



VR Eye: Towards building a Customized Head Mount Display for Virtual Reality Applications

ABSTRACTS

VR Eye is a research project intended to provide medical solutions to **visual acuity disorder** using virtual reality applications. The branch of this research involves building a customizable head-mounted display that can render the VR scene leading to testing for any human eye disorders like myopia, hypermetropia and others using standard medical practices. The build for customizable HMD involves various steps like literature survey on presently available HMD's and their features, stipulated circuit schematic on approach and their different phases involved for design. This research deals with **designing, testing, validation, and interfacing** various sensors required to simulate virtual reality immersive experience. Furthermore, the prototype design will be subjected to many peripheral interfaces for enhanced medical applications.

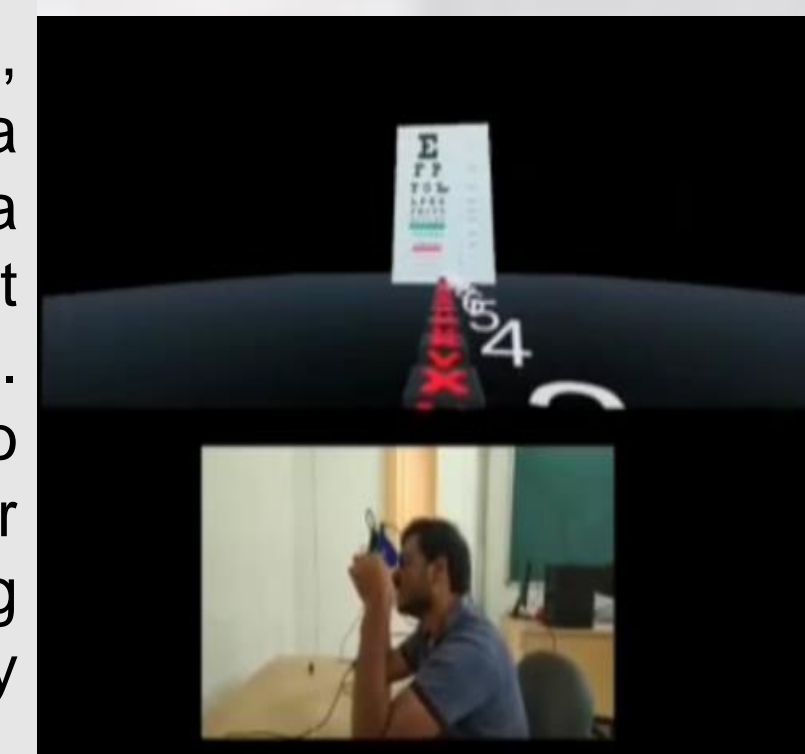
OBJECTIVE

- The idea is to provide medical assistance for eye-related disorders in a customizable, low cost, and robust head mount display.
- The essential function of HMD should be to **diagnose** the type of visual disorder the person wearing is facing. The disorder may be related to the eye's power, night blindness, astigmatism, and many more.
- The key here is that the user should feel immersed in the VR scene to yield accurate results. The HMD designed should follow all the **usability guidelines** and yet **customizable** to any applications related to optics.



METHOD

Initially, in the experiment, participants must read a standard **Snellen chart** at a certain distance in a well-lit room using a direct eye. They were later subjected to read the Snellen with their corrected vision or using their spectacles. Then they are administered the



standard Snellen chart process to establish a **causation** relationship. In the second part of the experiment, the participants undergo the test using customizable **head-mounted-display with 3D printed casing**. The participants are subjected to follow a sequential list of instructions to mimic the real Snellen test in VR.

REFERENCES

VR Eye: Exploring Human Visual Acuity Test Using Virtual Reality by Shivang Shekhar, Sai Anirudh Karre, Raghu Reddy