiment**
   1) Note down the experiment No. and current time: hold into camera for starting
   2) Check if all devices record properly, note down any problems if problem occurs
   3) Take notes for observation

Post Experiment

1) Stop recording all devices: GoPro, Zoom, PupleLab, Brightness
2) Take off gear of the participants (mic, belt and eye-tracker)
3) Start questionnaire
   1) Write down No. and mark role
   2) Hand out the questionnaire with provided pens and inks
   3) Provide chocolate to farewell
4) Collect all papers and archive them according to experiment No.
5) Save all data from all electronic devices to external SSD
6) Prepare for next experiment

Explanation of the experiment

Today you have been invited to **participate in a research project** on the use of eye-tracking in field studies. All participants will be asked to sail in the waters of the **Bjørøya island (Bergen)** and follow a predefined course at the **average speed of 30 knots.** This course will be a **standard procedures**. The sailing procedure itself will take around **40 minutes** and during the sailing we will **record audio and video** of the exercise as well as eye tracking. It is important to note that we are testing a new technology and not your individual performance, your records/grades will not be effected by the results of the experiment.

After the experiment we will ask you to fill in a questionnaire and ask a few follow up questions, there will be also time for you to ask us questions if you would like.

Check List

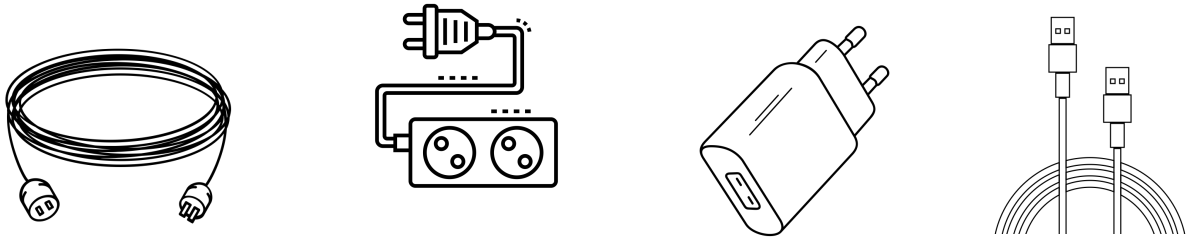
Consent forms
Questionnaires
Folders
Paper and pens
Chocolate

1x Zoom Audiorecorder
2x SD-card 32GB
1x GoPro (+ USB, Wall-Plug)
1x Tripod
2x Senheiser Audio-transmitter (+ audio cables and Mic)
1x Pack Spare Batteries
2x Extension cable
2x Extension USB cord
2x SSD + Reader
2x Notebook
1x USB-C adapter
2x Eye-tracker
1x Brightness Add-on
6x paper clips
1x Calibration Card Eye-tracker

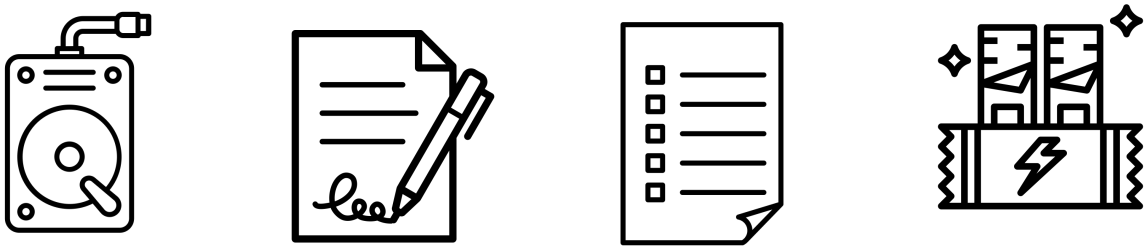
Preparation

Find a place

1) Find a place or table for the **notebooks** and a **power** source. Place **batteries** in a good reachable place.



2) Plug in necessary **power cords** for all needed **chargers**.

