

Scuola Superiore Sant'Anna

PERCRO Laboratory - Visualisation and Information Landscapes Unit (=VILU)

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Core Competence

Real-time Rendering, Virtual and Augmented Environments, Scientific Visualisation, Information Visualisation, Optimal SceneGraph Management, Immersive Visualisation, Image Based Rendering.



Head of PERCRO
and of the VILU
Massimo Bergamasco

History

The PERCRO Laboratory fosters research in Virtual Environments and Teleoperations and since 1991 has made considerable progress and gained experience in the technical and experimental development of Virtual Environments. The Visualisation Unit of the PERCRO Laboratory started its activities in 1997 originally addressing optimal real-time rendering of complex Virtual Environments and then expanding its research to new fields like Augmented Reality and Information Landscapes.

Staff

1 Professor: Massimo Bergamasco

8 Research assistants: Franco Tecchia, Andrea Brogni, Chiara Evangelista, Carlo Alberto Avizzano, Marcello Carrozzino, Claudia Falcioni, Sandro Bacinelli, Cristian Bianchi

1 Ph.D. student: Fabio Rossi



1 Assisting staff: Laura Meattini.

Rooms and Locations

The PERCRO Laboratory is located in the the first floor of the new Scientific and Technology Centre of the Scuola Superiore Sant'Anna in Pontedera (Pisa). This includes a large area for the Visualisation and Information Landscapes unit and two areas for the Mechanics and Control units of the Laboratory.

Financing

Rooms and infrastructures of PERCRO-VILU are property of the Scuola Superiore Sant'Anna, which is a public university. The specific costs of the VILU related to equipment, software and personell are covered by projects funded by the European Commission and by projects commissioned by private entities (industries and foundations).

Current Structure and Important Partners

PERCRO VILU is organized into two work areas, one for Visualisation, the other one for Information Landscapes. Their principal partners are museums, research centres and universities. Among them the most relevant

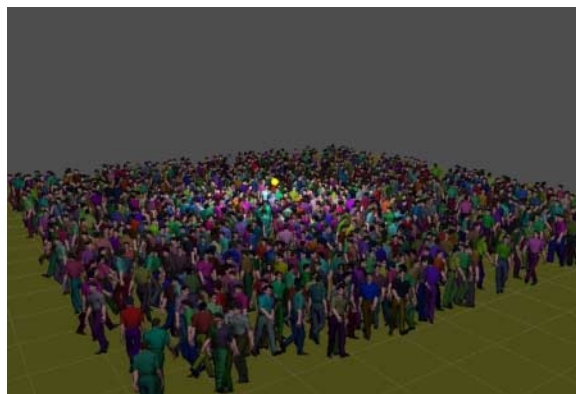
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are the Opera del Duomo Museum (Pisa, Italy), the Centro Galego de Arte Contemporanea (Santiago de Compostela, Spain), the University College of London and the University of Cyprus.



Current Research

PERCRO VILU is currently researching on various topics, mostly related to on-going projects. In the context of the EU project PURE FORM a low cost, passive stereo projection screen is been built that allows the user to interact with models of laser-scanned statues. New algorithms for mesh simplification are being researched as well as the possibility to use per-pixel lighting to increase visual fidelity. In the context of a collaboration with Italian Cultural Heritage organizations research is active on efficient, lightweight transmission of 3d models over the Internet, and a new technology to display 3D content on line is under development. Real-time crowd rendering and procedural modeling of cities are others active research topics. Another field of interest is Virtual TypoGraphic Lybrary. This project is oriented to changing the paradigm of interaction with the textual information in the web: from the classical metaphor of html pages to the Virtual Environment exploration. The new spatial dimensions implied in this approach change the relation between the user and the Environment, as



well as the way information are managed. An Editor is available that gives the opportunity of building own Information Landscapes in the same easy way used for creating html pages. That way it is possible to insert the Information Landscape in the web so that it may be accessible to all users by mouse or by space mouse.

Important Recent Industrial Partners

3D Scanners Ltd. UK, Centro Ricerche FIAT, Italy, ENEA, Italy, Piaggio, Pisa, Italy

Important Recent Project Participations

- “IST-29580- PURE FORM“ funded by EU, www.pureform.org
- “Growth-1999-RD.11030-ViRtual” funded by EU, percro.sssup.it/projects/virtual/



- “Design and development of software for 3D visualization” in Real-Time and on the Web, to be applied to Cultural Heritage (with reference to the monuments of the Cathedral Square of the Leaning Tower in Pisa) funded by Opera della Primaziale Pisana, Pisa, Italy.
- “Realization of a Virtual Environment for the 3D navigation” to be used in the field of the neuropsychology, funded by Enea and S. Lucia Foundation, Roma, Italy.

The Future of the Lab

The future research areas of the PERCRO VILU will focus on: Image Based Rendering, High-Level Shading Languages, Procedural Modeling, and Immersive Visualisation (for the Visualisation research area), data base visualization, Haptic manipulation of information, Multiuser Presence and Immersive Visualisation (for the Information Landscape research area).