

**VIRTUAL REALITY (VR) APPLIED TO ENVIRONMENT REPRESENTATIONS:
SOME EXAMPLES AT UNIVERSITY OF PADUA (ITALY)**

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ABSTRACT

Lately, in the circle of the architectural survey, there is the need to have a more and more complete representation of the scene or of the object to survey. Particularly one curtains to integrate the photogrammetry survey with representations of virtual visits. One of the systems for sale that allows to visit interactive environments, more precisely visit of environments from their inside and its objects, proposing images of high quality independently from the complexity of the scene, is the "Quick Time VR". In this note we show with details this system, giving theoretical justification of the algorithms used from it to effect the construction from banks of necessary images to the realisation of the virtual visit of the "Anatomical Theatre" and of the "Ancient Courtyard" of the University of Padova

KEY WORDS: GIS, Survey, Cultural Heritage, Teaching, Experience

ABSTRACT

The research here reported is the result of the cooperation of the DIAR Department of the University of Padua with the School of Advanced Studies (E.S.A.S.) in the field of the Conservation of the Cultural and Architectural Heritage (C.P.S.A.). The course has been organized for the first year in 200 hours lesson and 200 practical lesson (full time). At the course are admitted graduated students in Architecture, Engineering, and Humanistic Science which want to increase their knowledge and which want to work in the field of the Conservation of the Cultural and Architectural Heritage; but the course is also offered to graduated professional man and woman in the Public Administration (from local government, municipality, province, region, national government, Ministry of Cultural Heritage, Local Monuments and Fine Arts Offices) attend at the conservation and environmental protection and want to specialize themselves in the disciplines involved in the intervention on the territory and on the architectural monument. The E.S.A.S. took place in the DIET Department of the University of Padua. The school is particularly focused on the methodology of survey and management of qualitative and quantitative data which come from the different analysis: carried out on the manuscript, among the subjects there is the topographic survey, photogrammetric survey of the architecture, Cad to support the representation and 3D modelling of the object, Geographic Information System for the Cultural Heritage, integrated survey methodologies and not destructive analysis, Cataloging of the Cultural Heritage. The works here presented are the result of the teaching and of the stage (two months) which took place in the DIAR Department. The works are reproduced on a CD support and has been exposed in the closing ceremony. The activity of the students during this period has been focused on the survey and representation of the Castello Visconteo di Padova. The topics are divided in two fields: the first field is represented by the survey and representation, the related subjects are the topographic project and survey of networks to support the different phases of a survey, the use of lot of the advanced methodology and technology, topographic survey of vertical section and surfaces of the manuscript with total station no prism, the data acquisition to support digital photogrammetric restitution (photogrammetric taken acquired by metric and scientific cameras, and not calibrated cameras digital and not), the data processing (photogrammetric restitution, simplified methodology of survey). The second is the data management to support the phases of the project of conservation and of the Cataloging of the monument or objects in the museum. It has been used GIS technology to support both these fields applied from the architectural scale (to support the analysis of the material, the analysis of the degree, the metric computation of the intervention, the verify of the standard limits admitted by the law in the re-use project...) to the urban scale to support the production of the map of the Cultural, Architectural Heritage.