Multiphase Safety System for Real Walking in Virtual Environments

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Overview

Real Walking in Virtual Environments allows a user to explore a virtual environment by physically moving in the real world. This provides intuitive navigation and high immersion, but the user cannot see the real world.

This can be a safety issue, because the user can collide with physical objects such as walls or furniture. To avoid this, there should be a system in place that reliably warns the user from such obstacles. In the past this has been solved with a simple texture that fades in as the user approaches the physical boundaries.

This however can be problematic if the user walks fast and can block the view if the user stands relatively close to the wall. However, both situations need to be solved to increase security and immersion. In addition, certain special cases such as the user walking backwards or different virtual environments need to be considered.

Tasks

In this thesis you will analyze the requirements for such a system. Afterwards you will design various warning systems, evaluate them against your designs and select the most promising ones. These should be evaluated in a small user experiment.

Skills

• Experience with C# or other object oriented programing languages
• Experience with Unity3D is a plus
• Knowledge in statistics and user studies is advantageous
• Interest in Virtual Reality
• Autonomous working style

Results

The results of this thesis have to be summarized in a written report and will be presented to the ICVR group in a 20 min talk.

Contact

Markus Zank, LEE L 201- zank@iwf.mavt.ethz.ch
Andreas Kunz, LEE L208 - kunz@iwf.mavt.ethz.ch