

Tobii Pro Lab

Product Description

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1 Introduction

1.1 Overview

This document describes the features and functionality of **Tobii Pro Lab**. This powerful, versatile, and comprehensive software supports the entire research workflow for eye trackers from Tobii Pro. The software comprises three modules: *Designer*, *Recorder*, and *Analyzer*. Pro Lab is available in four editions: **Full Edition**, **Presenter Edition**, **Analyzer Edition**, and **VR 360 Edition**. The Full Edition contains all three modules; the Presenter Edition contains Designer, Recorder/Stimuli, Presentation and a part of Analyzer's functionality; and the Analyzer Edition contains only the Analyzer module. The Full Edition and the VR 360 Edition contains all three modules but with different eye tracker support.



This document applies to Tobii Pro Lab. The software is continuously being developed and refined. Please visit tobiipro.com for the most recent specifications for the software and for the latest version of this document.

1.2 Modules

1.2.1 Designer

You can create experiments in the Designer module lets you based on Timelines consisting of different stimuli. You can also edit stimuli presentation settings like display position, background color, presentation time and stimulus advancement methods, (i.e. end on a mouse click or key press to adapt your experiment). Here you also get a preview of what the stimuli will look like on the screen.



The Designer module works with selected screen-based eye trackers from Tobii Pro and with the HTC VIVE Pro Eye and Tobii Pro VR Integration VR Headsets, but not with Pro Glasses 2.

1.2.2 Recorder

The Recorder module lets you configure eye trackers from Tobii Pro and present different stimuli, with high timing accuracy. You can read more about this in the Tobii Pro Learning article [Stimulus presentation timing in Tobii Pro Lab](#). You can also validate a calibration, record eye tracking data, mouse clicks and key presses, as well as Galvanic Skin Response (GSR) data from Shimmer3 devices. The participant camera with audio lets you record the participant. Recorder turns into a Moderator view during live viewing of the track status, stimuli displayed and gaze data.



The Recorder module works with selected screen-based eye trackers from Tobii Pro and with the HTC VIVE Pro Eye and Tobii Pro VR Integration VR Headsets, but not with Pro Glasses 2.

1.2.3 Analyzer

The Analyzer module enables you to replay, visualize and analyze your recorded data. It provides data-filtering features, visualizations and the ability to export data for presentations and for further processing in third-party software. In addition, for Pro Glasses 2 based projects, it also provides manual and automatic fixation mapping.

1.3 License Models

Pro Lab has two different license models; a *perpetual*-based license model and a *subscription*-based license model. A subscription license provides you with access to the latest software versions as soon as they become available. A perpetual license grants you one year of free upgrades. One- to four-year upgrade contracts are available for perpetual licenses.



If you use the subscription-based model, your Pro Lab must connect to the internet at least once every 14 days to validate the license. If you fail to do this, your software will cease to function.

1.4 System Requirements

For the most up-to-date information about Pro Lab's software system requirements, please visit the Tobii Pro website:
<https://www.tobii.com/product-listing/tobii-pro-lab/system-requirements/>

2 Software Features and Editions

2.1 Project Overview

Feature	Presenter	Analyzer	Full	VR 360
Export project	•	•	•	•
Import project	•	•	•	•

2.2 Designer

Feature	Presenter	Analyzer	Full	VR 360
Design experiments with multiple timelines or use hierarchical structures with randomized presentation (shuffled order, randomized sampling), and repetitions with images and video stimuli	•		•	•
Batch editing of stimuli settings	•		•	•
Use multiple stimuli advance options, either alone or in combination (advance on time, key press, mouse click)	•		•	•
Configure stimulus onset markers (TTL) for synchronization purposes	•		•	•

2.3 Recorder

Feature	Presenter	Analyzer	Full	VR 360
Scene camera project (support for real world experiments using screen based eye trackers)	•		•	
External Presenter project	•		•	
Configure eye tracker settings	•		•	
Define experiment participants	•		•	•
Calibrate eye tracker (regular and infant calibration)	•		•	•
Numeric calibration results (accuracy and precision values)	•		•	
Present image and video stimuli	•		•	•
Record eye tracking, mouse, and keyboard data	•		•	•
Recording of galvanic skin response data from Shimmer3 GSR+ sensors	•		•	•
Moderator view: track status, stimuli displayed and gaze data live	•		•	•
Send stimulus onset markers (TTL) for synchronization purposes	•		•	•

