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Abstract

Guiding Attention in Immersive 3D Virtual Reality

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This dissertation is concerned with guiding a user's attention in an immersive 3D virtual reality. The improving quality in virtual reality has come with the added challenge of keeping the experience for users as realistic as possible. This work proposes the use of the Subtle Gaze Direction (SGD) technique along with a 'saturation' technique as methods for drawing attention in a virtual reality environment. This adaption of SGD from 2D to a virtual reality 3D environment works by modulating the colour of a location using a semi-transparent sphere. In the 'saturation' technique, the colour of the object is manipulated by increasing its saturation and brightness.

A user study was conducted to determine the effectiveness of these techniques. This study required participants to wear the Oculus Rift™ head-mounted display to perform a visual search task with and without attention guidance. The task was made purposely difficult to perform accurately without attention guidance. Results indicate through improved performance with attention guidance that the techniques used are effective. However, we were not able to conclusively prove that the technique was subtle as participants noticed the visual cues. Based on our findings we outline a number of areas for further improvement, most notably in determining the location of a viewer's focus before placing a visual cue.