

XREye

Simulating Visual Impairments in Eye-Trackerd XR

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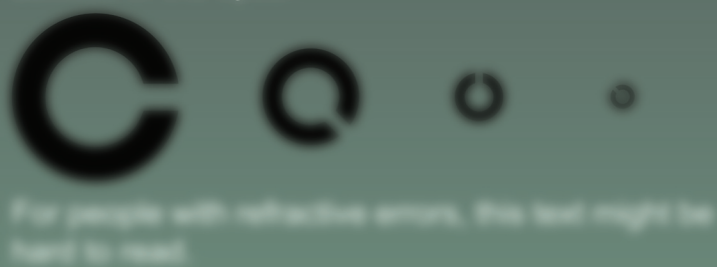
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Many people suffer from visual impairments, which can be difficult for patients to describe and others to visualize. To aid in understanding what people with visual impairments experience, we demonstrate **a set of medically informed simulations in eye-tracked XR** of several common conditions that affect visual perception.

Refractive Errors

Myopia causes blurry vision in the distance, while people still have good near vision.

Hyperopia causes blurred vision of near objects, while far objects can appear clear, similar to blurry vision caused by **Presbyopia**, which is due to aging and a reduction of accommodation abilities of the eyes.



Cornea Disease

The transparent front layer of the eye is known as the cornea. Different conditions can affect the cornea and therefore the vision of a person, such as injuries, allergies, inflammation (keratitis) that causes fogging or a swelling of the cornea, or material build-ups in the cornea (corneal dystrophies), each affecting vision differently.

We try to replicate the vision of a patient with cornea disease, who described it as "looking through opal glass".



Age-Related Macular Degeneration

AMD does not cause total blindness, but the reduction or loss of central vision can have a high impact on perception and make tasks such as reading, cleaning, cooking or recognizing faces, challenging. There are two main types: **dry AMD** and **wet AMD**.

Symptoms affect the center of the field of view and include blurry vision, reduced brightness, distorted vision, and loss of central vision.



For people with wet or dry AMD, this text might be hard to read.

