by eyeV

for iPad
- User manual -

Contents

Skyle for iPad

Thank you for choosing Skyle for iPad. Skyle for iPad is an eye tracker designed for iPad Pro's of the 3rd to 5th generation. With the Skyle software and Assistive Touch from Apple, the complete iPad Pro can be controlled contactless. If you want to integrate Skyle into your own application, you are free to use the public API. You can find it at github.com/eyev-de.

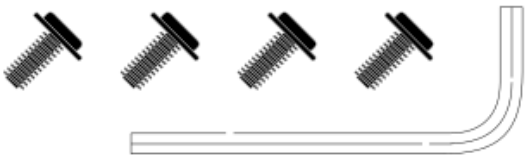
What is in the box

1x Skyle attached to iPad Case

1x USB PD Hub

6x housing screws with Torx key

4x screws for VESA-Mount with Torx key



1x USB-C to USB-A Cable

Technical Specifications

Supply voltage	5V DC
Current consumption	0.9 A
Sampling rate	18 Hz (max. 30Hz)
Accuracy	1° - 2°
Eye tracking mode	Binocular
Operating distance	45 – 65cm
Dimensions	282.5 x 42,5 x 39mm (l*w*h)
Device Compatibility	iPad Pro 12.9" 3rd to 5th Generation
Mounting possibilities	VESA 75 Standard

eyeV GmbH reserves the right to make modifications, improvements, corrections, or other changes without further notice to this document and any product described herein.

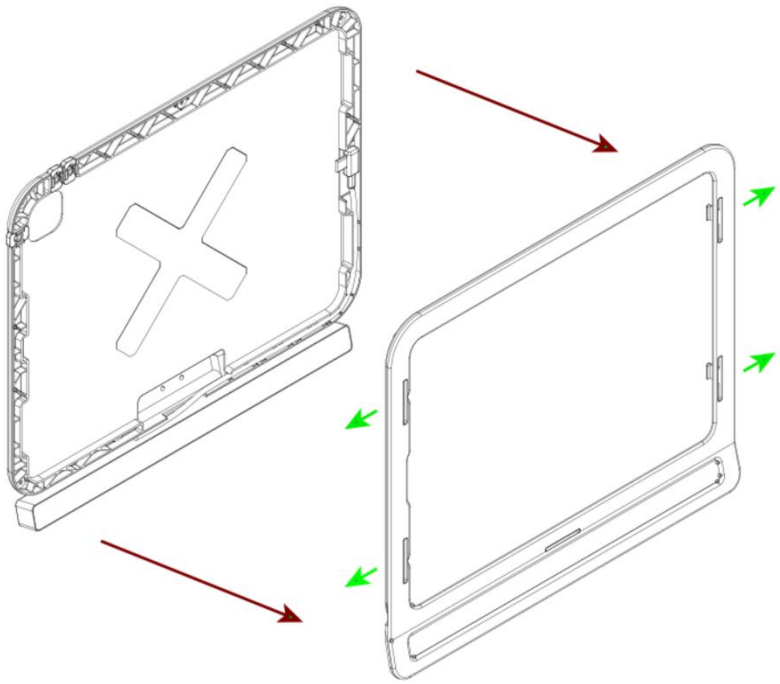
eyeV GmbH products are specifically not authorized for use as critical components in life support devices or applications, where the use can be reasonably expected to result in significant injury to the user.

Getting started

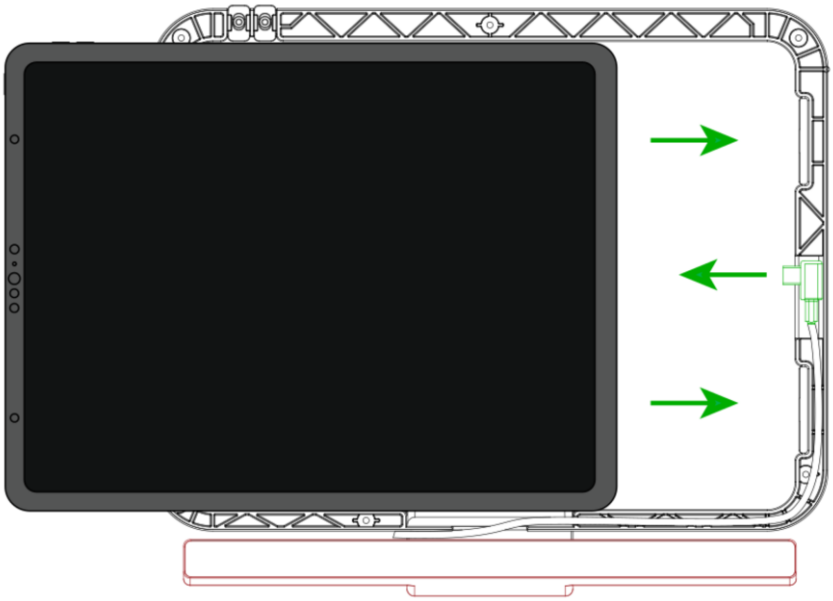
This chapter describes the basic setup of the eye control and the installation of the software

Assembly

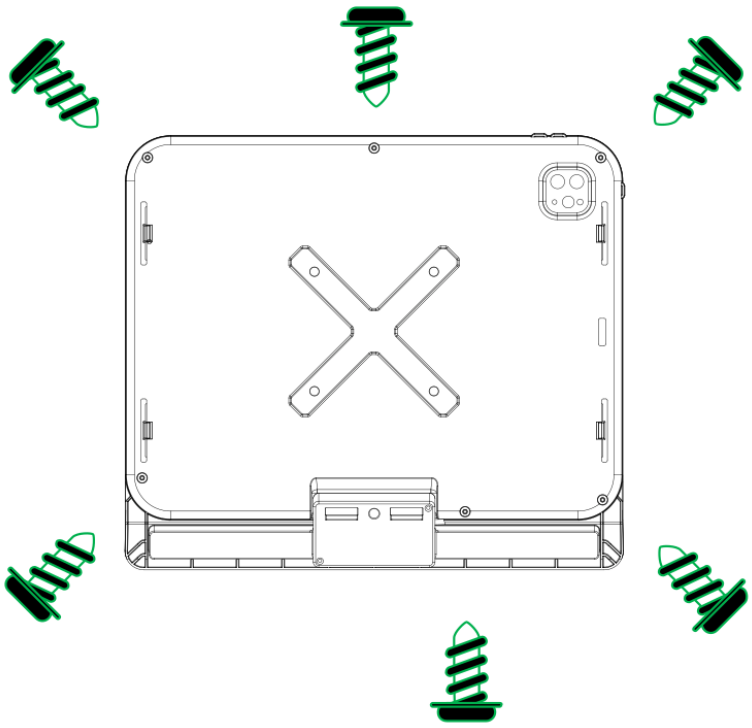
1. Skyle is already attached to the housing on delivery. A cable that leads to the iPad is also attached to the case. The housing consists of two parts that are supplied already assembled. Please carefully loosen the green marked snaps and remove the front in the red marked direction.



