

VIRTUAL PRISMS USING AUGMENTED REALITY DISPLAYS

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PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Published Application	WO 2025/155629	07/24/2025	2024-063

BRIEF DESCRIPTION

UC Berkeley researchers have developed a sophisticated method and apparatus for dynamically correcting ocular misalignment using pass-through augmented reality (AR) goggles. The system employs orientation sensors to track the user's gaze vectors and cameras to capture the surrounding environment in real time. A specialized processor calculates the specific magnitude of ocular misalignment for each eye and generates a computer-rendered version of the surroundings. By digitally shifting the images presented to each display based on these gaze vectors, the system acts as a "virtual prism," aligning the visual input with the user's actual gaze to provide a clear, unified field of view. This technology offers a programmable, non-invasive alternative to traditional corrective lenses or surgery for individuals with complex vision impairments.

SUGGESTED USES

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Clinical Vision Therapy: Providing a dynamic tool for treating strabismus (crossed eyes) and diplopia (double vision) without the need for physical prism lenses.

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Post-Surgical Rehabilitation: Assisting patients in adapting to visual changes following corrective eye surgeries through gradual digital adjustments.

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Precision HUDs for Operators: Enhancing situational awareness for pilots or heavy machinery operators by correcting minor ocular fatigue or misalignment in real time.

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Daily Vision Assistance: Creating wearable assistive devices for individuals with chronic ocular motility disorders to improve their quality of life.

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Diagnostic Tools: Using the integrated sensors to track and log the progression of eye movement disorders for ophthalmologists and optometrists.

ADVANTAGES

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Real-Time Adaptation: Unlike static physical prisms, this digital solution can adjust the degree of correction instantly based on where the user is looking.

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

- » **Computer**
- » Software
- » **Research Tools**
- » Other
- » **Sensors & Instrumentation**
- » Medical
- » Physical Measurement

RELATED CASES

2024-063-0

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Non-Invasive Solution: Provides a significant visual improvement for complex alignment issues without the need for surgical intervention.

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Customized Multi-Eye Correction: Independently renders and adjusts images for each eye, allowing for precise correction of asymmetrical misalignments.

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Data-Driven Insights: The system can monitor and record gaze patterns and misalignment magnitudes, providing valuable diagnostic data for long-term care.

»

Seamless Pass-Through Experience: Utilizes high-resolution cameras to ensure that the computer-generated surroundings feel natural and responsive to the user.

RELATED MATERIALS



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