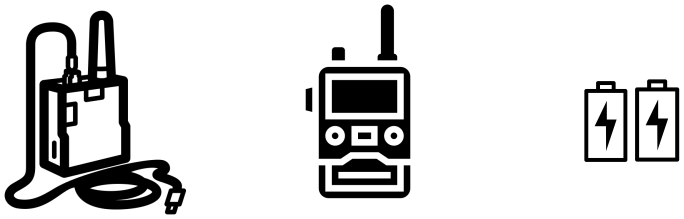


3) Place (or even connect) **SSD Bay, Consent forms, questionnaire, pencils, snacks**

Install Microphone

1) Get the **Zoom Recorder (1x)** and **turn it on**. Check if **batteries** are charged.

2 x



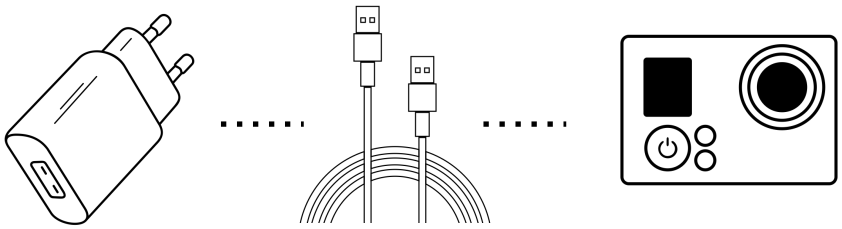
2) Get the **Senheiser Audio-Transmitters (2x)**. They come in pairs (transmitter and transceiver). **Turn on and check the batteries.** And check if TR and TC are **connected**.

2 x

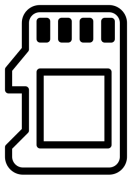
3) Connect the **transceivers + Zoom** audio-recorder and **transmitter + microphones**.

4) Check if Zoom **receives audio** in both Channels (Stereo) and check **sensitivity** if needed. Zoom should be also set to save in **.mp3**

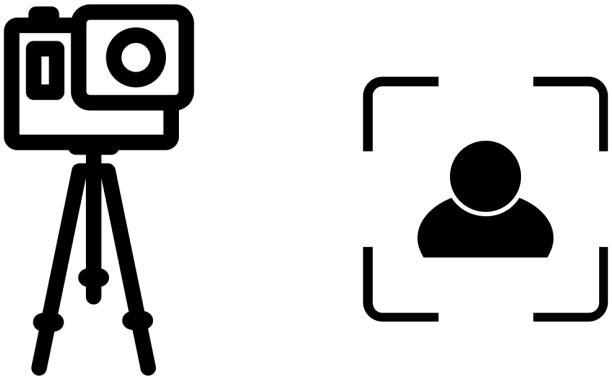
Install GoPro



1) Plug in **USB to power** it external. And **turn it on**.



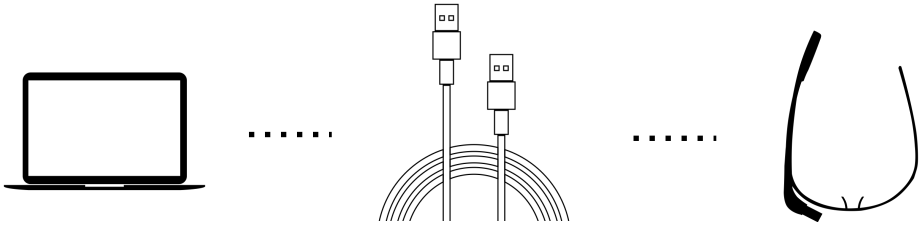
2) Check SD Card **free space** (Formate if needed before every experiment)



3) **Mount** on the tripod and check if **camera angle** is ok.

Install Eye-tracker (2x)

1) Turn on computer and **start programs (Arduino and PupilLabs)**



2) Connect **USB to eye-tracker** and computer and check if devices are recognized

3) Turn on the **pupil dilation/ brightness add-on-tool**. Start script if not done.

4) **Prepare** for handing over, put paperclips to the cables and
5) Make again sure**, computer has enough free storage** on internal SSD

Greeting participants

1) Explain Experiment

Today you have been invited to **participate in a research project** on the use of eye-tracking in field studies. All participants will be asked to sail in the waters of the **Bjørøya island (Bergen)** and follow a predefined course at the **average speed of 30 knots.** This course will be a **standard procedures**. The sailing procedure itself will take around **40 minutes** and during the sailing we will **record audio and video** of the exercise as well as eye tracking. It is important to note that we are testing a new technology and not your individual performance, your records/grades will not be effected by the results of the experiment.

