Applying ‘Second Life’ to a CAVE™-like System for the Elaboration of Interaction Methods with Programmable Interfaces

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1 Second Life as Stereoscopic Environment

With its multiple types of interaction scenarios both between people and between people and objects in virtual space, ‘Second Life’ can be used as a platform for both social and technological research. Set up in a stereoscopic environment, the Open Source Viewer is implemented in a technological framework for iteratively creating, evaluating and optimizing appropriate input/output patterns and interface metaphors for immersive environments. Focus of R&D are the real-time interaction methods rendered possible by a programmable Interface.

Thus, the Ars Electronica Futurelab has developed a technological framework based on own R&D results. The framework consists of an interaction wrapper (Palmist), a distribution engine (ARSBOX) [Berger et al. 2004] and a render unit (VRizer) [Berger et al. 2005].

2 Technological Framework for HCI Research

Closing the gap between applications based on game engines and the PC Cluster System like ‘ARSBOX’, ‘VRizer’ makes any Linux-based OpenGL application compatible with ‘ARSBOX’ whether in active or passive stereo mode. Real-time head-tracking hardware allows ‘ARSBOX’ to compute the correct environment for a user’s particular perspective. ‘VRizer’ is used to convert ‘Second Life’’s internet-based virtual world into stereoscopic environment for use in high-performance virtual reality systems, such as CAVE™ or other multi-screen environments. The interface, ‘Palmist’, a programmable Pocket PC specially developed for the interaction in Virtual Environment is used. The R&D project emphasizes joining the whole set of programming and interaction options to one interface. Current activities aim to apply the ‘Palmist’ software as editor for real time User Generated Content creation, e.g. modelling “on the fly”, and to designing the graphical interface simplifying and enhancing the interaction scopes normally restricted by the mouse and keyboard. Two main developments building on the existing R&D results of the Ars Electronica Futurelab are necessary: (1) the stereoscopic VR ‘Second Life’ Viewer and the (2) Interaction Framework. The first step to stereoscopically display ‘Second Life’ on four screens is to sync up the existing Open Source Viewer and the technological framework independently from one computer. An isolation of interaction patterns from the ‘Second Life’ source code based on clustering efforts is required to open up the simulated environment for research in interaction design. Creating an autonomous Interaction Wrapper serving as operating system for the ‘Palmist’ Interface and working independently from the internet application. This way, ‘Second Life’ is used as prototyping environment for the R&D of new forms of graphical and gesture based input languages for programmable interaction devices or even (as presently in preparation) for implementation options of speech recognition or computer vision for real time interaction in tele-immersive environments.

Figure 1: Screenshot during Interaction within ‘Second Life’

Why ‘Second Life’? ‘Second Life’ is built on the structure and semantics of the real world and, thus, is a continuation of the conception of an holistic artificial space populated by autonomous avatars representing human actors. Covering a wide range of opportunities and tasks in the creation and manipulation of virtual content as well as in telepresence and social interaction, ‘Second Life’ features a wide range of interaction principles relevant in HCI research.

3 Conclusion

Running ‘Second Life’ as real-time 3D application provides an experimental area exploring Human Computer Interaction that focuses on virtual content creation as well as the navigation through complex virtual environments and its interaction requirements. The results can be applied to other application scenarios such as virtual city planning for single-user and also collaborative edutainment and training sessions. 


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