ETVision Wearable Eye Tracker

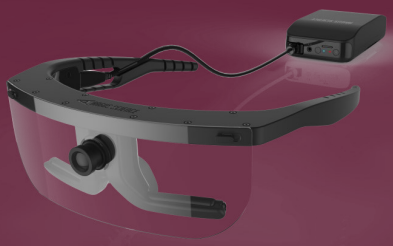
Gaze-Pupillometry-Saccade-Fixation
ETAnalysis
ETPhone
ETRemote
ET3Space
StimTrac
Live Object Tracking powered by AI

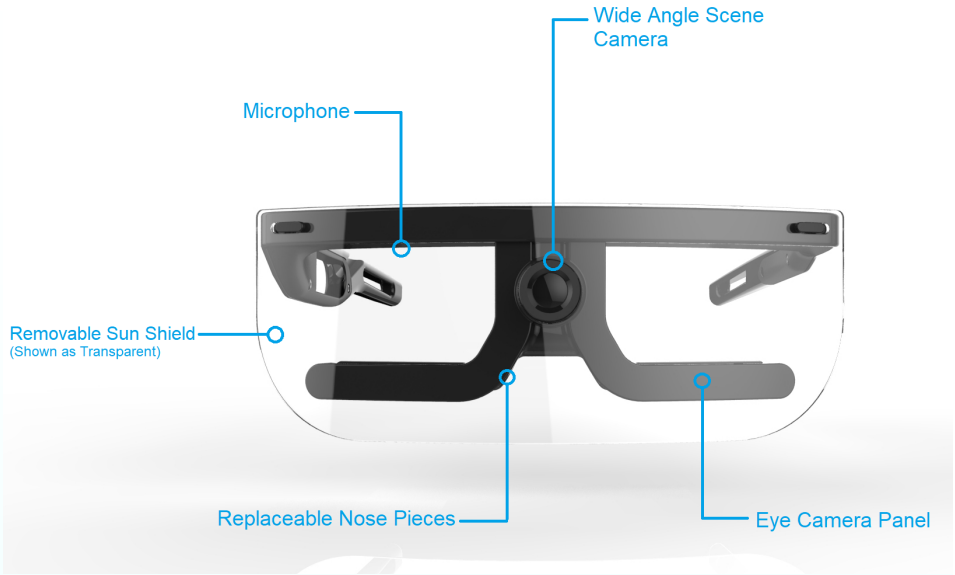
Argus Science, LLC
37 Westech Drive
Tyngsborough, MA 01879

www.argusscience.com

ETVision

- 180Hz Data Collection
- Binocular Gaze Calculation
- Wide Angle HD Forward facing Scene Camera
- Built In Microphone
- Removeable Sun Shield
- 5+ Hour battery life
- Multiple Nose Pieces for comfort
- Record on SD, stream live via WiFi or LAN
- Participant can wear their own Prescription Eye Glasses w/ETVision





The **ETVision** wearable eye tracker allows ultimate flexibility for real-world research. The simple design and work flow of the ETVision delivers the tool to get your research done quickly and accurately.

With the ETVision in live stream mode, we can use our exclusive Live Area Of Interest (LAOI) capability to define objects and track them to get immediate reports on visual engagement. If your research requires participants to range far beyond Wi-Fi range, ETVision can record locally to an SD card for later analysis.

ETVision Records the eye images as a 180Hz video, allowing exact replay of participant gaze experience.

ETVision can use the power of **AI** to track **Multiple Objects** and report gaze/fixation engagement in Real-Time.

If your research occasionally requires stimulus presented on a screen, the Argus Science **StimTrac** package allows the researcher to transform data from the scene camera coordinate space to the presented stimulus coordinate space (Images, Videos or non-determinant stimulus, such as video games or web browsing)

Using Motion Capture combined with eye tracking in your research? Add the **ET3Space** option to combine head position and orientation in space with gaze vector relative to head for immediate results of gaze vector, or gaze intersection with surfaces in your environment.

