EyePort User Manual

[Last Revised 5 April 2023]

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Under the Supervision of
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Contents
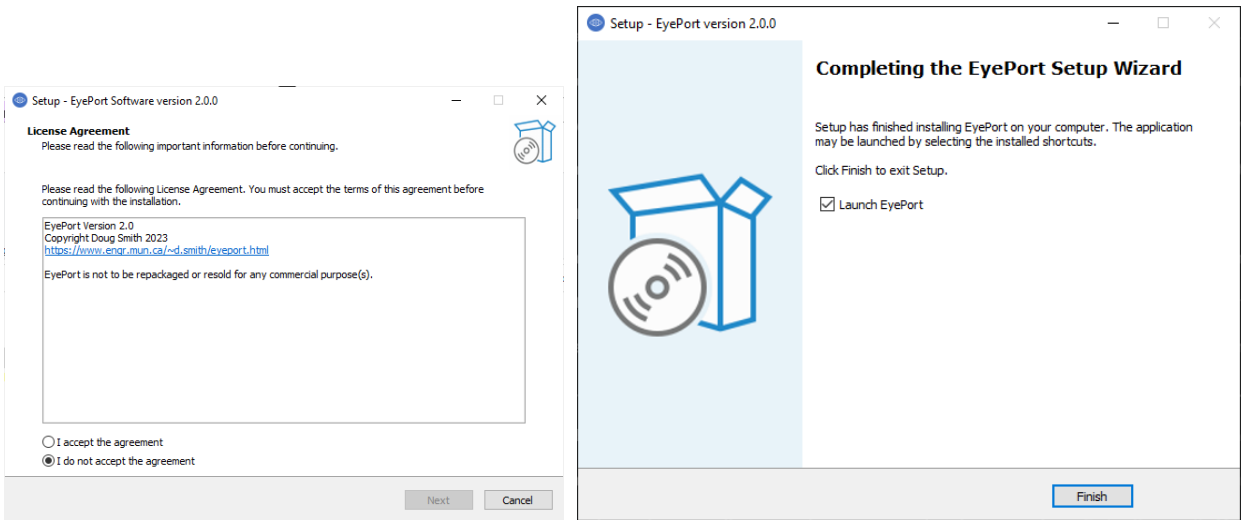
INSTALLATION

To install EyePort, double-click the (.exe) file that you downloaded from the official source. Then click 'Yes' on the UAC Prompt.
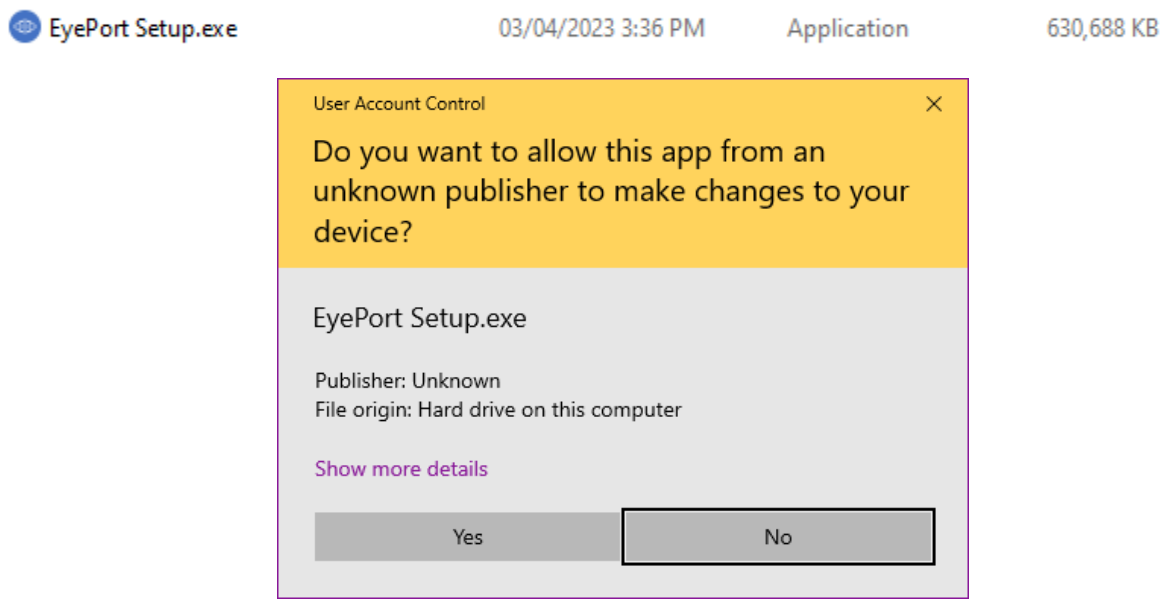
Accept the license agreement and click Next. Follow through the setup wizard and click finish when done. You can open EyePort from your Start Menu.