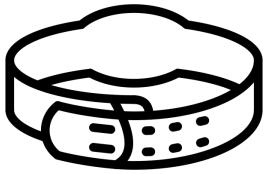
After the experiment we will ask you to fill in a questionnaire and ask a few follow up questions, there will be also time for you to ask us questions if you would like.

2) Hand out the consent forms and pen

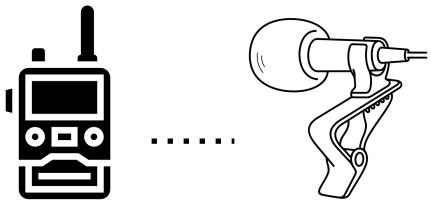
3) In the meanwhile prepare all papers and write down following experiment number

Prepare Participants

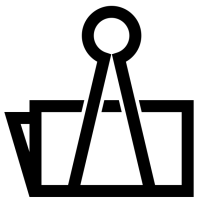
1) Hand out the **belt** and let them put it on



2) Hand out the **microphones with transmitter** and fix mic to the shirt. put transceiver into the belt - make sure its turned on also check the Zoom if audio is received.



3) Hand out the **Eye-tracker** (with the Add-On) and if necessary put the extension from the add-on into the belt. Let cables run behind the participant and clip cables gently to the shirt.

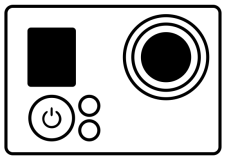


4) Check if both Participants have **enough space** to freely navigate

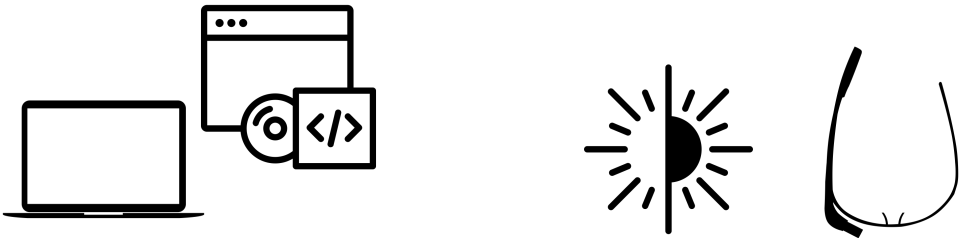
Start Experiment

3) **Calibration** of the Eye-tracker with the Calibration-Sticks. One will hold calibration card to the eye-tracker.

2) Start **recording the GoPro** by clicking on the record button and check if time is running



3) Start recording the **Eye-tracke**r and the **Brightness** measurement

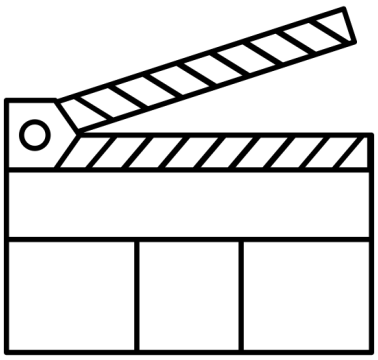


4) Start **recording audio**, press **double** on Rec.- button of the Zoom audio recorder

2 x press REC.

5) Make sure **audio streams, video(GoPro) streams**, **brightness streams**, **Eye-tracker** streams

6) Note down the crucial experiment data (**time-stamp** and **experiment number**), note down any save-data if possible. Start experiment with telling time and number into camera/ microphones



During the experiment

1) Check if program is not crashing and recording

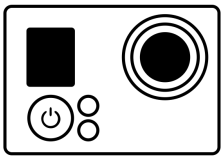
2) Note any changes (check other protocols paper)

3) Take notes of the experiment for later questions (observation)

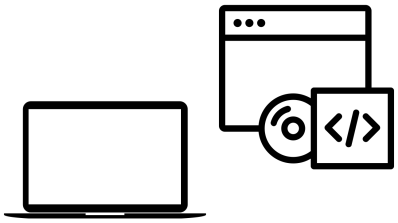
4) Make sure Navigator and Assistant have free space to move without distraction

