ITALY Pisa

CNR - ISTI

Istituto di Szienza e Tecnologie dell' Informazione (ISTI)
Visual Computing Group
Consiglio Nazionale delle Ricerche CNR
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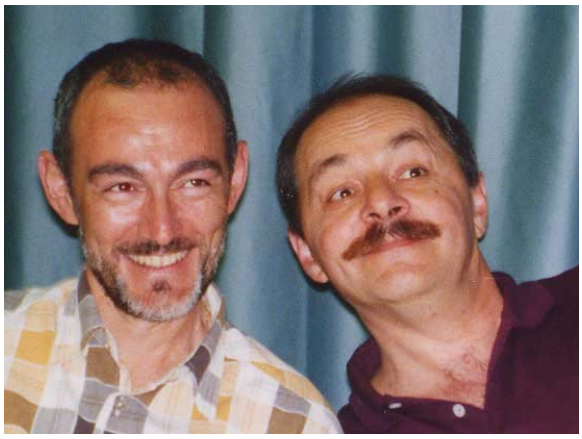
Core Competence

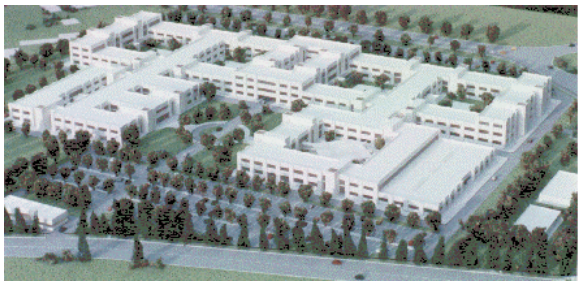
Isosurface Fitting, Volume Visualization, Deformable Object Modelling, 3D Scanning, Geometric Simplification, Multi-resolution Modelling



Head of the Institute
Roberto Scopigno and Claudio Montani

History

Computer graphics activities started in the first 80's, initiated by Claudio Montani of the Istituto di Elaborazione dell'Informazione (IEI) and directed mainly to the development of new techniques for the automatic production of thematic maps. At the end of the 80's Roberto Scopigno of the Istituto CNUCE joined the Group and this coincided with the beginning of research activities on volumetric and scientific visualization. The Group definitely took off in the first 90's when Paolo Cignoni became part of it and started the activities on multi-resolution modelling and, later, surface simplification. From the middle of 90's the activities of the Group have been



extended to the modelling of deformable objects and to the hardware and software systems for the automatic acquisition of the shape and colour of 3D objects. The Visual Computing Group is now part of the Istituto di Scienza e Tecnologie dell'Informazione (ISTI), born from the fusion of IEI and CNUCE.

Staff

1 Research director: Claudio Montani
2 Senior researchers: Giotto Fiorio Belletti, Roberto Scopigno
7 Researchers: Benedetto Biagi, Marco Callieri, Paolo Cignoni, Fabio Ganovelli, Raffaele Perego, Federico Ponchio, Claudio Rocchini
1 System programmer: Paolo Pingi
1 Technician: Enrico Fantini
1 Secretary: Lucia Pavoni

Rooms and Locations

The Group occupies five large rooms and a graphics lab of the Istituto di Scienza e Tecnologie dell'Informazione at the first floor of the new CNR Research Area in Pisa

Financing

As Institute of the Italian National Research Council the basic staff (6 people), the rooms and other infrastructure are financed by the Italian Ministry for Education, University and Scientific Research. Most of the researchers and some additional staff, as well as most special equipment are paid from projects funded by the EU or by Regional or Central Institution or by Industries.

Current Structure and Important Partners

The Visual Computing

Group is one of the large “projects” of the ISTI-CNR. In our meaning “project” is a light and flexible department where people have common research interests and goals. The VCG cooperates with many research Institutions in Italy (IMATI – CNR in Genova, Depatment of Computer Science in Pisa and Genova), in Europe (MPI in Saarbrücken, UPC in Barcelona), and in the USA (Stanford University, Stanford, CA).

Current Research

Current research activities are articulated in two different research lines: (a) new hardware and software tools for the acquisition, manipulation, handling, and interactive visualization of 3D cultural heritage and (b) scientific visualization and deformable objects modelling. The objectives of the projects in the medium-long term can be summarized in:

(a) design and implementation of software tools specific for the acquisition, manipulation, editing, handling, and presentation of complex 3D objects. In particular, the objectives of the research line refer the development of interactive tools for the registration of the depth information acquired with different 3D scans, the fusion of the depth information in a single triangular model, the simplification of the geometric complexity of the output models, the preservation of the geometric and /or pictorial details on the simplified models via texture or bump mapping. This research line provides for the acquisition of both small and large scale; for these latter image based rendering techniques rather than accurate 3D scanning have been adopted;

(b) the design and implementation of software tools for the efficient simulation of deformable objects subjected to pressures, cuts, lacerations or shifts and,

in the same time, tools for the interactive visualization of the ongoing simulations and for the visual integration of the simulated models together with the information acquired with the classic non invasive investigations.

Important Recent Project Participations

- „ViHAP3D“, EU-IST Project, www.vihap3d.org/information.html
- „V-Planet“, EU-IST Project, www.crs4.it/vvr/contents/announce/vplanet/index.html
- „RIS+, EU-IST” Project by means of Tuscany Regional Government, europa.eu.int/comm/regional_policy/innovation/innovating/inno/tosca.htm
- Parnaso “Ecumene”, Industrial National Project funded by the Ministries of Cultural Heritage and Scientific Research.
- Special National Project “Safeguard of Cultural Heritage”, CNR funded National Project, www.pfbeniculturali.it/index.asp .

Important Recent Industrial Partners

Minolta Italia - Milano, IDS Informatica - Messina, SCM Group – Sinalunga

Future of the Lab

The Visual Computing Group will intensify its partecipation in international projects and will give more and more attention to the industrial applications of the scientific results obtained.