QUICK START

This section will guide you through recording a session quickly. Later sections discuss the analyze and export pages. Please make sure you read the entire manual to obtain the best results from the glasses.
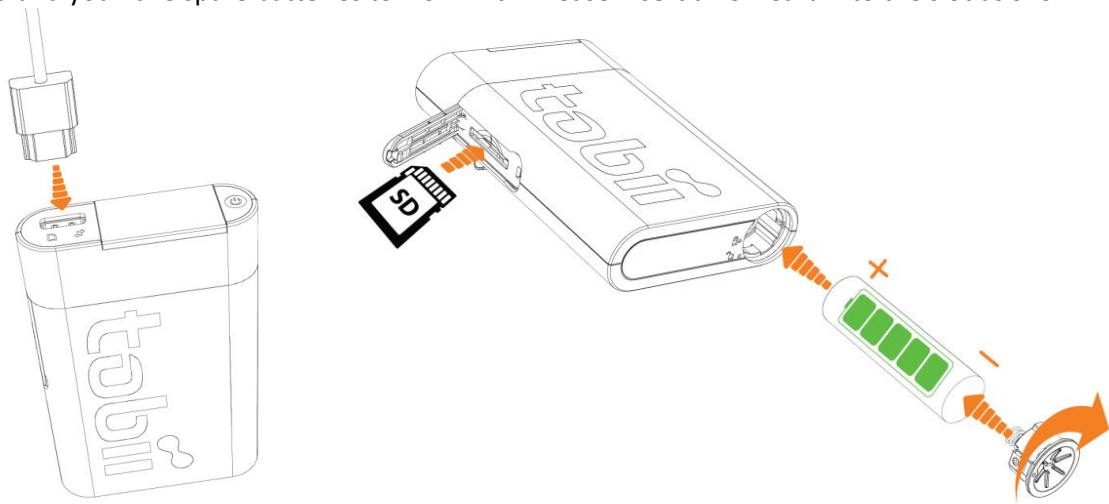
Overview

Connection Guide

EyePort can connect to TOBII Glasses 2 using either Wi-Fi or Ethernet*
Connect the head unit with the provided HDMI cable to the recording pack. Ensure the battery is charged and you have spare batteries to work with. Please insert an SD Card into the slot as shown.

Turn on the recording unit of the glasses. After the green power button is lit, connect the glasses using the following ways. Please verify that the correct mode is selected in EyePort settings.

Wi-Fi – The network SSID of the glasses is the serial number of the glasses, as shown above. The passkey is **TobiiGlasses**.

*Ethernet – An ethernet connection is much faster than Wi-Fi. However, please note that this connection mode does not support Live Preview.

Once recognized by your computer, click "Connect Glasses" on the Record Page in EyePort.
Do you need help? Check the troubleshooting section.

Connect Glasses

Calibration

You can calibrate the glasses before the record session if you wish. Although this step is optional, it is highly recommended that you calibrate your glasses after each session or user for the best results.

Ensure you have the calibration card in front of the user. Ask the user to keep looking at the card during the calibration process. Click "Calibrate Glasses" and dismiss the prompt to start calibration.
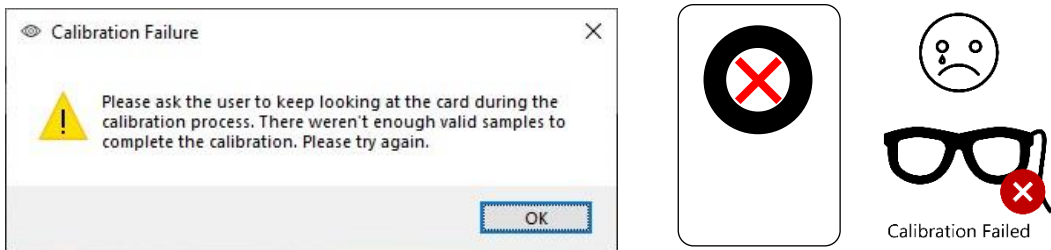
Calibrate Glasses

Successful Calibration:

