

ET3Space

Real-time 3D Gaze, on Real Surfaces, in Real-World Environments



Reflector array on the ETVision optics frames

3D Gaze in Room Coordinates

Gaze on Real Surfaces and Objects
6DoF Head Position and Orientation
Live Attention Bar Plots
Stationary Scene Camera Global View
Motion Capture Integration
Spatial Computing and Digital Twin

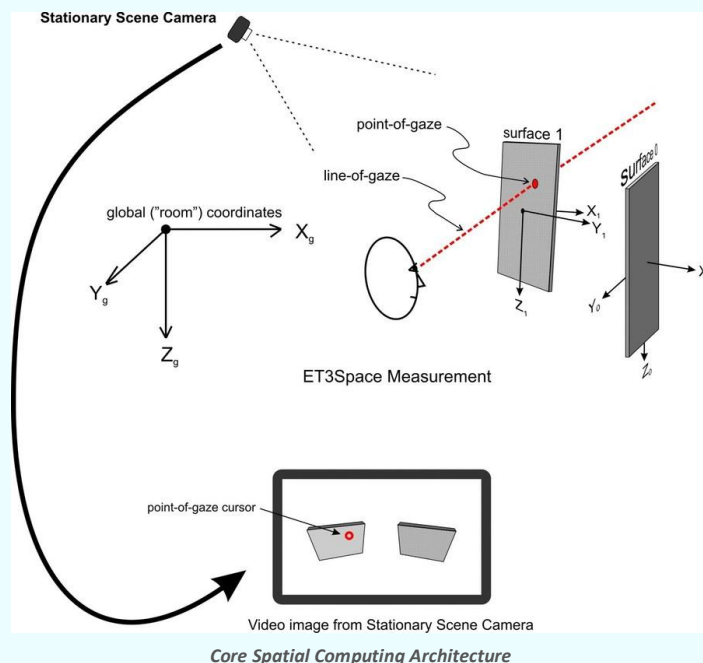


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ET3Space

- Point of Gaze in Room Coordinates
- Up to 20 Surfaces or Objects
- 6DoF Head Position and Orientation
- 3D Gaze Point Solved from Both Eyes
- Real-Time Fixations and Pupil Data
- Surfaces Defined in Four Clicks
- Live Stream via LAN, Record to File
- ETAnalysis Included



Gaze With an Address in the Room

A wearable eye tracker reports gaze within a head mounted scene camera image. The head moves, so the image moves with it. Every object in the room appears to drift.

ET3Space removes that problem. It adds head position and orientation from a motion capture system. It then computes the line of gaze in fixed room coordinates, identifies the surface gaze lands on, and reports exactly where on that surface.

The result is not just a point-of-gaze dot on a video. It is a 3D gaze with an address in the room — the same coordinate frame for every participant, every trial, every session.

Line-of-gaze is specified in the room coordinate frame. Point-of-gaze is specified both as a point on a surface coordinate frame and a point with respect to the room coordinate frame.

Your Space, Defined in Minutes

Just hold the ETVision optics so a surface is visible to the scene camera and click on four points with known surface coordinates. Repeat for up to 20 surfaces: displays, panels, controls, windows, walls, floors, work areas.

Together they form a digital twin of the environment. Curved and irregular shapes are approximated by multiple planes. Most spaces are configured in minutes, and the configuration is auto-saving and reused for all participants.

Both eyes are measured and recorded at 180 Hz so every value can be checked against the recorded eye video, frame by frame.

