Simpler Interfaces for Better 3D Simulation

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Abstract

As a company providing VR professionals with the immersive visualization and interaction devices they require for their daily tasks, we are witnessing the limitations of existing expert user interfaces that do not address non-advanced users' requirements. That is why we aimed at simplifying both 3D interaction devices and the interaction tasks they are associated with, and confronted actual users to such new interaction techniques.

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1. Introduction and Context

Addressing the needs of many VR professionals for more than 20 years, Immersion specializes in providing interaction, visualization and collaboration hardware interfaces for both the research and the in-dustry. Having followed the increased deployment of large display immersive virtual reality rooms, the company witnessed that they greatly help enhance inter-disciplinary collaboration. Indeed, they introduce immersive visualization interfaces that allow their users to better understand each other thanks to a life size interactive representation of 3D data that more or less acts like a common operational picture. However, given everyone has a different viewpoint on the screen and different relationships with the content displayed, it may happen they have slightly different understandings of the same data. Besides, while many advanced simulation tools and input devices exist to perform complicated virtual operations onto the 3D models, they are often so complex that they require extensive training.

2. Contribution

We believe providing simpler input devices for simple manipulation or interaction tasks with 3D con-tent should help people get a quicker and better grasp of the 3D content they are being presented with, which would definitely be useful in design and project reviews tasks. That is why we are performing extensive research and development in the scope of interactive and collaborative interfaces. We created a multitouch cubic interface that relies on simple well-known multitouch gestures, and tried to assess how much the use of such

a device can help novice 3D users to better understand 3D data. Likewise, we implemented very simple selection and navigation techniques that were sufficiently in line with the users requirements to open the way to interactive and immersive visualization applications in other domains, such as exhibitions and medical applications.

3. Conclusion and Future Works

Applying multitouch interaction techniques to virtual environments proves to ease the access to 3D interaction for non advanced users, provided such devices are associated to simple tasks in the 3D environment. Besides, given the huge need for professionnals to discuss and exchange their expertises around interactive representations of digital information, both 2D and 3D, we now wish to investigate new ways to consolidate such heterogenous data while proposing homogeneous interaction techniques.