

Subliminal Reorientation and Repositioning in Virtual Reality During Eye Blinks

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ABSTRACT

Locomotion in Immersive Virtual Environments (IVEs) is one of the most basic interactions, while human walking is the most natural user-interface for this. Obviously, this technique is limited by the available physical space. Redirected Walking (RDW) wants to overcome this issue by subliminal redirection of the user inside the physical space. Traditional RDW algorithms need a circle with a radius of 22m to allow the user the exploration of an infinite virtual world [2]. Because this is still too large to fit in a room-scale setup, we have to optimize detection thresholds and algorithms.

Bolte et al. [1] already examined reorientation and repositioning during saccades and showed that a subtle manipulation is possible. In this poster we describe how we investigated reorientation and repositioning of the user in the virtual world during eye blinks. Furthermore, we present an experimental setup for evaluating detection thresholds of reorientation and repositioning during eye blinks. And we indicate first impressions of the perception and the usability.

Keywords

Virtual Reality; Redirection; Eye Blink

1. EXPERIMENTAL SETUP

We used a head-mounted display with an integrated eye-tracking device and showed a virtual replica of the real environment to the participants of the experiment. In a trial, the participant was asked to blink. During the detection of a blink the virtual world was rotated or translated. After that, we asked the participant to guess in which direction the world was rotated/translated and offered two possible answers (2-Alternatives-Forced-Choice-Task). We tested yaw, pitch, roll and translations on x, y, z axis with seven gains.

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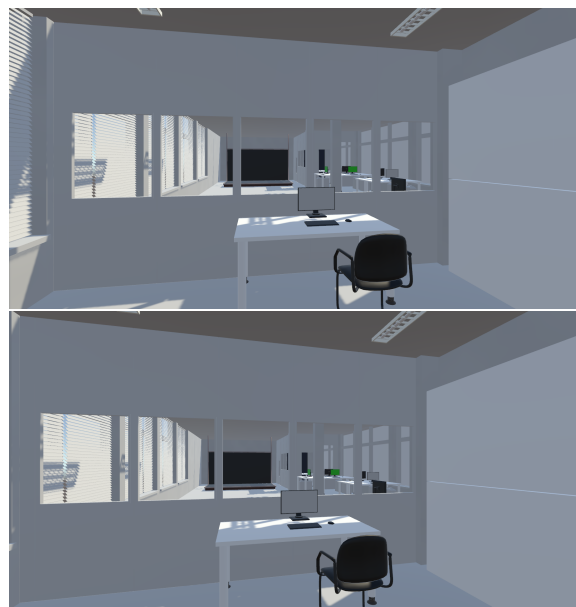


Figure 1: The virtual environment before and after an eye blink.

2. IMPRESSIONS

First impressions suggest that imperceptible reorientation and repositioning is possible during eye blinks. Moreover, initial feedback suggests that it could widen the known RDW detection thresholds.

3. REFERENCES

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