Receive TTL-in markers and the value for synchronization (available for Pro Spectrum and Tobii Pro TX300 eye trackers only)	•		•	
Participant camera	•		•	

2.4 Analyzer

Feature	Presenter	Analyzer	Full	VR 360
Replay of recordings	•	•	•	•
Import Tobii Pro Glasses 2 recordings		•	•	
Manual fixation mapping onto Snapshot images (Pro Glasses 2 projects only)		•	•	
Automatic fixation mapping onto Snapshot images (Pro Glasses 2 projects only)		•	•	
Create and edit static and dynamic Areas of Interest (AOIs) on images and videos		•	•	•
AOI Tags and Grouping (static and dynamic AOIs)		•	•	•
Log Events for behavioral coding		•	•	•
Times of Interest: define time intervals based on recording and logged Events		•	•	•
Selecting a frame as background and pairing it with Time of Interest (Screen and Scene camera projects only).		•	•	
Plot gaze x and y coordinates as well as eye movement velocity over time		•	•	•
Plot and visualize galvanic skin response (GSR) data over time (together with gaze video replay and eye movements)		•	•	•
GSR data analysis: noise reduction filters and detection of Skin Conductance Responses (SCRs) and Event Related SCRs		•	•	•
Static Heat Map Visualizations on images		•	•	•
Static Gaze Plot Visualizations on images		•	•	•
Video export of recordings and recording segments	•	•	•	
Export eye tracking metrics		•	•	•
Export Event and time interval based metrics		•	•	•
Export GSR Metrics		•	•	•
Export visualizations as images (.png and .jpg)		•	•	•
Export numeric calibration results (accuracy and precision values)	•	•	•	
Export calibration results as images (.png format)	•	•	•	
Recording data to text file (.tsv)	•	•	•	•

2.4.1 Data Export

Currently available data export fields:	Available coordinate systems	Screen-based eye trackers from Tobii Pro	Pro Glasses 2	Scene camera
Project name		•	•	•
Export date		•	•	•
Participant name		•	•	•
Participant variables		•	•	•
Recording name		•	•	•
Recording date		•	•	•
Recording start time		•	•	•
Recording duration		•	•	•
Timeline name		•		•
Recording fixation filter name		•	•	•
Snapshot fixation filter name			•	
Recording software version		•		•
Recording resolution width		•		•
Recording resolution height		•		•
Recording monitor latency		•		•
Calibration results		•	•	•
Recording timestamp		•	•	•
Eye tracker timestamp		•		•
Gaze point X	DACSpx/MCSpx	•	•	•
Gaze point Y	DACSpx/MCSpx	•	•	•
Gaze point left X	DACSpx/MCSpx	•		•
Gaze point left Y	DACSpx/MCSpx	•		•
Gaze point right X	DACSpx/MCSpx	•		•
Gaze point right Y	DACSpx/MCSpx	•		•
Gaze 3D position left X			•	
Gaze 3D position left Y			•	
Gaze 3D position left Z			•	
Gaze 3D position right X			•	
Gaze 3D position right Y			•	
Gaze 3D position right Z			•	
Gaze 3D position combined X			•	
Gaze 3D position combined Y			•	
Gaze 3D position combined Z			•	
Gaze 3D position left X			•	
Gaze 3D position left Y			•	
Gaze 3D position left Z			•	
Gaze 3D position right X			•	

Gaze 3D position right Y			•	
Gaze 3D position right Z			•	
Gaze direction left X	Normalized coordinates	•	•	•
Gaze direction left Y	Normalized coordinates	•	•	•
Gaze direction left Z	Normalized coordinates	•	•	•
Gaze direction right X	Normalized coordinates	•	•	•
Gaze direction right Y	Normalized coordinates	•	•	•
Gaze direction right Z	Normalized coordinates	•	•	•
Pupil position left X			•	
Pupil position left Y			•	
Pupil position left Z			•	
Pupil position right X			•	
Pupil position right Y			•	
Pupil position right Z			•	
Pupil diameter left		•	•	•
Pupil diameter right		•	•	•
Validity left		•		•
Validity right		•		•
Eye position left X	DACSmm	•		•
Eye position left Y	DACSmm	•		•
Eye position left Z	DACSmm	•		•
Eye position right X	DACSmm	•		•
Eye position right Y	DACSmm	•		•
Eye position right Z	DACSmm	•		•
Gaze point left X (DACSmm)	DACSmm, DACSpix	•		
Gaze point left Y (DACSmm)	DACSmm, DACSpix	•		
Gaze point right X (DACSmm)	DACSmm, DACSpix	•		
Gaze point right Y (DACSmm)	DACSmm, DACSpix	•		
Eye movement type		•	•	•
Gaze event duration		•	•	•
Eye movement type index		•	•	•
Fixation point X (MCSnorm)	DACSpix/ MCSnorm	•	•	•
Fixation point Y (MCSnorm)	DACSpix/ MCSnorm	•	•	•