2. Place the iPad into the back pane and connect the USB-C cable to your iPad.



3. Place the front panel on the iPad. Make sure the clips snap into place, flip the case and apply the screws.



Connect the eye tracker (direct connection)

Skyle can be connected to the iPad **with or without** a hub. Skyle is already connected with the cable leading into the case upon delivery. This ensures **a direct** connection to the iPad.

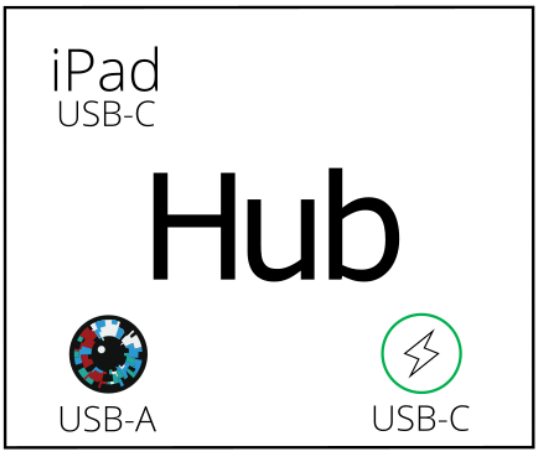
The cable that comes out of the case can also be used **to charge** the iPad without unscrewing the case. Of course, it can also be used to connect other peripherals to the iPad, such as a USB stick.

Connect the eye tracker (using a hub connection)

If you want to use the included hub, the cables have to be arranged differently. The included hub has 2 USB-C ports. All important ports are marked. One USB-C port is for the USB-C cable coming out of the case, which is connected to the iPad. The other USB-C port can be used for simultaneous charging.

The included USB-A to USB-C cable is connected to the hub with the USB-A end. The USB-C end is connected to Skyle.

The hub can now be attached to the case with the already attached adhesive velcro.



Skyle X

The software can be used to calibrate the controller, create profiles, or customize the appearance. The with Assistive you are able to control the iPad’s mouse cursor without physical contact.

