

Headset with Incorporated Optical Coherence Tomography (OCT) and Fundus Imaging Capabilities

Tech ID: 33804 / UC Case 2021-895-0

ABSTRACT

Researchers at the University of California, Davis, have developed a headset (e.g., virtual reality headset) in which two imaging modalities, optical coherence tomography (OCT) and scanning laser ophthalmoscopy (SLO), are incorporated with automated eye tracking and optical adjustment capabilities providing a fully automated imaging system in which patients are unaware that images of the retina are being acquired. Imaging takes place while the patient watches a soothing or entertaining video.

FULL DESCRIPTION

Many techniques used by ophthalmology personnel are non-invasive but require a patient to be focused on a specific point or region in their field of vision. Most of these methods are easy to perform with a cooperative patient. However, in children and patients with mental disabilities, most, if not all, ophthalmology techniques can be nearly impossible to perform due to a lack of cooperation by the patient, often resulting in misdiagnosis and underdiagnosis of eye conditions in these patients. Due to the manual and complex nature of setting up conventional imaging systems, the involvement of expert clinicians and technicians, and full cooperation of the patient in the process is required. In addition to limitations with certain patient groups, the unavailability of trained personnel and the extra cost associated with their involvement further make it difficult for patient groups in remote and underserved areas to access imaging technologies.

As a result, there is a need to develop other techniques that benefit patients with mental disabilities, making the process as seamless as possible and for use within the entire ophthalmic patient population including remote and underserved areas by making the technology easier to use and more accessible. The developed invention provides a fully automated imaging system in which a patient is unaware that images of his or her retina are being taken. The seamless imaging capability of the new technology includes OCT and SLO. This new imaging technology can be used with new groups of patients: very young children, people with mental disabilities, including children with autism, elderly, including those with mental disabilities and Alzheimer's disease, veterans with mental health issues, or patients in remote areas where specialty clinics are not available.

APPLICATIONS

- ▶ Ocular image capture and diagnostics of a patient
- ▶ Manufacturers of eye imaging equipment

FEATURES/BENEFITS

- ▶ Simplifies ocular image capture for a wider patient population including young children
- ▶ Reduces imaging costs
- ▶ Easy to use and does not require highly trained imaging technicians

CONTACT

Andrew M. Van Court
amvancourt@ucdavis.edu
 tel: .



INVENTORS

- ▶ Bozchalooi, Iman
- ▶ Emami-Naeini, Parisa

OTHER INFORMATION

KEYWORDS

ophthalmic imaging,
 imaging modalities, OCT
 imaging, SLO imaging

CATEGORIZED AS

- ▶ **Optics and Photonics**
 - ▶ All Optics and Photonics
- ▶ **Imaging**
 - ▶ Medical
 - ▶ Other
- ▶ **Medical**
 - ▶ Devices
 - ▶ Diagnostics
 - ▶ Imaging
- ▶ **Sensors & Instrumentation**
 - ▶ Medical

▶ Can be paired with machine learning for automated imaging followed by diagnosis

▶ [Other](#)

PATENT STATUS

RELATED CASES

2021-895-0

| Country | Type | Number | Dated | Case |
|---------------------------|-----------------------|--------------------------------|------------|----------|
| Patent Cooperation Treaty | Published Application | WO 2022/217160 | 10/13/2022 | 2021-895 |

Additional Patent Pending

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Low-Cost, Multi-Wavelength, Camera System that Incorporates Artificial Intelligence for Precision Positioning](#)
- ▶ [Non-Invasive AI-Based Retinal Inflammation Detection and Severity Estimation Using OCT B-Scans](#)
- ▶ [Haptic Smart Phone-Cover: A Real-Time Navigation System for Individuals with Visual Impairment](#)

University of California, Davis

Technology Transfer Office

1 Shields Avenue, Mrak Hall 4th Floor,

Davis, CA 95616

Tel:

530.754.8649

techtransfer@ucdavis.edu

<https://research.ucdavis.edu/technology-transfer/>

Fax:

530.754.7620

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