

Development of man-machine interfaces in VR

with true hand tracking and gesture recognition

Graduate



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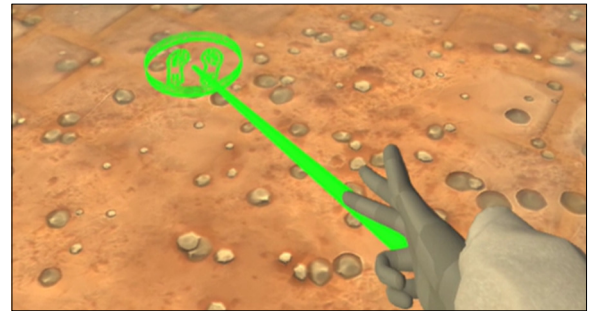
Introduction: The aim of this thesis is to develop various human-machine interfaces in virtual reality using true hand tracking. Based on the Pico 4 hand tracking VR headset and a multi-user environment by VRilliant GmbH in Zurich, this work expanded the gestures, gesture-recognition, inventory system and collision detection.

The interfaces developed within this framework are intended to enable intuitive and user-friendly interaction with the virtual world through the use of hand gestures instead of memorized controller button actions.

Definition of Task: The hand gestures are refined in favor of a more natural handling. The existing travel function - movement of the user through the virtual space - is simplified. The bagged transport of objects through the room - the so-called inventory function - is a completely new development. A collision warning for multiplayer mode has also been created to prevent unintentional collisions between players who are in the same shared real space, but virtually at different places. This is a crucial feature for large-scale free-roam applications.

Result: A particular concern during implementation was the ability to make interfaces easily transferable to other projects. Solutions were successfully developed for all the tasks mentioned before. The interfaces offer a wide range of applications and enable developers to easily integrate them into their projects.

Teleportbeam
Own presentation



Inventory
Own presentation



Collisionwarning
Own presentation



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Subject Area
Computer Science