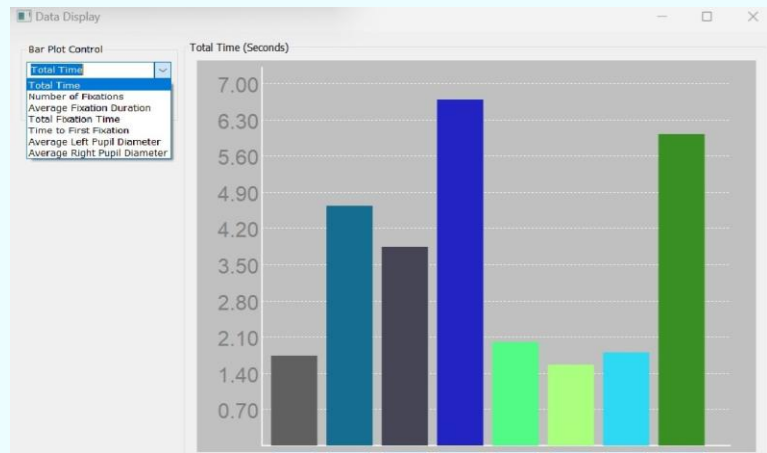
Works With What You Already Run

ET3Space is not tied to one motion capture vendor. OptiTrack, Advanced Realtime Tracking, Vicon, Qualisys and others are supported. Our engineers help you match a tracker to your room, your constraints, and your budget.



Live Attention

- Total Time and Total Fixation Time
- Number of Fixations
- Average Fixation Duration
- Time to First Fixation
- Left and Right Pupil Diameter
- Bar Plots Update While You Watch
- Point of Gaze on a Room Camera View
- Open SDK: Python, LSL, MATLAB



Live attention bar plots, surface by surface.

Read Attention While It Happens

ET3Space turns eye tracking into a true spatial computing signal. ET3Space scores attention on every defined surface as the task runs, and draws it as bar plots that update live.

You see what was looked at, for how long, how often, and what drew the eye first — during the session, not the week after.

Every value also streams over the network. Drive a live display. Trigger an adaptive simulator. Log gaze beside EEG, physiology, or vehicle data. The SDK ships with Python, LSL, and MATLAB samples.

Everything runs on your local system. No cloud service is required, and your data never leaves your control.

If You Can Define It, You Can Measure It

ET3Space works wherever a person looks at real things in a real-world space:

- Flight, driving, rail, and maritime simulators
- Cockpits, vehicle interiors, and crew stations
- Control rooms, command centers, and operating rooms
- Production lines, workstations, and training rigs
- Robotics cells, teleoperation, and XR test beds
- Laboratories, classrooms, retail, and built environments

Research, design, training, certification, safety, human factors, and AI ground truth all use the same measurement. Only the surfaces change.

Ground Truth for What Comes Next

Autonomy, robotics, and simulation teams increasingly need object-grounded attention: which real object a person attended to, when, and for how long. ET3Space produces exactly that, in both surface and room coordinates, ready to label a training set or feed a shared-autonomy runtime.

Tell us about your space. We will help you select a head tracker, suggest an ET3Space configuration, and show the system running on a task close to your own.



Specifications

ET3Space SYSTEM	
Coordinate frame	Global ("room") right-handed Cartesian, set by the head tracker
Surfaces of interest	Up to 20 bounded planes
Surface definition	Four points clicked on the scene camera image
Point of gaze	Intersection of line of gaze with a defined surface
Eye data rate	180 Hz binocular (ETVision)
3D gaze point	Solved from binocular vergence
Real-time fixations	Yes
Live attention bar plots	Yes, per surface
Stationary Scene Camera	Supported; gaze cursor on the room view
Output	Live display, LAN streaming, digital file (binary or CSV)
Processing	On local system; no cloud service required
Analysis	ETAnalysis, included with every system

ET3Space HEAD TRACKING	
Tracking technology	Optical motion capture
Systems supported	OptiTrack, Advanced Realtime Tracking (ART), Vicon, Qualisys, and others
Optical marker set	Reflector array mounted on the ETVision optics frames
Interface	Network or USB, depending on the system
Selection	Argus Science engineers help match a tracker to your environment

ET3Space REPORTED DATA	
Head position	X, Y, Z in room coordinates
Head orientation	Azimuth, elevation, roll
Eye position	Left and right, in room coordinates
Gaze direction	Left and right gaze vectors
3D gaze point	Vergence-derived X, Y, Z
Surface viewed	Scene plane number
Gaze on surface	Horizontal and vertical coordinates on that surface frame
Gaze length	Distance from eye to point of gaze
Room camera gaze	Coordinates on the Stationary Scene Camera image
Fixations	Duration and coordinates
Pupil	Diameter, left and right
Also reported	Blink, eyelid positions, and Corneal Reflection positions

Scope Your Environment

Tell us what your space looks like. We will help you select a head tracker, suggest an ET3Space configuration, and show the system running on a task close to your own. Demonstrations are free.

