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Communication dans un congr  s

A Survey of Interaction Techniques for Interactive 3D Environments

Jacek Jankowski¹, Martin Hachet^{1,2} D  tails

1 Potioc - Popular interaction with 3d content

LaBRI - Laboratoire Bordelais de Recherche en Informatique, Inria Bordeaux - Sud-Ouest

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Abstract : Various interaction techniques have been developed for interactive 3D environments. This paper presents an up-to-date and comprehensive review of the state of the art of non-immersive interaction techniques for Navigation, Selection & Manipulation, and System Control, including a basic introduction to the topic, the challenges, and an examination of a number of popular approaches. We hope that this survey can aid both researchers and developers of interactive 3D applications in having a clearer overview of the topic and in particular can be useful for practitioners and researchers that are new to the field of interactive 3D graphics.

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The application must coordinate the interactions and resolve potential ambiguities to provide plausible effects. We analyze and document the challenges of seamless 3D interaction across multiple independent viewing windows, propose a high-level software design to realize the necessary functionality, and apply the design to a set of interaction tools. Our setup was tested in a formal user study, which revealed general advantages of collaborative 3D data exploration with multiple views in terms of user preference, comfort, and task performance. Published in: IEEE Transactions on Visualization and Computer Graphics. Interaction techniques for 3D environments. 1) Direct manipulation: Interacting efficiently within a 3D immersive environment is likely to require input methods that differ from the traditional mouse and keyboard combination. One way of categorising immersive interaction techniques is based on isomorphism: isomorphic approaches will preserve a natural one-to-one mapping between input actions and their resulting effect, whereas non-isomorphic techniques afford non-realistic interactions and can even be based on "magical" or "virtual" tools. [16] D. A. Bowman, J. L. Gabbard, and D. Hix, "A survey of usability evaluation in virtual 3D interactive environments are often referred to as virtual reality or interactive 3D and have a figurative appearance. Much like our own world, this type of world allows interaction with other (networked) beings as well as manipulation of objects (Loeffler & Andersen 1994). They are a kind of virtual habitat. See also: virtual environment (overview of various virtual environments), Web 3D technology (overview of web 3D technologies), 3D modeling (overview of modeling tools), 3D file format (overview Declarative Integration of Interactive 3D Graphics into the World-Wide Web. Principles, Current Approaches, and Research Agenda. Jacek Jankowski, Sandy Ressler, Kristian Söns, Yvonne Jung, Johannes Behr, and Philipp Slusallek. Introduction. Outline. u Declarative 3D Principles u Declarative 3D Frameworks. u Evaluation Platforms: X3DOM and XML3D u Declarative 3D Essentials u Level of Integration and Polyfill Approach. u Declarative 3D Agenda u Conclusions. Maps to Native, X3D-Plugin, WebGL or Flash Utilizes HTML/JS/CSS for scripting and interaction HTML-Profile: Reduced complexity and implementation effort u 2011: W3C Declarative 3D Community Group u 2012: Component-Plugins: Volume, GEO, CAD, Geo2D, X3DOM: Showcases. XML3D.