

Einsatz eines CAVE in Ausbildung und Training von Chirurgen

Education and Surgical Training using the CAVE Technology

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In order to represent three dimensional data on a conventional two dimensional media, one has always to accept a trade off between complexity of the illustration and the amount of information displayed. This is the more true in medical education where inadequate teaching methods of complicated anatomical and pathological structures lead to suboptimal patients treatment. In this work first experiences are reported using a VR system to overcome this drawbacks.

A walkable VR room (CAVE) is used for displaying structures obtained from medical tomographic data. By rear panel projection on multiple walls and wearing shutter glasses the CAVE allows multiple users to interact with objects seemingly floating in space. Volumetric datasets are converted into surface data (segmentation process) using the 3D-Slicer. software tool and saved as .vtk files and exported as a collection of primitives in any common file format (.iv, .pfb). Adequate tracking of the head position and separate image calculation for each eye yields a vivid impression for the users.

With the use of a separately tracked 6D joystick manipulation such as rotation, translation, zooming, decomposition or highlightning can be done intuitively as well as exploring the data physically by walking through the scene, e.g. the temporal bone. The availability of the CAVE technology at many universities will facilitate the use for medical purposes considerably.

The authors used this system succesfully for education of medical students and young residents in otorhinolaryngology and for selected clinical cases. Currently the clinical applications are surgical planning and simulation, leading to surgical training by

integration of haptic devices. Teleteaching and interactive global case reports are only examples of the unique potential of this technology.