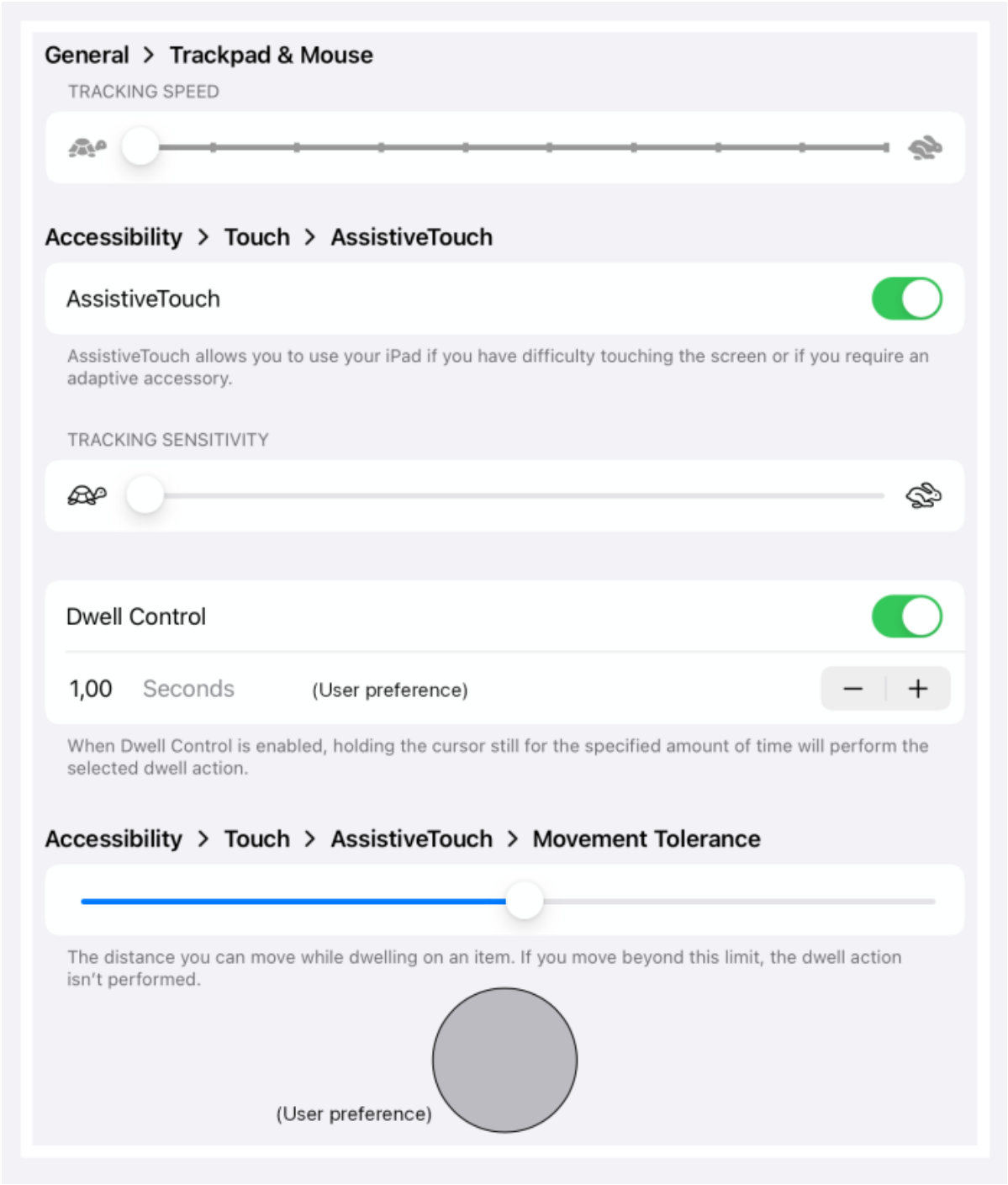
Installation

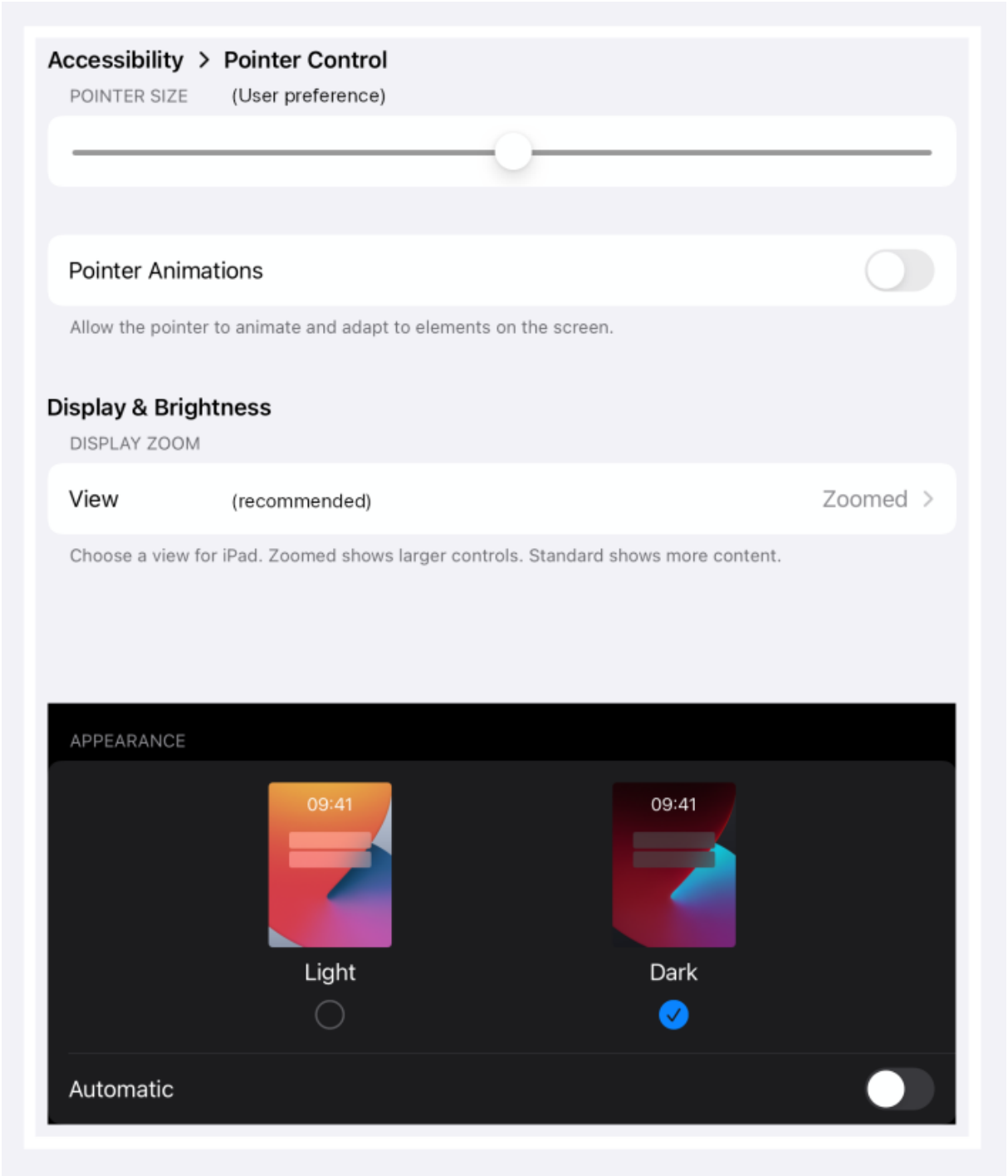
The Skyle Software for iPad can be downloaded here:
eyeV.de/iosapp

Download and install the "Skyle X" application on your iPad from the link above or the QR code. This app is required for the user-specific calibration of the eye tracker. The app also offers the possibility to display the camera feed of the eye control to carry out an optimal positioning. The details of the software are described in the following chapters.

iPadOS Setup

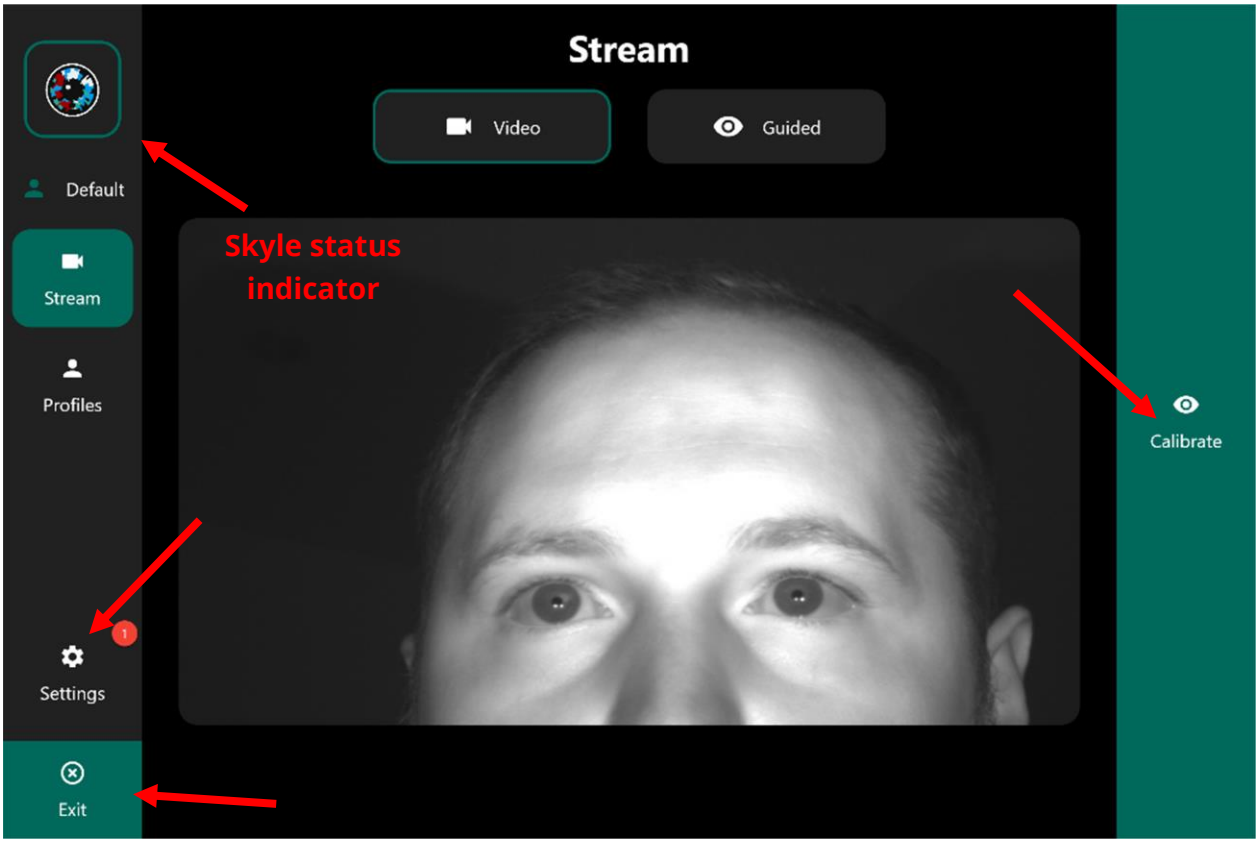
Please Note: You can only enter the menu “Trackpad & Mouse” only if the skyle is connected



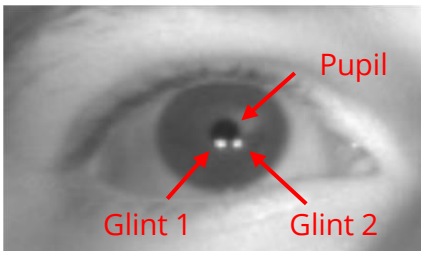

Accessibility > Pointer Control
POINTER SIZE (User preference)
Pointer Animations
Allow the pointer to animate and adapt to elements on the screen.
Display & Brightness
DISPLAY ZOOM
View (recommended) Zoomed
Choose a view for iPad. Zoomed shows larger controls. Standard shows more content.
APPEARANCE
09:41
Light
09:41
Dark
Automatic

