PORTUGAL Lisbon

INESC-CVLab

INESC Institute for Computer & Systems Engineering
CVLab: Cooperative Virtual Environments Lab
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Core Competence

Virtual and Augmented Environments, MultiModal Interaction, Real-Time Rendering, Mobile Visualization, Security and Neworking

Head of the Institute
Joaquim Jorge

History

Computer Graphics activities started in mid-eighties with a focus on CAD/CAM. Lectures on Computer graphics started in 1985. About 7PhDs have been awarded since the inception of the group. In 1998 we rganized the Eurographics'98 conference in Fundacao Calouste Gulbenkian, Lisboa. In 2001 the graphics group merged with three other research groups to form the current laboratory.

Staff

11 Professors: Joaquim Jorge, Paulo Ferreira, Brisson Lopes, Ana Paiva, Joao Pereira, Alberto Silva, Miguel Mira da Silva, Helena Galhardas, Rito da Silva, Andre Zuquete, Mario Rui Gomes
12 Doctoral students
10 MsC students
2 Secretaries: Paula Centeno, Paula Monteiro

Rooms and Locations

The lab occupies 360 square meters and is located on the sixth floor of the INESC-ID building.

Financing

The Laboratory is partly financed by the Portuguese government, thanks to a multi-year grant proportional to the number of PhD-qualified research staff. Some of the doctoral and masters candidates work are paid through EC or national project grants.

Current Structure and Important Partners

CVLab currently groups 20% of the research staff (PhD) at INESC-ID. THe other main laboratories focus on Natural Language Processing, Nanotechnology, Wide-Band Telecommunications and Signal Processing. CVLab is organized into three main areas of competence: - Computer Graphics and Virtual Environments (headed by Joaquim Jorge) - Mobile and Distributed Environments (headed by Paulo Ferreira) - Information Systems and S/W Engineering (headed by Alberto Silva) We have strong collaborations with Portugal Telecom, Siemens and Sony/Ericsson. Within INESC-ID we have been cooperating with the Spoken Language Lab. At the Technical University of Lisbon there are ongoing research projects with the Robotics Institute of Instituto Superior Tecnico.

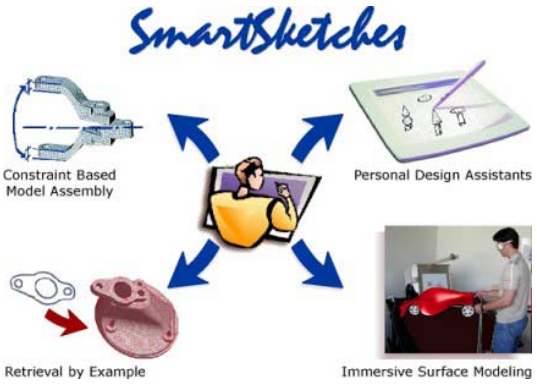
Current Research

The area of cooperative virtual environments has become strategically relevant, given the

emergence of new interaction paradigms involving people and intelligent devices and also between people in distinct geographical places. Within CVLab there is critical mass in a number of disciplines relevant to virtual environments with ongoing work in in different specialization areas: a) Multimodal interaction with computational artifacts within virtual envi-ronments based on synergistic recognition of multiple dialogue modalities. (Three ongoing projects) b) Intelligent virtual environments combining gesture recognition with computer graphics and artificial intelligence techniques for creating synthetic believable persons. (Three ongoing projects) c) Software architectures for virtual environments with a focus on image synthesis, intelligent agent programming through the effective use of software design patters and component-based design. (two ongoing projects) d) Distributed Systems and ubiquitous computing focusing on object distribution, persistence, resource sharing and management, security, parallelism and mobility. (new area) e) Models for mobile electronic commerce, companies and virtual organizations with a special emphasis on logistics, transportation, management of information and work flow as well as costumer mobility. (two projects)

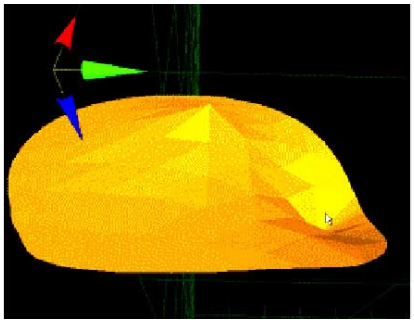
Important Recent Project Participations

- "SmartSketches", EU-IST Project, smartsketches.inesc-id.pt
- "SAFIRA", EU-IST Project, gaiva.inesc.pt/safira/
- "EUCLID", RTP 11.13
- "PERDIS", EU-IST Project, www-sor.inria.fr/projects/perdis/
- "NIMIS", EU-IST



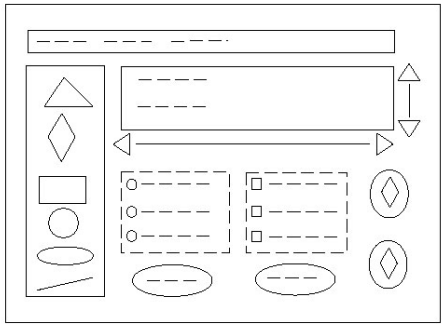
Important Recent Industrial Partners

Sony, Portugal Telecom, Siemens, Fujitsu, FIAT



Future of the Lab

Our joint work will focus on international recognition through publication within the context of participation in networks of excellence, international research projects and graduate-level teaching. At the institutional level we aim at reinforcing cooperation with other groups with complementary skills such as Spoken Language, Computer Vision, Computer Networks and Robotics. We plan to work in several main directions: Ubiquitous Computing and



Concurrent Engineering: Develop intelligent environments as well as the required infrastructure to support concurrent engineering tasks using multimodal interaction techniques, personal design assistants and tools for cooperative work. Virtual Environments and Digital Storytelling: To develop a platform for cooperative virtual environments. This platform will support creating networked large-scale virtual worlds inhabited by autonomous beings (autonomous agents and believable synthetic personalities). This entails re-search into algorithms and techniques for real-time rendering of complex environments such as large urban models, huge virtual landscapes and cul-tural heritage sites. These environments will be used for simulation, training and entertainment. Virtual Citizenship: to develop comprehensive systems that support activities of citizens (secure commerce, tourism, logistics, information and resource discovery, participation in society and interaction with institutions).