Virtual Heritage: Simulations and Visualization Tools

Teresa Heitor
Instituto Superior Técnico
Lisboa, Portugal
teresa@civil.ist.utl.pt

Aurélio Nogueira
Universidade Federal do Rio de Janeiro
Rio de Janeiro, Brasil
aurelio.nogueira@gmail.com

Maria Bacharel Carreira
Instituto Superior Técnico
Lisboa, Portugal
maria@civil.ist.utl.pt

Gelly Rodrigues
Instituto Superior Técnico
Lisboa, Portugal
gellymendes@gmail.com

Ana Luísa Pedroso
Instituto Superior Técnico
Lisboa, Portugal
luisapedroso@gmail.com

Abstract

This work refers to a tool for Architecture learning and for the promotion and preservation of the Cultural Heritage, based on the virtual exploration of an environment. As Mudur et al (1999) regards there is an absolute need to preserve and catalog these assets for future study and memory "right from the beginning of the first civilizations, documentation of events, religion, culture and significant structures has been of utmost importance for further study and preservation."

To explore the heritage, virtual environments are modeled, supported by Virtual Reality (VR) technology concepts and Virtual Heritage (VH) systems. VR technology was technologically and scientifically enhance in the 90's, nowadays the costs of the VR required materials dropped significantly making VR an interesting resource for the preservation and divulgation of cultural heritage. The virtual Heritage system, based on computation and VR technologies, evolved from virtual archeology, generating virtual reconstitutions of ancient communities with valuable cultural assets (Mitchell, 2004).

The Virtual reality technology allows the construction of three-dimensional visualizations which simultaneously integrates a variety of data and images in an environment of digital and cultural inclusion, facilitating the acquisition and transmission of knowledge. (Nogueira et al, 2010) By exceeding the space-time limits, virtual environments make possible the interactive exploration, acting as a kind of "time machine" (Dainese et al, 2003).

The article is structured in three parts. The first one analyses the use of new technologies in Architecture namely during project process, creation and divulgation of knowledge. The second one describes the common responsibility towards the Cultural Heritage. The third one presents the Virtual Heritage (VH) system: photogrammetry, panoramic and 3D scanner.

The final remarks explain the tool's advantages, emphasizing on Jardim do Cerco's case study. A baroque garden, which has the unique potential to combine architectural and landscape values.

The garden has a succession of fountains and lakes, as well as the wide paths that encourage the visitors to a contemplative attitude.

The present study should be further developed and enhanced to become an effective learning tool, thus supporting cultural heritage preservation and memory. (Nogueira et al, 2010)

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