Skyle X App

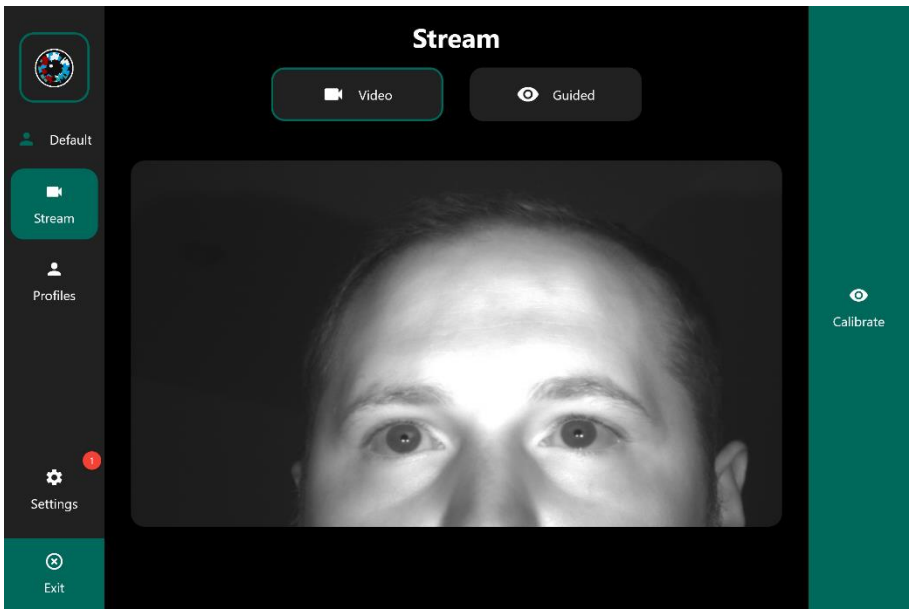
All important settings can be made here, and the stream can be viewed for correct positioning. All settings are explained in more detail in the following sections. Via "Exit" you can leave the app to control your iPad.



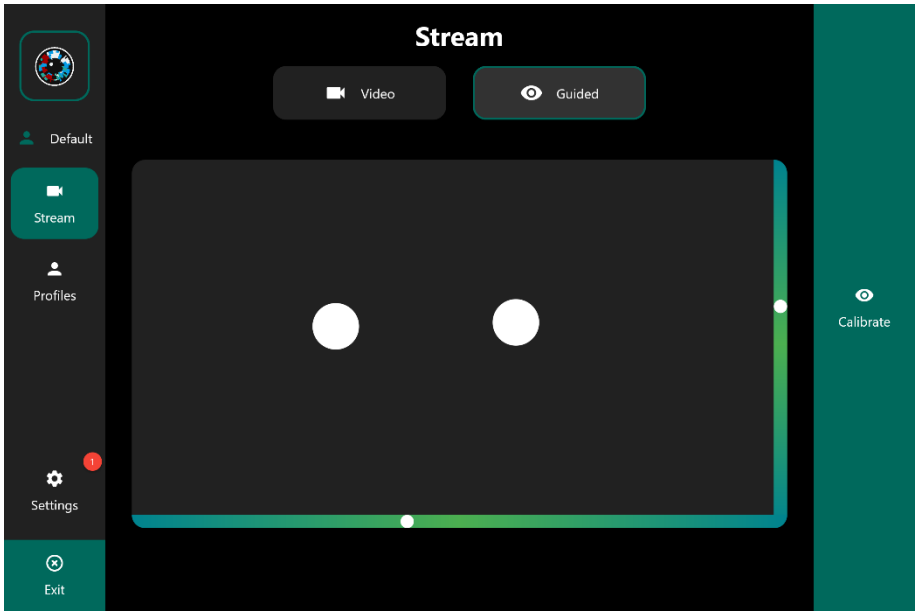
Positioning



If the eye tracker is ready for use, eye movements are converted into mouse positions. If not, make sure that the user is positioned correctly. This means that the built-in camera must recognize your eyes completely. To do this, open the settings that you can access via the Skyle Mouse (eye icon). The pupil and the two white reflections in the eye must be clearly visible and sharp. The optimal position is when the user is positioned parallel to the screen surface and the eyes are centered on the video stream. The recommended distance is ~60cm.

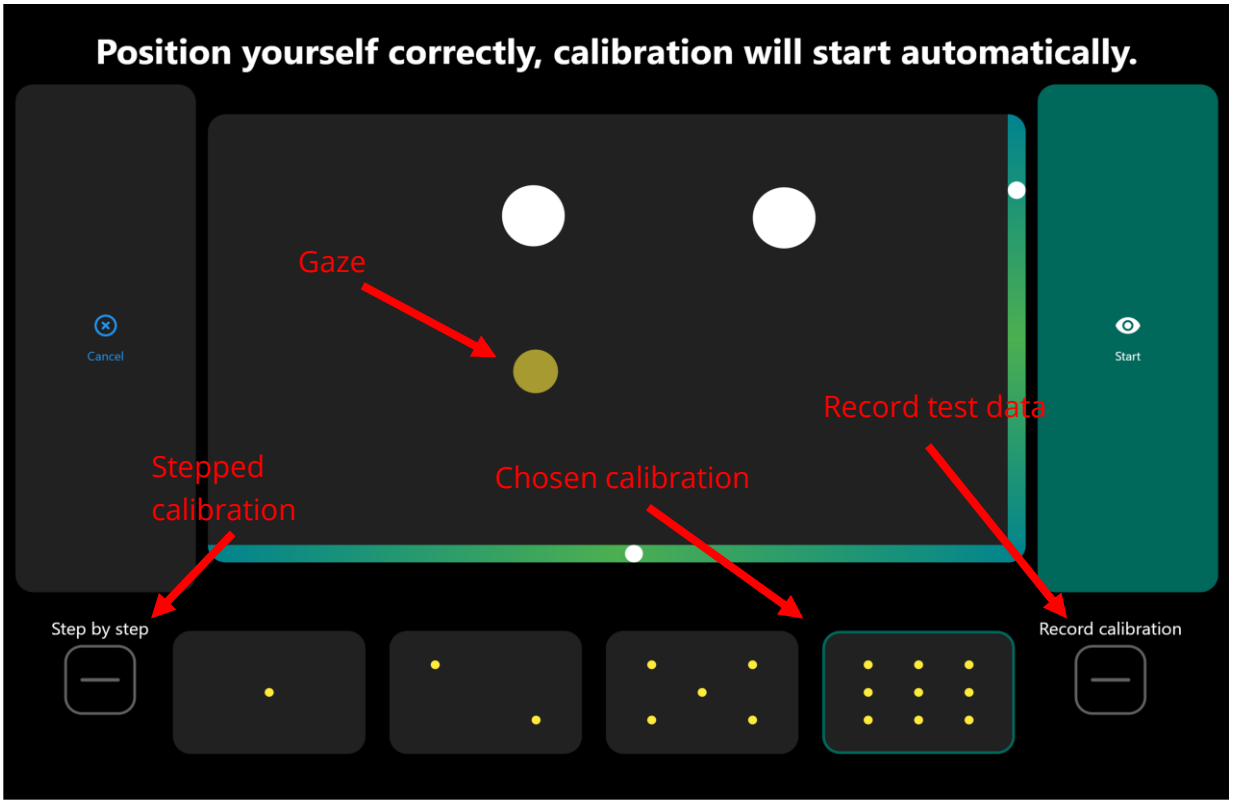


The video stream is turned on by default, but it can also be turned off or toggled so that only a simplified display with assistance is shown.