If you get a successful calibration result, you may proceed to the next step of recording data. You can re-calibrate any number of times.
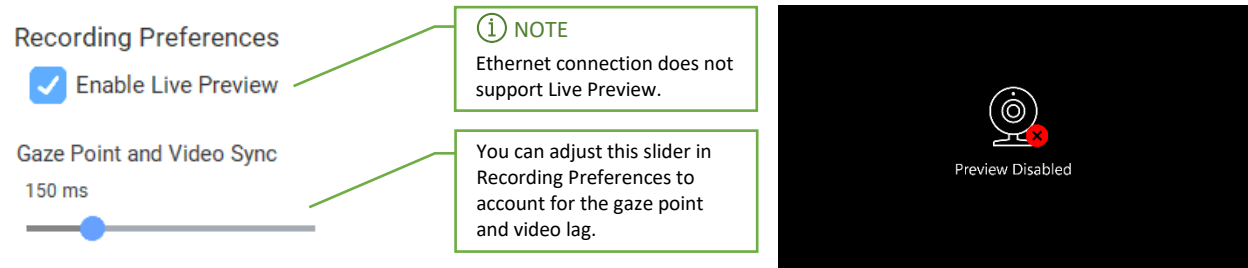
Failed Calibration:

If you get a failed calibration result, try the following steps:
- Ensure a snug fit on the user.
- Ask the user not to move during the calibration process.
- Try cleaning the glass shades with lens cleaner.
- Make sure the connection has not dropped (Loose Ethernet cable or Wi-Fi lost).

Live Preview and Sync

If using a Wi-Fi connection, you can view the live feed from the front camera of the glasses. Please note that this will use some of the connection bandwidth. Hence the precision of data will be reduced while recording (in EyePort Custom mode) as some are lost while transmitting the video feed. Depending on the connection strength, you may need to adjust the gaze point with the live preview.

It is advisable to keep the preview disabled in settings or use TOBII Proprietary mode for recording. More detailed aspects of the two recording modes are discussed in the next section.

Recording Preferences
☑ Enable Live Preview

ⓘ NOTE
Ethernet connection does not support Live Preview.

Gaze Point and Video Sync
150 ms

You can adjust this slider in Recording Preferences to account for the gaze point and video lag.

Preview Disabled

Record Data

EyePort lets you record in one of two modes: EyePort Custom or TOBII Proprietary. You can choose the type of recording from EyePort settings.

Choose how you would like the recordings to be saved.

⦿ EyePort Custom

◯ Tobii Proprietary

Click the "Record Now" button to start your session. When finished, click "Stop" to save the recording.

| Record Now | 🔴 Recording in Progress |
| Stop | ✅ Recording Saved |

Here is a table that describes the differences between TOBII Proprietary and EyePort Custom Modes.

	TOBII Proprietary	**EyePort Custom**
Storage Location	SD Card	PC
Preferred Save Location	No	Yes
Saving Procedure	Normal	Streamed
Data Precision	Best	Good
Data Availability for Analysis	Slow	Fast
Stream Data Format	Compressed JSON File	Excel File
Video Format	MP4	AVI
Gaze Point in Video	No	Yes

⚠️ WARNING
It is important that the connection is not dropped, or the recording unit is not powered down when saving the recording. This may lead to corruption or loss of data.

Analyze Data

Both the recording modes are supported and recognized for the analyzing procedure. On this page, you must locate the stream data file (either a Compressed JSON or Excel file) and the video file (either an MP4 or AVI file). The file formats depend on the way you recorded your sessions earlier.

⚠️ **CAUTION**
It is possible to mix and match the formats, though it is unlikely to produce the best results. Please make sure you select the files that belong to the same record session, otherwise the algorithm may show an error.

The files will be remembered for your convenience by default when you relaunch EyePort. If you do not want EyePort to remember the last loaded files, you can turn this off in Analysis Preferences.

