

# Pupil Invisible



## No adjustments, no calibrations, instant insight.

With Pupil Invisible we have developed a new approach to mobile eye tracking that is powered by a novel end-to-end gaze estimation pipeline. You can put on the glasses and you will get gaze data immediately.

## Wear

Put on the glasses and launch the Invisible Companion app.

## Capture

Observe real-time gaze behavior, record, and upload securely to the cloud.

## Analyze

Enrich your data in Pupil Cloud, and gain deep insights into human behavior.



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## **Works in all environments**

Traditional eye tracking approaches fail in bright sunlight. Pupil Invisible provides robust gaze estimation in any environment!

## **Never lose track**

Take the glasses on and off, just like you would a normal pair of glasses. No calibration required! Our deep learning powered gaze estimation pipeline provides you with high quality gaze data regardless of how much you move. We have also integrated an IMU into the frame, so that you can keep track of head movements.

## **Convenient by design**

A wide angle camera records your full field of view. An integrated microphone can capture audio. We recognize that you might not always want or need an outward facing camera. That is why we have designed the entire scene camera to be quickly and easily detached/re-attached via magnetic connection.

## **Swappable lenses**

You can easily pop in/out lenses with different prescriptions and shades. The glasses can accommodate prescription lenses from -8 to +8 diopter.

## **Companion App**

Use Pupil Invisible Companion app to view real-time gaze data, record, manage wearers, and upload securely to Pupil Cloud.

## **Web app**

Pupil Cloud enables you to securely and privately store your Pupil Invisible recordings in the cloud. Robustly upload recordings from Pupil Invisible Companion Devices, visualize and enrich your data, and collaborate with colleagues around the world.

## **Desktop App**

Pupil Invisible Monitor is a lightweight desktop app that enables streaming of video and gaze data over WiFi from your Pupil Invisible Companion Devices.



## Dimensions

### Frame

W: 144mm x H: 48mm

W: 160mm x H: 48mm

### Scene camera

W: 15mm x H: 12mm

W: 75mm x H: 12mm

## Technical Specs & Performance

### Gaze Data

Normalized 2d gaze positions.

### Calibration

None

### Sensors

#### Eye Cameras

200Hz @ 192x192px IR illumination

#### Scene Camera

Detachable scene camera.

30Hz @ 1088 x 1080px

82°x82° FOV. Square aspect ratio covers full field of view.

### Audio

Microphone included in scene camera.

### IMU

Gyroscope and Accelerometer @200Hz.

### Recording

Gaze data, videos, user input data.

### Real-Time Streaming

Gaze data at 55fps and world video.

### Technical Report

['A High-Level Description and Performance Evaluation of Pupil Invisible' \(2020-09-01\)](#)

## **Physical Properties**

### **Frame**

PA12 Nylon

### **Lenses**

CR-39 Anti-Scratch UV Filter

Anti-Reflective

Dust and water repelling coating

### **Weight**

46.9 g

## **Prescription Lenses**

Can accommodate -8 to +8 diopter lenses.

## **Machine Learning**

### **Environment**

Robust for all environments

### **Demographics**

Works on the majority of people

### **Slippage Compensation**

Slippage invariant.

## **Mobile Recording Unit**

### **Functionality**

Provides power, storage, and neural network computation for gaze estimation.

### **Recording Duration**

8 hours storage space, 100 minutes of run time, fast charging.

### **Software**

[Pupil Invisible Companion App](#) - download for free on PlayStore. Requires Android version 9.

## **Additional Recording Unit**

Use a second mobile recording unit while the first is charging and uploading recordings to Pupil Cloud.

## **Cloud**

Upload recordings to pupil cloud (opt-in).

## **What's in the box**

Pupil Invisible glasses

OnePlus 6 Android phone. Power adaptor for charging.

(Invisible Companion app is not pre-installed)

Traveling case for secure storage and transport of glasses and phone.

USB-C to USB-C cable

Shaded lenses and clear lenses

Microfiber lens cleaning cloth

\*옵션(Accessories) 별매

## Prescription Lens Kit (별매)

Prescription lens kit to accommodate a variety of wearers.

Material:CR-39 anti-scratch UV Filter, anti-reflective, dust and water repelling coating  
Optics:Clear lenses from -3 to +3 diopter in 0.5 steps. Lenses can be popped in and out from Invisible frames in seconds.