Calibration

Each eye is unique and must therefore be calibrated to control the tablet. The calibration can be started directly on the start page of the app

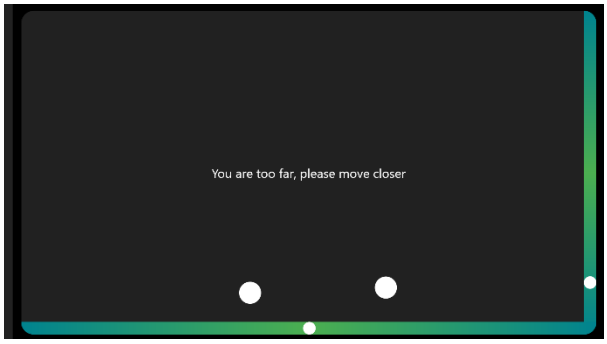


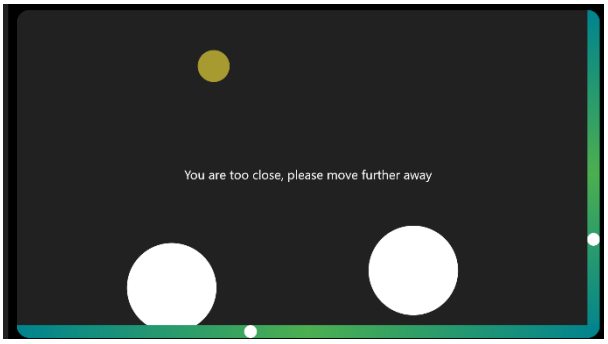
Before a calibration is started, it is possible to select how many points are to be used for the calibration. A higher number of points takes longer, but usually achieves more accurate results.

Positioning

Please make sure that the positioning is correct. If you are too close or too far away, this will be displayed. The bar on the right and bottom indicate whether the user is centered both horizontally and vertically.

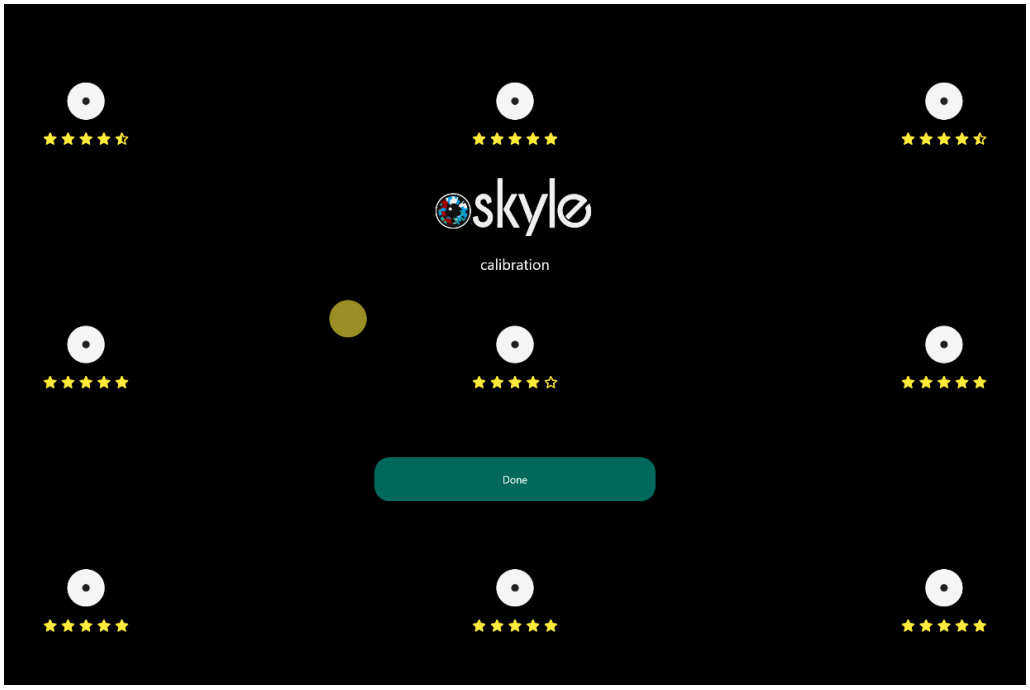
Calibration starts automatically as soon as a correct position is kept for a certain time.



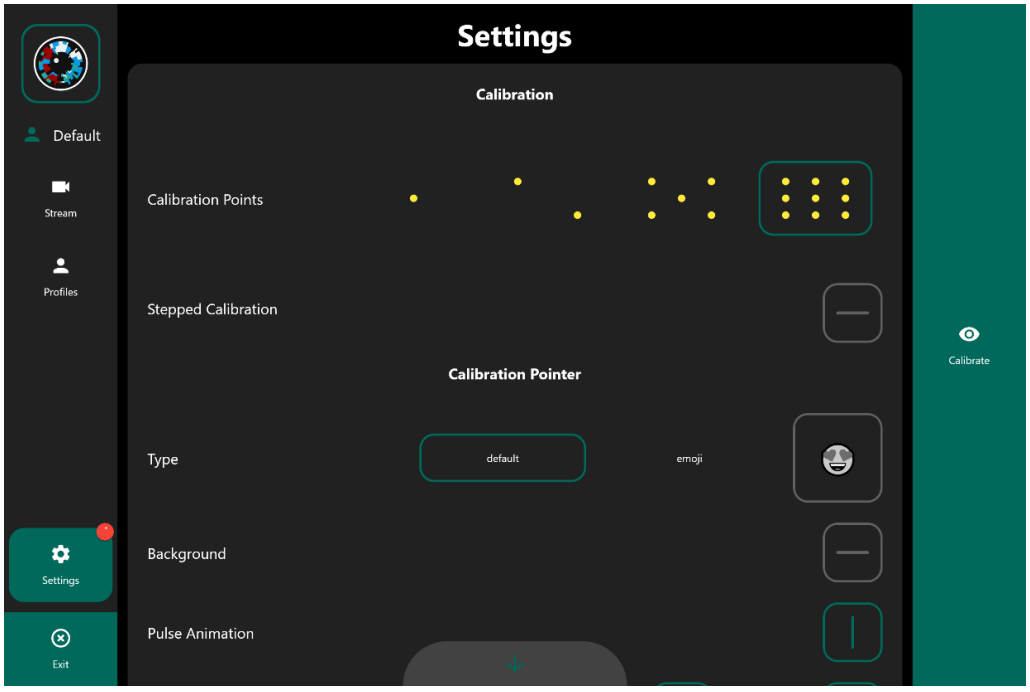


Once this is done, the cursor jumps to 1-9 different positions which the user must focus on. Please focus the center of the circle. The appearance of the cursor can also be customized in the app settings.