Here is an overview of the Analyze Data page.
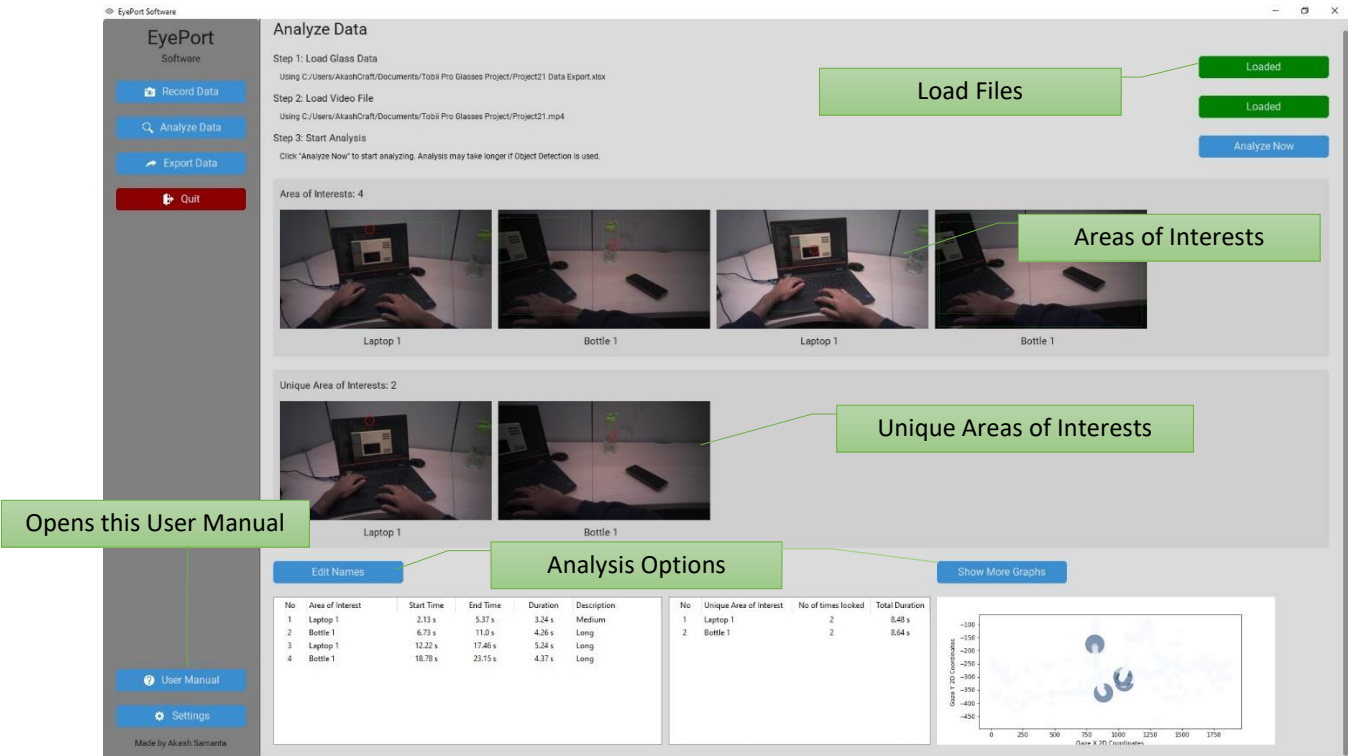
1) **Edit Names**
   If you are unhappy with the names of the detected Unique Areas of Interest. You can change the names using this button. Upon clicking, you will be presented with entry fields beneath each image frame to enter your desired names manually. Once done, click Save Changes or press ENTER on your keyboard to commit the changes.

   NOTE: You can enter identical names for Unique Areas of Interest only in **Manual Mode**. This is to help in analyzing data that contains unrestrained motion.
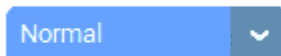
2) **Show Graphs**
   This button allows you to view or save graphs of the analyzed data. A new window showing the Gaze Data, Duration and Areas of Interest in the form of scatter and bar graphs will be displayed.

Let us take a more detailed look at the Analysis Settings.

Analysis Preferences

Detection Sensitivity

Choose how sensitive the analyzing algorithm should be to detect Unique Areas of Interest.

> Normal ⌄

Fixation Time

Choose how long a user should focus on an object to register it as an Area of Interest.

2.00 s

Automatic Object Detection

Choose if you would like to use object detection along with the type of objects to be detected.

- ○ Disabled
- ◉ General
- ○ Ships and Icebergs

- ☐ Manual Mode
- ☑ Remember last Loaded Files
- ☐ Overwrite Old Excel Files

1) **Detection Sensitivity**
   This setting helps you adjust the sensitivity by which the Unique Areas of interest are identified. Imagine the tolerance to be a circle with the center as the gaze point to understand the setting better. The default sensitivity is Normal.

   Setting a **HIGH** sensitivity <u>decreases</u> the tolerance circle radius. This will <u>increase</u> the number of Unique AOIs. However, this may falsely mark the same object as different objects if the same object is looked at multiple times.

Setting a **LOW** sensitivity <u>increases</u> the tolerance circle radius. This will <u>decrease</u> the number of Unique AOIs. However, this may falsely mark different objects in close proximity as the same object.

2) **Fixation Time**
This setting determines how long the user should look at an object to register it as an Area of Interest. The default value is 2 seconds of fixation time.

