

VRlab - Teaching and Researching Virtual Technologies

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The VRlab is a teaching and research lab for virtual technologies at the School of Informatics, Reutlingen University. It is a lab and a postgraduate project in the study program Human-Centered Computing. A major goal of this project is to give students the opportunity to focus on research work related to virtual technologies and interaction in and with virtual environments. The time-span is two semesters, which give students nearly one year time for their project work. They can then go on with their research in the so-called scientific deepening project and the thesis. In the lab, students can work with different input and output devices, e.g. Leap motion, Myo or Kinect for input or Oculus Rift, Samsung Gear VR, Smart Glasses or HTC Vive for output.

In one project, we plugged a camera in front of the Oculus Rift to allow showing parts of the real body in the virtual environment. This setup was then used to compare the influence of a so-called video self-avatar with the absence of such a visual representation of a body for height estimations. The result of this experiment shows that the presence of a visual body influences height estimates, which is consistent with other experiments. These results can be of interest for VR applications used in the context of acrophobia treatment.

Another project is also dealing with the fear of heights. Here the students developed a VR application that tries to create an experience as immersive as possible. Therefore, it puts the user on a small real wooden plank over a 40-meter deep virtual canyon to trigger the fear of heights. The user is tracked using optical markers to transfer his motions into the virtual world. The real and the virtual plank bends synchronously thus triggering multiple senses and increasing immersion. For the future, we plan to extend this VR - application by using a self-avatar controlled by a Perception Neuron MoCap system.