Once the calibration is finished, these points are displayed on the screen. Please check in this step if the accuracy is satisfactory or repeat the calibration. When nothing is detected, the calibration will end after a timeout of 100 seconds and uses the previous calibration profile.



In the app settings (Settings -> General) you can switch the standard calibration method between a 1-, 2-, 5- and 9-point calibration. Depending on the calibration, this may result in a loss of quality.



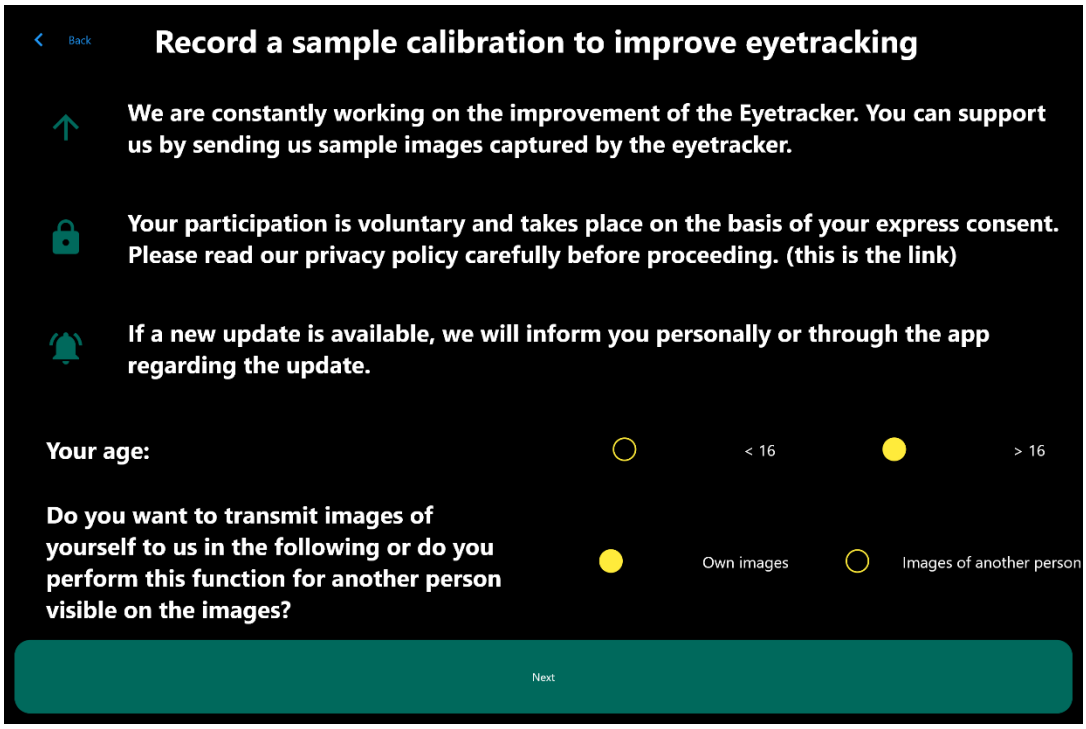
Additional features of calibration.

Step by Step Calibration

The calibration can also be done step by step, for example when an external push button, touch gestures or a mouse are connected or executed on the PC. To do this you can activate this option in this step.

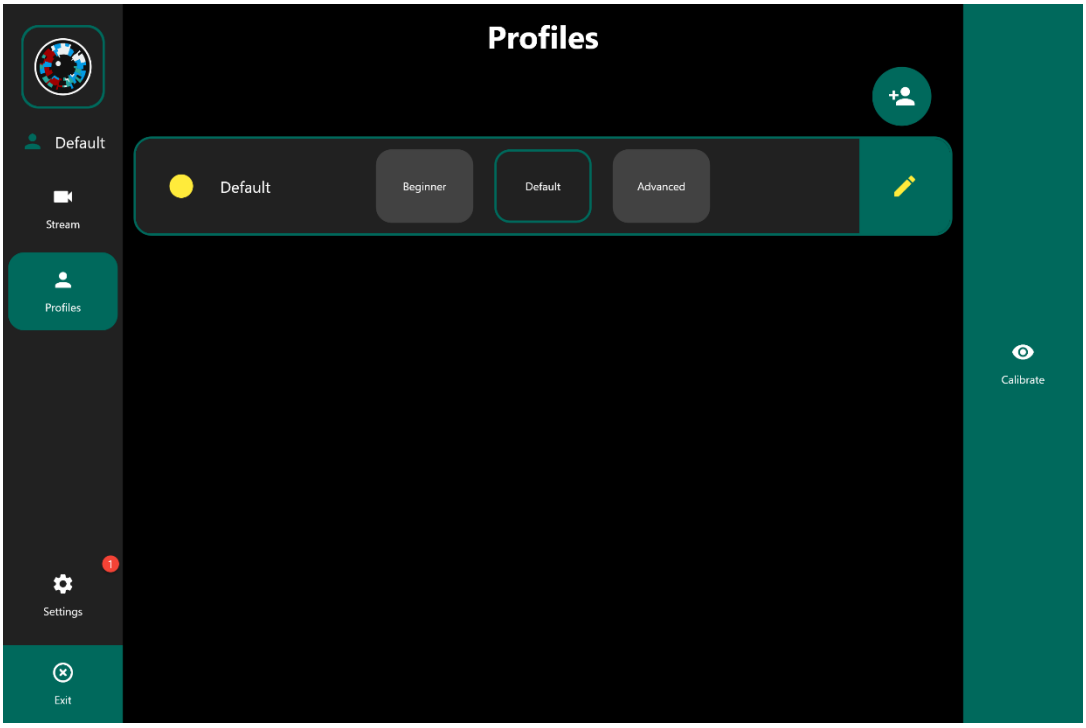
Help to improve the eye tracking algorithm

If "Record calibration" is activated, test data is uploaded after completion of a calibration. These are used to improve the eye tracker.

