

**UNIVERSITY
OF TWENTE.**



WEBCAM EYE TRACKING

USER DOCUMENTATION

**THE
BMS
LAB**
Tech4People

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Welcome to the Webcam Eye Tracking documentation!

By looking at the general overview and the directions and advice when using Webcam Eye Tracking, this documentation aims to help you as a researcher or student navigate better through the tool. Based on this, the documentation is segmented into 2 main parts: (1) introduction and (2) directions and advice. The second part consists of 4 sections which are numbered in a logical order. So, please make sure to follow the modules in their numbered order.

At the end of this documentation, you should be able to:

1. Know how to create a Webcam Eye Tracking experiment
2. Know how to invite participants
3. Know how to download the results

If you have any questions, you can reach us via bmslab@utwente.nl.

1. Introduction

In this chapter, we will introduce you to the general overview and objective of the Webcam Eye Tracking tool.

1.1 Tool overview

Webcam Eye Tracking is a software created by The BMS Lab. Researchers and students at the University of Twente can create an explorative experiment in order to track the eyes of their participant through a webcam. Within the Webcam Eye Tracking experiment, the researcher or student can create several trials and analyze the results of all participants through a gaze plot and heat map plot.

At the moment, Webcam Eye Tracking is unsuitable for research because the data is not valid and reliable enough for data collection. **So, it can only be used for educational purposes (i.e., explorative experiment).**

1.2 Tool objective

The Webcam Eye Tracking's objective is to:

- Enable you as the researcher or student to track the eye gaze of participants while they gaze at images displayed in a series of trials.
- Enable researchers and students to exploratively try to see if there is a trend.
- Enable researchers and students to understand the research methodologies behind Webcam Eye Tracking.


2. Directions and advice

This chapter will look into the directions and advice of creating a Webcam Eye Tracking experiment, inviting participants, and downloading the results obtained through the Webcam Eye Tracking tool.

2.1 Creating an Experiment

2.1.1. Opening Webcam Eye Tracking

1. Go to <https://apps.bmslab.utwente.nl/webeyetrack>
2. Click on the blue button called “UT sign in”.
3. Login with your UT account.

- i.  *The website’s use is **exclusively** for UT staff and students.*

You have now successfully logged in.

2.1.2 Filling in the experiment information

1. Once you have logged in, you will see the Webcam Eye Tracking’s dashboard.
2. On the Webcam Eye tracking’s dashboard, click on the green “NEW” button next to “Experiment”.
3. On the right side, under the blue design tab, enter a name for your experiment.
4. Under “Experiment information”, fill in the information you want the participant to see before the experiment starts.
5. Under “Exit information”, fill in the information you want the participant to see at the end of the experiment.


You have now filled in the experiment information.


2.1.3 Creating Trials

1. To create trials within your experiment, click on the green “NEW” button underneath “Trials” on the bottom of your screen.
2. Then, link the image you want to show for each trial by clicking on the image in the image list and then click on the trial image holder.
3. Next to the trial image within the number box, you can adjust the number of seconds that the image will be displayed to the participant.



4. You can arrange the order of the trials by clicking on the up or down arrow buttons.
5. Or delete a specific trial by clicking on the trash bin symbol next to the trial.

You have now created the trials within an experiment


 You can test the experiment by clicking on the “TEST” button at the top of the screen.

 The experiment and trials should be edited or deleted before any data is collected from participants. Because once data has been collected, the collected data will be linked to the configuration of the experiment.


2.2 Uploading images

1. In order to add images to trials during the creation of your experiments, you need to upload images to the image list.
2. On the right side of your screen, underneath “Upload image”, click on the attachment symbol or on “choose a file”.
 - i.  Supported files are png. and jpg.
 - ii.  You can only choose **one file at a time**.
3. Then, click on the submit button.

Your image has now been uploaded to the image list.

- i.  Your uploaded images can be used for your other experiments too.

2.3 Inviting Dummy Participants

1. On the Webcam Eye tracking’s dashboard, underneath “experiment link”, you will see the link to your experiment.
2. Copy and paste your experiment link into emails to invite dummy participants.
3. Each dummy participant will need a unique id for data collection.
 - i.  Within the link, replace the “participantid” with a unique participant ID

For example, if the link is:

<https://apps.bmslab.utwente.nl/wwwapps/webeyetrack/etparti>

[cipant.html?exp_id=602e36593ad493547c35f257&participant=participantid](https://apps.bmslab.utwente.nl/wwwapps/webeyetrack/etparticipant.html?exp_id=602e36593ad493547c35f257&participant=participantid)

You should change it for each participant with a specific and unique ID by changing "participantid" to "p1"

https://apps.bmslab.utwente.nl/wwwapps/webeyetrack/etparticipant.html?exp_id=602e36593ad493547c35f257&participant=p1

4. The dummy participant needs to click on the shared link to start the experiment.
5. Share the Participant Experiment Instructions (Figure 1) with **dummy participants**.

After this, the calibration phase will start.

Participant Experiment Instructions





1. The participant will see instructions on the screen.
2. The participant will need to allow access to their camera.
 - i.  Firefox seems to select the camera for the experiment **better than other browsers**.
3. Participant should wait for the camera to open and mark their face.
 - i. If participants are wearing glasses, they should remove their glasses.
4. Participant should position their face 20 to 30 cm from the screen, take a comfortable position, and have their face within the square in the camera.
 - i. Then, the participant should press the green "Calibrate" button.
5. After this, the participant should follow the green dots with their eyes.
 - i.  *If after the calibration the system gets stuck, the participant should **refresh** and **restart** the calibration.*
6. Right after, the participant will start the experiment.

Figure 1. Participant Experiment Instructions

2.4 Downloading Results

1. On the Webcam Eye tracking's dashboard, click on the "results" tab.

2. Select the trial you want to see.
3. To see the gaze plot of all the participants for the selected trial, click on the eye symbol next to the image name.
4. To see the heatmap plot of all the participants for the selected trial, click on the thermometer symbol.
5. To download the data of all the trials, click on the cloud with the downward arrow symbol next to "trials".
 - i.  *The trials will automatically be downloaded as a CSV file and will show the individual data of all participants for all the trials for further processing.*
 - ii.  *The eye, thermometer, and the cloud with the downward arrow button are only visible once data has been collected from participants.*

You have now downloaded the Webcam Eye Tracking's results.