3) **Automatic Object Detection**
This setting allows you to configure the type of Object Detection to be used. If this feature is used, the analysis may take longer to complete. This is because every image frame will be analyzed for objects, and the objects will be identified and classified using pre-trained AI models.

The <u>General</u> option configures EyePort to look for everyday objects (Cellphones, Laptops, Bottles, Cats, Dogs, People, etc.).

The <u>Ships and Icebergs</u> option configures EyePort to only look for ships and icebergs.

You save time in the analysis by choosing <u>Disabled</u>. In that case, any identified Areas of Interest will be labelled with generic names (Object 1, Object 2, Object 3, and so on).
The default option is General Objects.

4) **Manual Mode**
If this feature is turned on, all Areas of Interest will be marked as Unique Objects. You can edit their names and determine which objects were unique manually. You can do this by labelling two objects with the same name. Very useful if your record session data contains unrestrained movement. This setting is unchecked by default.

NOTE: You can enter names only once per analysis. If you need to rename them, click the Analyze button again.

5) **Remember Last Loaded Files**
This setting allows you to set whether EyePort should load previously loaded files again upon relaunch. If the files are moved, renamed, or deleted when relaunching EyePort, you will be asked to load the files again. This setting is checked by default.

6) **Overwrite Old Excel Files**
If this box is checked, older Excel files will be over-written with new Excel files created for analysis. This setting is unchecked by default.

⚠️ WARNING
This setting **also affects** the Record Page. When you are recording in EyePort Custom mode, new saves will overwrite the older excel files which are part of a recorded session.
Once a file is over-written, it is impossible to recover them.

Export Data

Once you are happy with your analyzed data, go to the export page. Here you can export your data in the following formats. These formats are catered to aid DynaFRAM, a FRAM modelling software, and other general-purpose applications.

1) **CSV File**
   This is the Scenario file for DynaFRAM which contains data to help model files. You may open this file in Excel and cut and paste data according to your needs.

2) **XFMV File**
   EyePort can also generate a partial model file for DynaFRAM to visualize. You can use this file with the scenario file to see your record session as a FRAM Model.

3) **XLSX File**
   EyePort can generate an Excel File for general-purpose applications. This is the same table displayed under Analyze Data Page.

4) **Image Files**
   You can export images of all Unique Areas of Interest. EyePort overwrites previous images that have the same file names. Be sure to select a new folder with the Export Folder Button.

You may choose an export location folder to export your files. EyePort will let you know where the files will be exported if you do not select one.
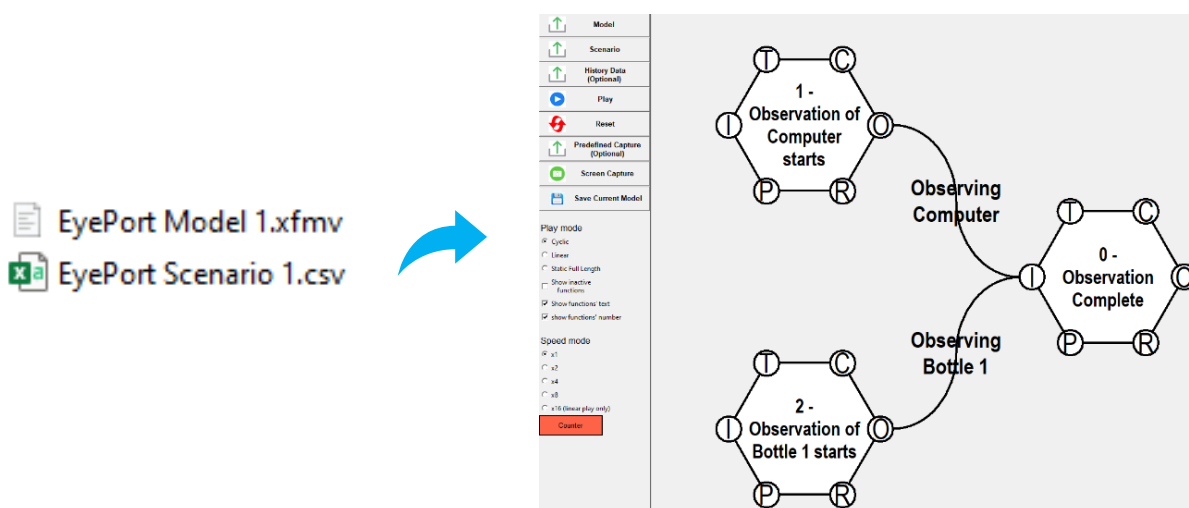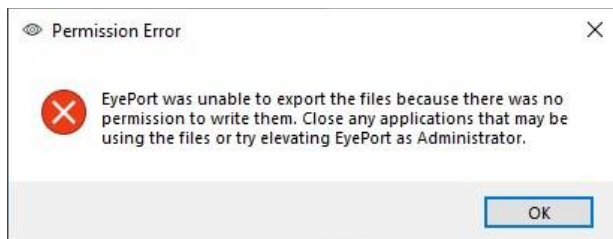
Here is an overview of the Export Page.