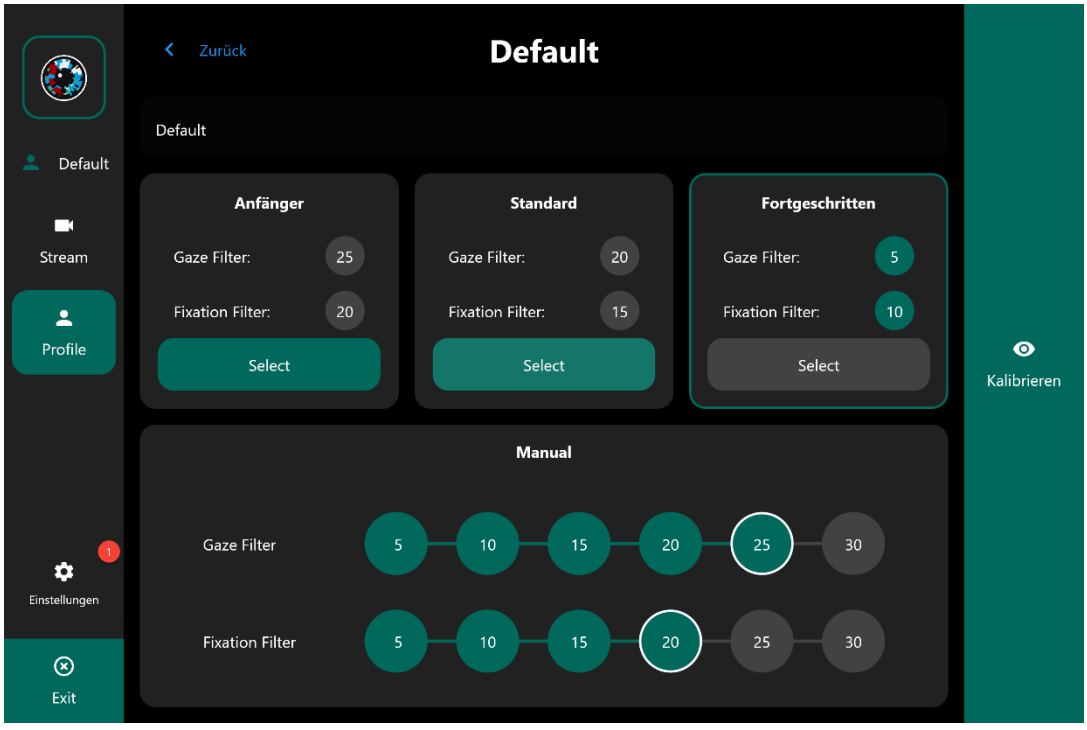


Profiles

On the app's home screen, you have direct access to your profiles. Profiles can not only be used to adjust the filter settings and sensitivity, but calibrations are also stored in the respective profiles.



The fixation filter describes the filtering when a fixation takes place and when such a fixation is aborted. The gaze filter, on the other hand, describes the general filtering of gaze data.



Gaze Selection

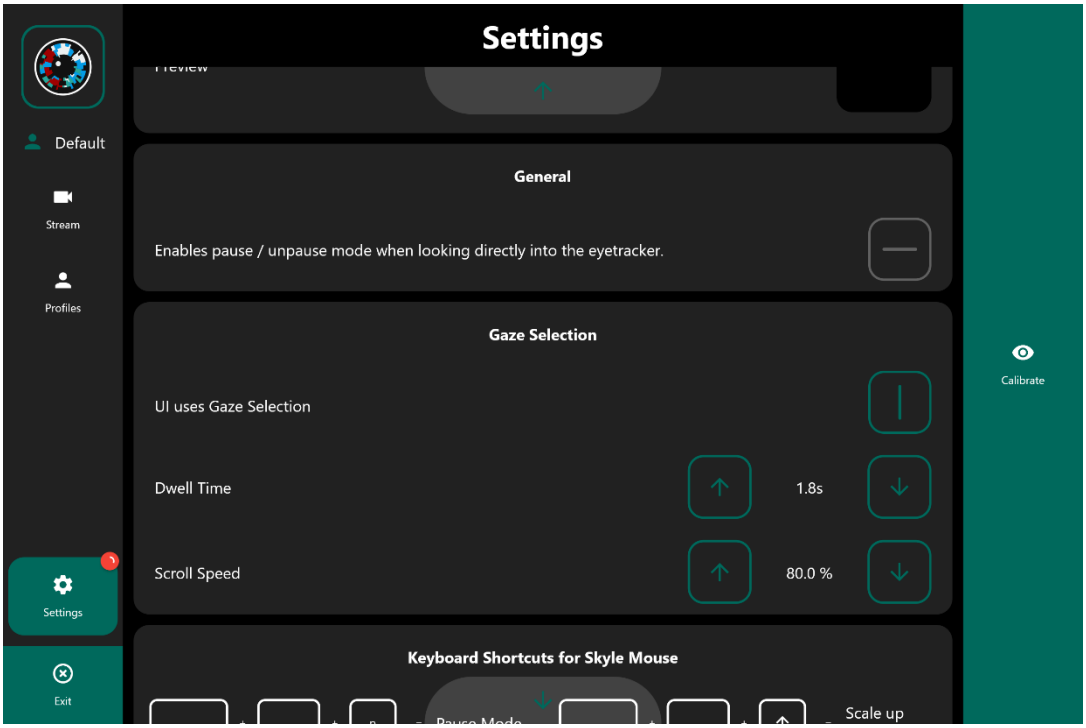
These settings affect the behaviour of the dwell control.

UI uses Gaze Selection

„UI uses Gaze Selection“ setting enables or disables the use of a dwell control. This feature cannot be disabled by dwell and only if no eyes are detected.

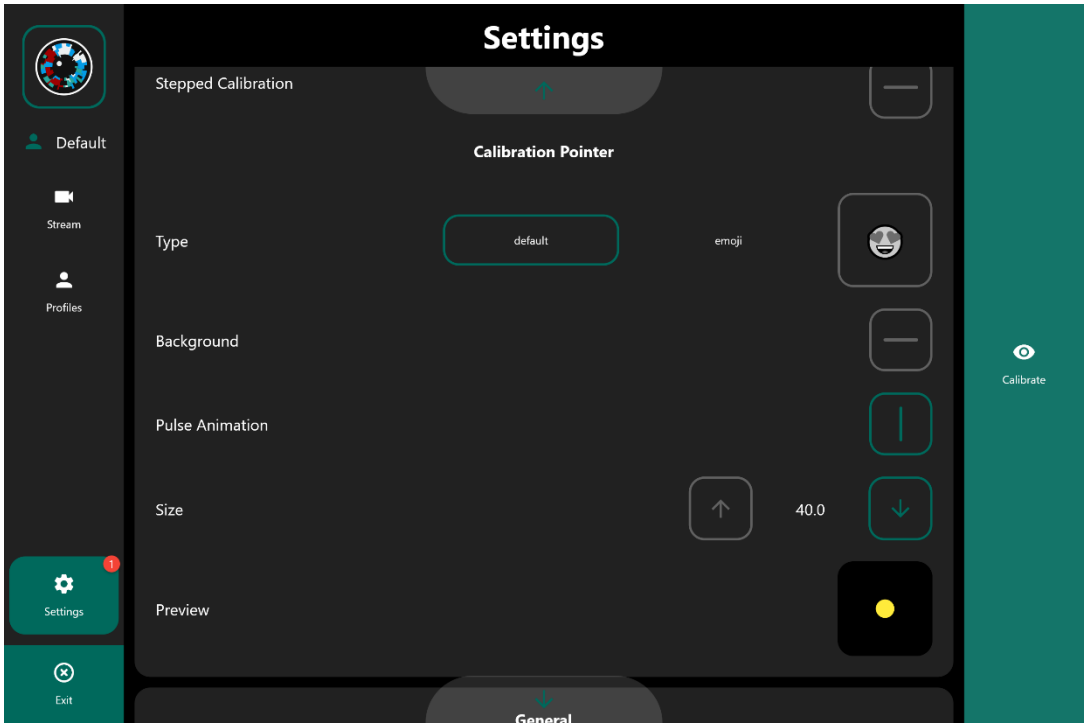
Dwell time and Scroll Speed

The dwell time determines the time until an action is executed. The scroll speed determines the speed of the scrolling.