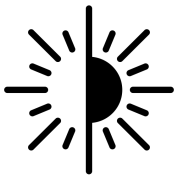
Post Experiment

Stop electronics

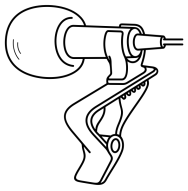


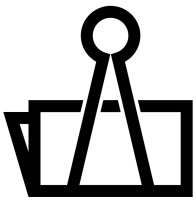
1) **Stop recording** on
    1) Eye-tracker
    2) Pupil Brightness
    3) Gopro
    4) Zoom

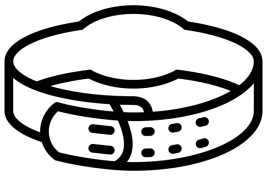




2) **Unclip** eye trackers and microphones and **take the gear of** the participants, incl. belt.





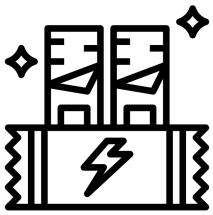


Start Questionnaire

1) Write down experiment No. and fill in checkbox for “Assistant” and “Navigator “

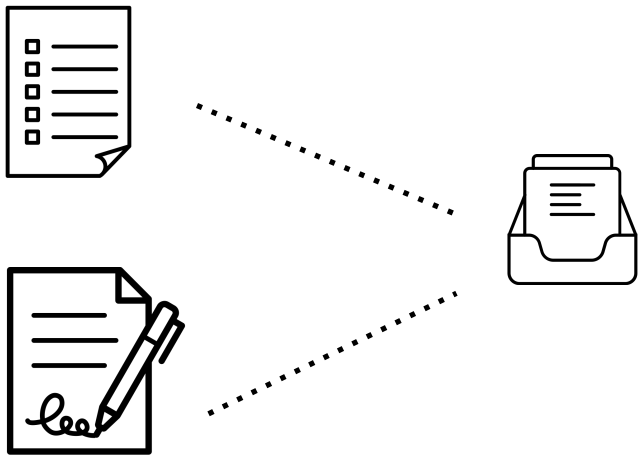
2) Hand out the map questionnaire and give participants pens and paper. Stay there to answer possible question

3) Hand out snack and let participants leave simulator

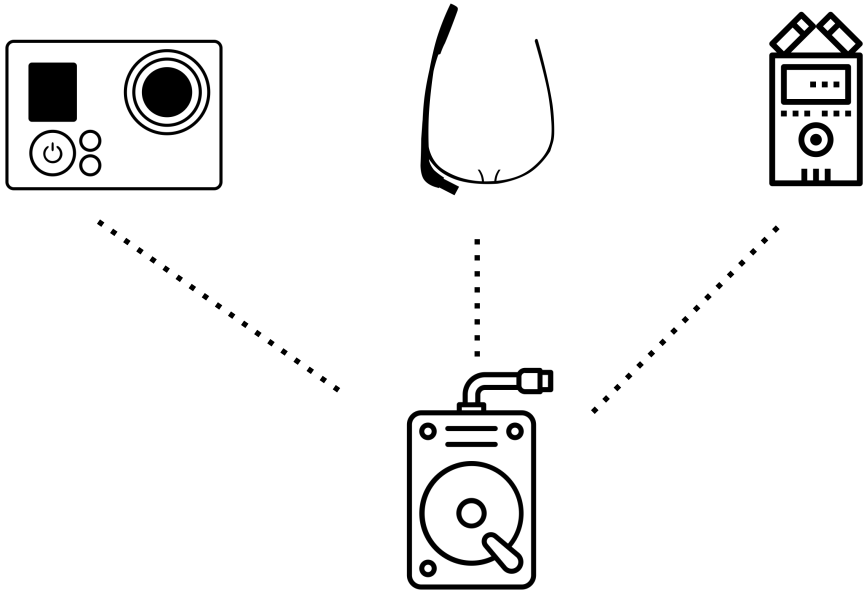


Prepare equipment for the next experiment

1) Put the map-questionnaire including all other notes together away to **archive** for each experiment.



2) **Save data** from GoPro and Zoom to computer and format to free space



2) **Organize all electronic devices back and take out new documents.**