Event		•	•	•
Event value		•		•
Presented Stimulus name		•		
Presented media name		•		
Presented media width		•		
Presented media height		•		
Presented media position X	DACSpx	•		
Presented media position Y	DACSpx	•		
Original media width		•		
Original media height		•		
Gaze point X	MCSnorm/ SCCSnorm	•		•
Gaze point Y	MCSnorm/ SCCSnorm	•		•
Gaze point left X	MCSnorm	•		•
Gaze point left Y	MCSnorm	•		•
Gaze point right X	MCSnorm	•		•
Gaze point right Y	MCSnorm	•		•
Fixation point X	MCSnorm	•		
Fixation point Y	MCSnorm	•		
Recording media name			•	
Recording media width			•	
Recording media height			•	
Media width			•	
Media height			•	
Mapped gaze data X			•	
Mapped gaze data Y			•	
Mapped eye movement type			•	
Mapped eye movement type index			•	
Mapped fixation point X			•	
Mapped fixation point Y			•	
Automatically-mapped gaze data score			•	
Automatically-mapped gaze data X			•	
Automatically-mapped gaze data Y			•	
Manually-mapped gaze data X			•	
Manually-mapped gaze data Y			•	
AOI hit			•	
Gyro X			•	
Gyro Y			•	
Gyro Z			•	
Accelerometer X			•	

Accelerometer Y			•	
Accelerometer Z			•	
Galvanic skin response (GSR)		•		•

2.4.2 Metrics Export

Metrics can be exported to two different formats:

- The Interval-based TSV file format is intended to be loaded into a statistical software, like R or SPSS, for further analysis. It is formatted as a tab-separated text file in which every row holds the results for one Time of Interest interval. Each metric or other property is presented in columns in this format. This format has the most metrics, including saccades, available for selection.
- The Excel report format is designed for easy readability in Microsoft Excel or compatible applications. This format presents the metrics in an aggregated form. Every metric is presented as a separate sheet in the Excel workbook. It contains tables showing the results, including averages and totals, for each Time of Interest.

Interval-based TSV file:

The metrics available for export to a TSV file are shown in the table below:

Duration of interval
Start of interval
Time to first Event
Number of Events
Total duration of fixation
Average Duration of fixation
Number of fixations
Time to first fixation
Duration of first fixation
Total duration of whole fixations
Average duration of whole fixations
Number of whole fixations
Time to first whole fixation
Duration of first whole fixations
Total duration of Visit
Average duration of Visit
Number of Visits
Total duration of Glances
Average duration of Glances
Maximum duration of Glances
Minimum duration of Glances
Number of Glances
Number of clicks
Time to first click
Time from first fixation to mouse click
Average GSR
Amplitude of event related SCR
Number of GSR
Number of saccades
Average peak velocity of saccades
Minimum peak velocity of saccades
Maximum peak velocity of saccades

Standard deviation of peak velocity of saccades
Average amplitude of saccades
Minimum amplitude of saccades
Maximum amplitude of saccades
Total amplitude of saccades
Time to first saccade
Direction of first saccade
Peak velocity of the first saccade
Average velocity of the first saccade
Amplitude of the first saccade
Number of saccades in AOI
Time to entry saccade
Time to exit saccade
Peak velocity of entry saccade
Peak velocity of exit saccade

Excel report:

The metrics available for export to an Excel report are shown in the table below:

Duration of interval
Start of interval
Time To First Event
Number of events
Number of events (include zeroes)
Total duration of fixation in AOI
Total duration of fixation in AOI (include zeroes)
Average duration of fixation in AOI
Number of fixations in AOI
Number of fixations in AOI (include zeroes)
Time to first fixation in AOI
Duration of first fixation in AOI
Total duration of Visit
Total duration of Visit (include zeroes)
Average duration of Visit
Number of Visits
Number of Visits (include zeroes)
Number of clicks in AOI
Number of clicks in AOI (include zeroes)
Time to first click in AOI
Time from first fixation to mouse click in AOI
Number of clicks in AOI (include zeroes)
GSR Average

ER-SCR amplitude
SCR count



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