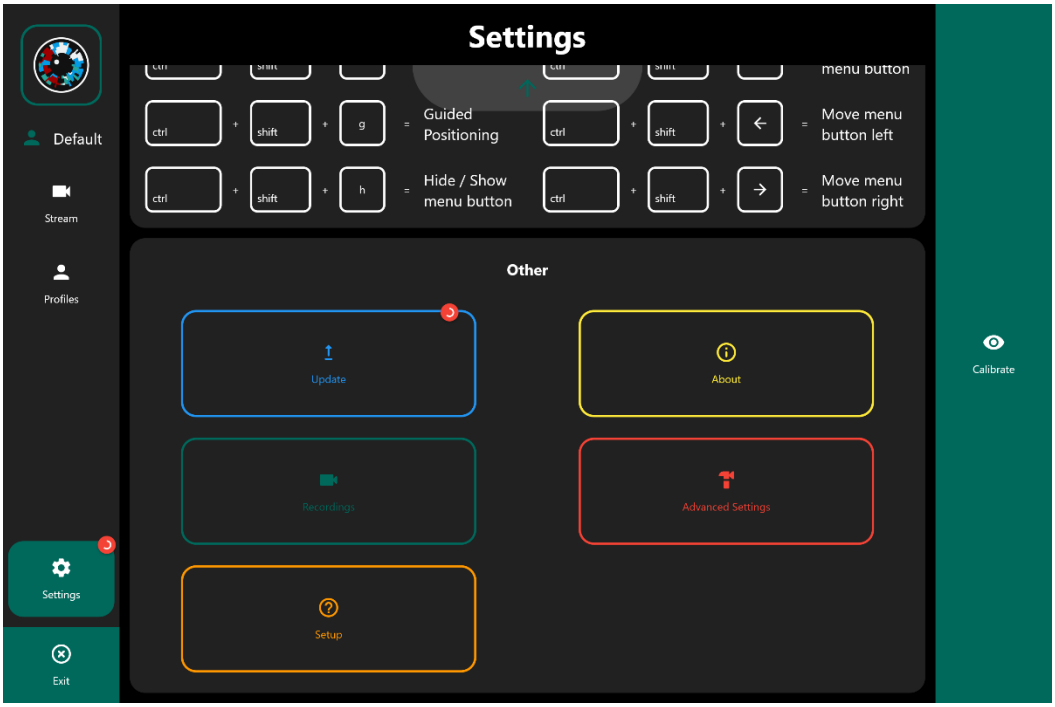
Calibration Pointer

The animation pointer during a calibration can also be adjusted to the user's needs. All changes are visible in the preview.



Update

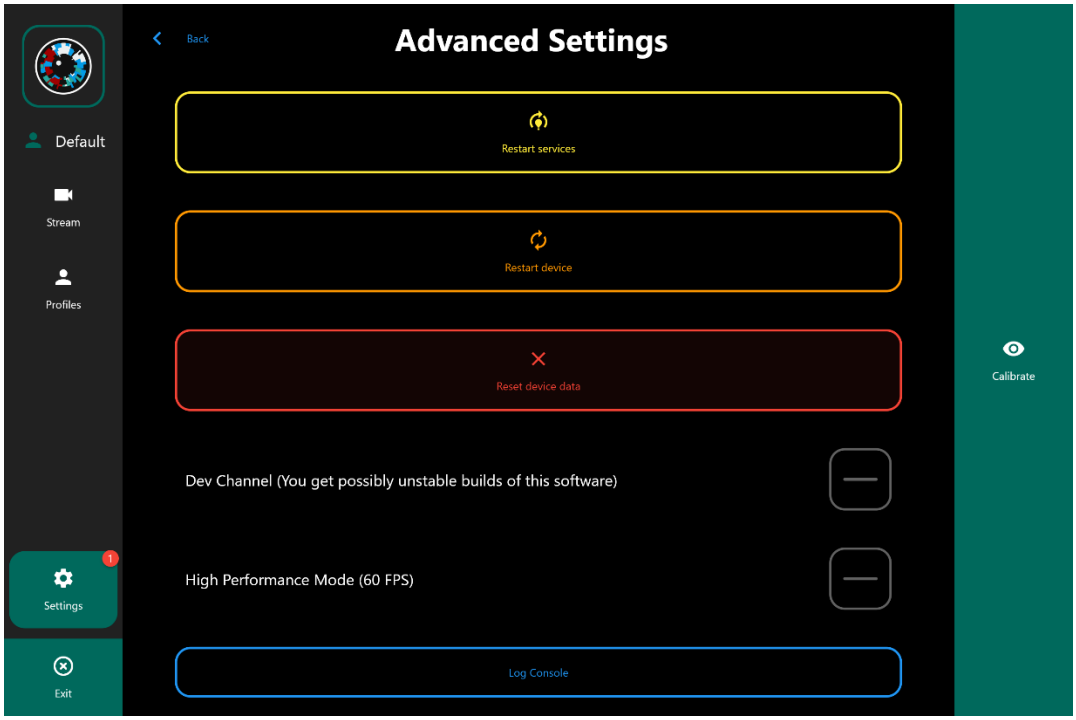
Updates for the eye control can be installed via the app. If a new update is available, a small red dot will appear in the left corner The update can now be found in the settings under Update.



If an update has been installed, the eye control will restart itself.

Advanced Settings

The advanced settings allow soft or hard reboot and factory reset.



Improvement

There is no such thing as perfect eye control. Each eye is unique and has unique characteristics. To support the largest possible number of users, the largest possible amount of test data is required.

If an eye control does not work well, test data can be collected to improve the quality of the eye control. A 9-point calibration is performed during the collection ("Calibration-> Recording calibration"). The test data recorded during this process can then be checked and sent off. If you want your data to be deleted, please send an email with the corresponding character string, which you can find in the app under "Settings -> Recordings".

Safety instructions

Please observe the safety instructions supplied with the device

Published by eyeV GmbH
Alzeyer Straße. 39, D-67549 Worms

Version 2.2 | 2021-12-21 – * We reserve the right to make changes and misprints.