Successful Export:

If your export was successful, you can open Explorer and locate where the files were exported or open DynaFRAM using the buttons above. If DynaFRAM is not installed on your PC, EyePort will prompt you to download the installer from the website.

Failed Export:

Export Failed

If your export was unsuccessful, this could be due to a Permission Error, as shown above. Some other applications, such as Excel, might be using files with the same name, and you have enabled Overwrite Old Exports in settings. In this case, EyePort does not have permission to overwrite the files. You could resolve this by closing any applications that might be using the files or unchecking Overwrite Old Exports to generate new files instead.

> ⚠️ **ADVISORY**
> If you get an error message that states an Unknown Error. Try exporting other files and see if the problem persists. If so, there might be a problem in the source code.
> Please contact the developer.

Let us take a more detailed look at the Export Settings.

1) **Overwrite Old Exports**
    If this box is checked, older exported files will be over-written with newly exported files. This setting is unchecked by default.

> ⚠️ **WARNING**
> Once a file is over-written, it is impossible to recover them. If other applications are accessing files with same file names, then EyePort cannot overwrite the old exports files.

2) **Ask for File Names before Exporting**
    This setting allows you to make EyePort prompt for file names before exporting. As long as you provide different file names to export, no files will be overwritten, regardless of the previous setting. This setting does not affect exporting images and is unchecked by default.

General Appearance

EyePort offers two settings for your preferences on the general appearance of the application. As of Version 2.0.0, EyePort is only available in English (UK). You can change the following settings:
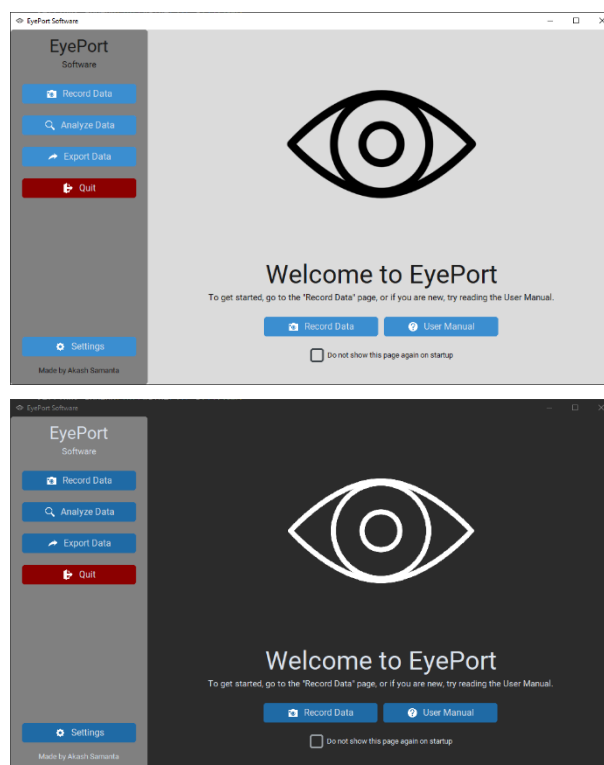
1) **Theme**
    This setting allows you to show EyePort in light or dark mode. All UI elements will change to white (or lighter) or black (or darker), respectively. The default mode is Light mode.

2) **UI Scaling**
    This setting allows you to scale all UI elements based on a certain percentage. EyePort will remember both your theme and UI scaling upon the next launch. The default scaling is 100%.

> ⚠️ ADVISORY
> The System option matches your system theme. This option does not work on Linux. Setting a higher UI scale also raises the minimum screen resolution limit.

3) **Start in Fullscreen Mode**
    When enabled, EyePort will always start in fullscreen mode so that you do not have to maximise the window. This setting is unchecked by default.