Argus Science provides SDK support as well as the ability to live stream to our **ETPhone** app which may be found on Apple App Store as well as on Google Play.

Of course, our ETAnalysis is included with your ETVision.

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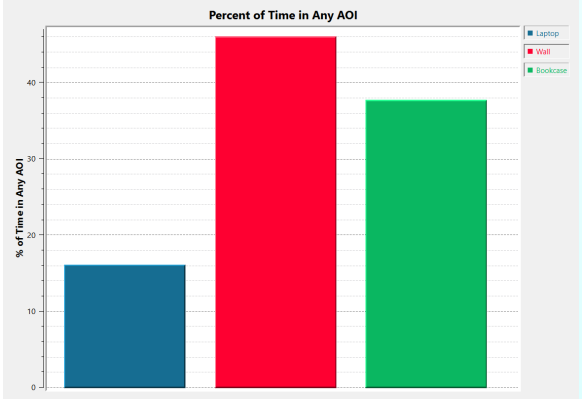
ETAnalysis

- Train your own **AI Object** Collection for use in live data collection of ETVision
- Report Fixations
- Report Saccades
- Pupillometry (Size, Blink and Blink Frequency)
- Fixation Sequence and Dwell Calculations
- Group Statistics
- Fixation , Heatmap and Gaze Trail Visualizations
- Time Plots of collected data
- Moving Areas Of Interest (Automatic)
- Parse Events by Markers or Time
- Create AOI Bar Plots—Individual or Group
- Record any visualization as an image or video
- Export any part or all data to xml or text file



A Comprehensive Analysis Package for Researchers

Once data has been collected with the ETVision Wearable Eye Tracker, we may load the data records and recorded videos into ETAnalysis for complete Analysis.

An important factor in wearable eye trackers is that gaze is first reported relative to the forward facing scene camera. Since a participants head is always moving, objects in the environment always appear to be moving within the scene image. ETAnalysis simplifies this critical relationship with our automated Moving Areas Of Interest (MAOI). An object is defined to the program on a single video frame, and the program then automatically tracks the object through the entire video. We then may easily report gaze relative to these objects and the gaze location within the object.

Once this MAOI collection is made, we may then combine fixations to compute statistics regarding time to first fixation on an object, pupil size while attention is upon that object, total time viewing object and many other metrics. This information may be presented either as a text file, bar plots or visualizations upon the video including heatmaps, fixation plots and gaze trails.

Using the same collection of MAOI's for data from multiple participants, ETAnalysis can provide statistics related to gaze behavior across a population exposed to similar visual environments and stimuli.

ETAnalysis can use this collection of Moving Areas Of Interest to train our new Artificial Intelligence Powered Multiple Object Tracking (AI MOT) feature with a few mouse clicks!

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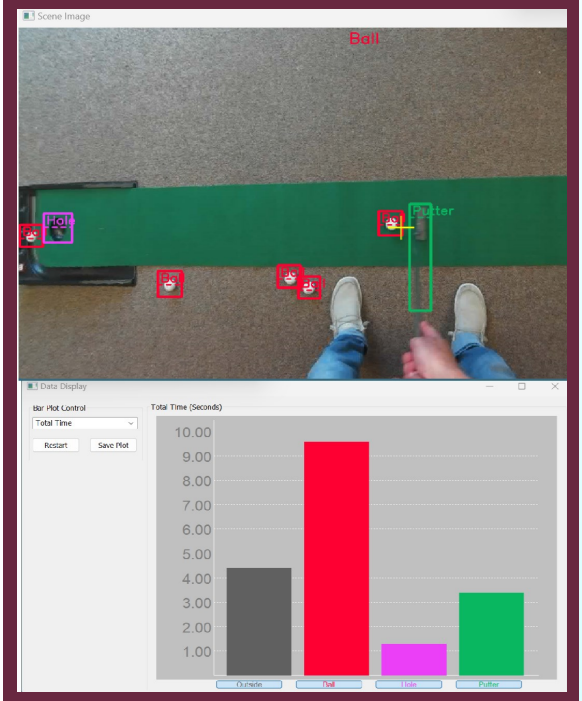
AI MOT