Troubleshooting

This section helps resolve problems or errors (other than those covered earlier) you may encounter while using EyePort. For all of the issues listed below, follow the solutions provided. If these don't fix the issue, then there might be a problem in the source code. Contact the developer.
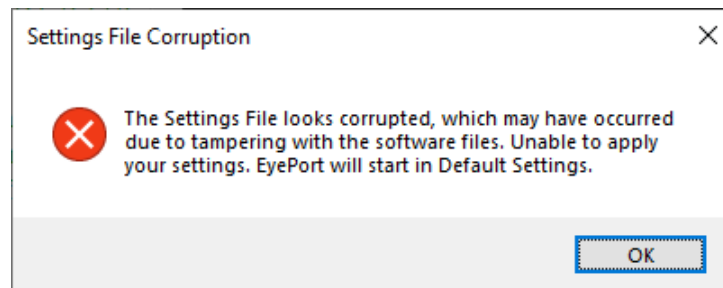
1) **Missing Resources**
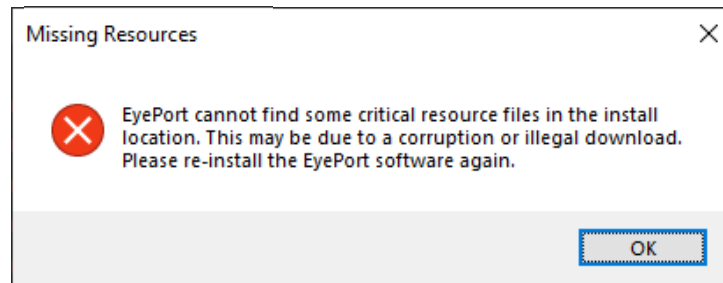
Causes: Corruption of the Install Folder or Downloading EyePort from non-legitimate sources.

Solution: Please re-install the EyePort software again.
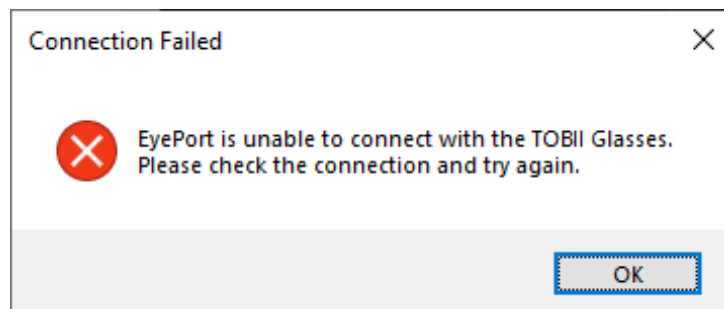
2) **Settings File Corruption**

Causes: Corruption of the Install Folder or Tampering with the software files.

Solution:
EyePort will attempt to revert to the default settings. If this does not work, please re-install the EyePort software again.
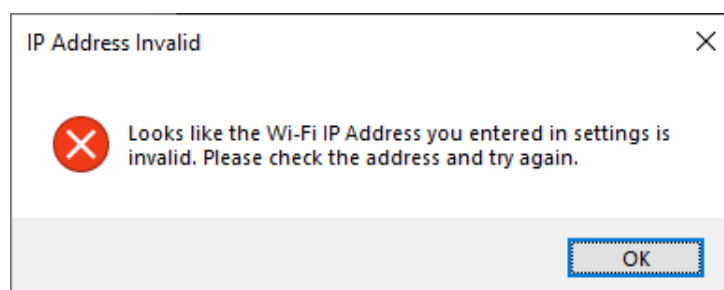
3) Connection Failed

Causes: Clicking the Connect Button too many times or having a limited or no connection with the TOBII Glasses.

Solution:
Check if the connection is established and stable under Settings > Network & internet > Wi-Fi. It can help to restart your PC. Try updating your Wi-Fi drivers under Device Management. Set your Wi-Fi network as a non-metered connection. If using Ethernet, make sure the cable is not damaged or bent.

4) IP Address Invalid

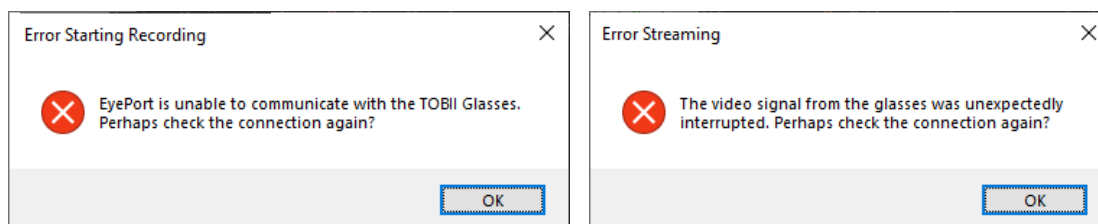Causes: Entering an Invalid IP address in EyePort Connection Settings.

Solution:
Try the Restore Defaults button. Make sure the IP address is formatted correctly. You cannot skip any dots or periods (.).

Restore Defaults

5) **Error Starting/Stopping Recording or Error Streaming**

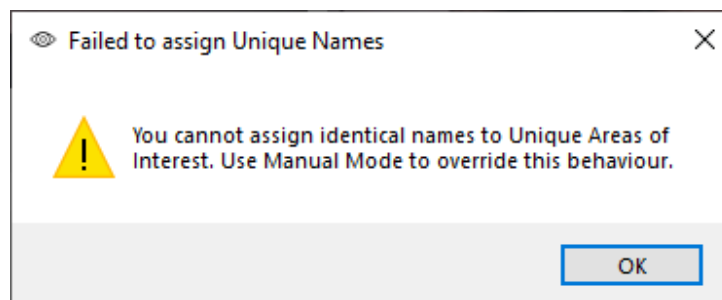| Error Starting Recording ✕	Error Streaming ✕
❌ EyePort is unable to communicate with the TOBII Glasses. Perhaps check the connection again?	❌ The video signal from the glasses was unexpectedly interrupted. Perhaps check the connection again?
OK	OK

Causes: Having a limited or no connection with the TOBII Glasses.

Solution:
Check if the connection is established and stable under Settings > Network & internet > Wi-Fi. It can help to restart your PC. Try updating your Wi-Fi drivers under Device Management. Set your Wi-Fi network as a non-metered connection. If using Ethernet, make sure the cable is not damaged or bent.
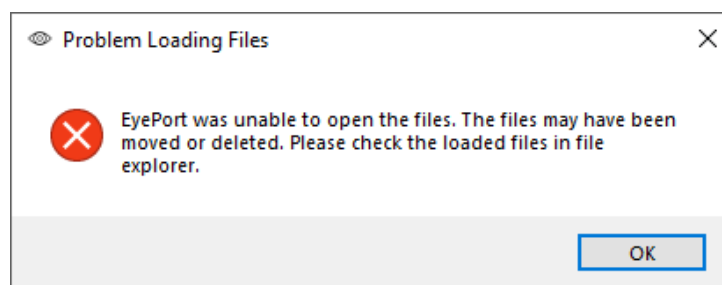
6) **Failed to Assign Unique Names**

> 👁 Failed to assign Unique Names ✕
>
> ⚠ You cannot assign identical names to Unique Areas of Interest. Use Manual Mode to override this behaviour.
>
> OK

Causes: Trying to assign the same name to Unique Areas of Interest in Automatic Mode

Solution: Please enter different names or enable **Manual Mode** in Settings.
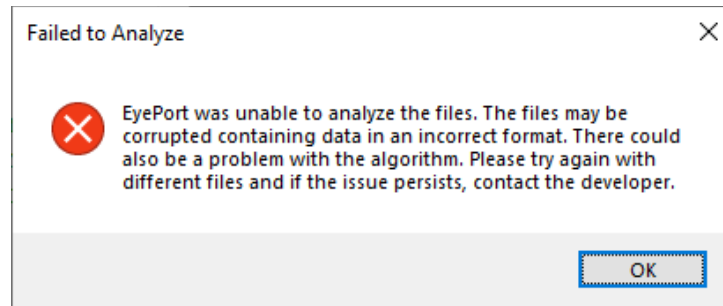
7) **Problem Loading Files**

> 👁 Problem Loading Files ✕
>
> ❌ EyePort was unable to open the files. The files may have been moved or deleted. Please check the loaded files in file explorer.
>
> OK

Causes: Previously loaded files were moved, renamed, or deleted.
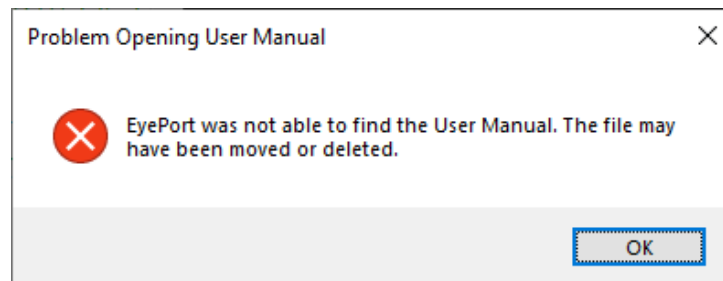
Solution: You will need to load new files.

8) Failed to Analyze

Causes: Corruption of the loaded files or choosing files with an incorrect format. Problem with source code.

Solution: Try loading different files. If the issue persists, contact the developer.

9) **Problem Opening User Manual**

Causes: Corruption of the Install Folder or Downloading EyePort from non-legitimate sources.

Solution: Please re-install the EyePort software again.