Artificial Intelligence Multiple Object Tracking

- Utilize the power of ETAnalysis MAOI to train your own unique collection of AI Objects
- Report Gaze engagement with Objects in Real-Time
- Use the same AI Model for ALL participants in a study
- Display Live Bar Plots of Fixation Time, number of Fixations, Total Gaze Time and even pupil size relative to AI Objects
- Allows the Researcher to gain real-time information on Participant Performance



A Game Changer for Real-Time Gaze Data Reporting

Adding to the capabilities of the ETVision system is Argus Science's new Multiple Object Tracking powered by AI.

ETVision can now use an AI Model to recognize objects in the Scene Image and report Gaze interaction with these objects. Argus Science provides an AI model with a standard collection of 80 objects that can be detected and tracked including People, Laptops or even a frisbee, to name a few.

Moreover, the researcher can train their own model to detect their own Unique Object Collection. Our ETAnalysis MAOI capability can be used to train an AI model to detect objects that match your own targeted research requirements, as shown above with objects related to an automotive interior.

This allows the ETVision to report Gaze time as well as Fixation time, Time to first Fixation, average Fixation duration and even pupil size relative to each object as a live bar plot.

Whether using a custom AI Model that you easily generate yourself, or using the default 80 object AI Model, Argus Science provides a robust, reliable way to Immediately report Gaze and/or Fixation Object engagement.

Contact us today for more details or a demo on the Argus Science AI powered Multiple Object Tracking!

For More Details:

visit www.argusscience.com, email us at info@argusscience.com

Visit our You Tube Channel: Argus Science Eye Tracking

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Specifications

ETVision SYSTEM

Eye Tracking Technique	Dark Pupil – Corneal Reflection
Binocular	Yes
Gaze Measurement Frequency	180 Hz
Artificial Intelligence	Available (LMOT: Live Multiple Object Track)
Live Object Tracking	Yes, (LAOI or AI MOT)
Pupil Size Measurement	Yes, Millimeter or Pixels: User Select
Eyelid Position Reporting	Yes
Live Blink and Live Fixation Reporting	Yes
Parallax Compensation	Automatic
Accuracy	0.5 degrees
Calibration	Automatic, Multiple Point Modes
Outdoor Capability	Yes
Synchronization w/ External source	Available
Playback Recorded Video	Yes

Standard Items Included

ETVision & ETAnalysis License
Access to ETPhone (iOS or Android)
Three (3) Nose Pieces for different head/nose sizes
ETRemote
SDK Samples including Python, LSL, Matlab and others
Removeable Sun Shield
Calibration Target
Carry Case
9V Power Supply (Controller)
Controller Belt

ETVision Optics

Color	Black
Removable Shield	Polarized, OD
Exchangeable Scene Camera Lens	Yes, Standard 96° : 16x9
Prescription Glasses Compatible	Yes
Nose Piece Adjustment	Replaceable, 3 included
Scene Camera Recording	720p (1280x720) @ 30Hz
Eye Camera Recording	Both Eyes (320x240) @ 180Hz
Microphone	Yes
Weight	56g

Optional Items Available

ET3Space
StimTrac
EEG TTL Sync
AI MOT Training Module for ETAnalysis

ETVision Controller

Processor	ARM Cortex A9
Operation System	Linux
Storage Media	Micro SD Card
Nominal SD Card Recording time	128GB Typ. >5 Hours
Main Battery	Rechargeable Li-Poly Battery
Main Battery Life	>5Hrs
Power Adapter	9VDC
Headphone Jack	3.5mm
(Length x Width x Depth)	150mm x 80mm x 36mm
Weight (with Battery)	345g
Connection PTU to Laptop (Live Streaming)	Wi-Fi (802.11ac) LAN (Gigabit Ethernet)

3rd Party Compatibility

Biopac Systems
iMotions
Vicon
Qualisys
Advanced Realtime Tracking
Ant Neuro

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