University of Granada

Grupo de Investigación en Informática Gráfica -
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Core Competence

Photorealistic Rendering, Global Illumination, Virtual Reality, Solid, Modelling, Volume Modelling, Interaction Techniques, Multiresolution, Animation

Head of the Institute
Juan Carlos Torres

History

Computer Graphics activities started in the late 1990 within a contract. The group was formally created by 1996. Lectures on computer graphics are given since 1989. About 12 PhD's have completed their work since then. The group organized the EG Spanish chapter annual conference in 1993, the EG workshop on Design, Specification and Verification of Interactive System in 1997, the EG rendering workshop in 1999 and will organize the EUROGRAPHICS annual conference in 2003.

Staff

4 Associate professors: Juan Carlos Torres, Carlos Ureña, Domingo Martín, Miguel Gea
4 Assistant professors: Jorge Revelles, Antonio López, Francisco Gutierrez, Marisa Rodríguez
12 Research assistants: Marcelino Cabrera, Pedro Cano, Francisco de Asís Conde, Rubén Jesús García, José Luis Garrido, Miguel Lastra, Alejandro León,

María Isabel López, José Miguel Mantas, Rosa Ana Montes, Vicente del Sol, Francisco Velasco

Rooms and Locations

The group occupies some 200 square meters and is located in the third floor of the department building of the Informatic Higher School.

Financing

The staff, some additional staff, the rooms and other infrastructure are financed by the Andalucian government. Most special equipment are paid from projects funded by the Andalucian and Spanish governments.

Current Structure and Important Partners

The Computer Graphics Group is one of the groups of the Software Department. The other group works on data bases and software engineering. The Computer Graphics Group is organized in three work areas, one for rendering (Carlos Ureña), the other for interaction (Miguel Gea), and the third one for modelling (Juan Carlos Torres). Among others, they cooperate closely with the graphics group from: Girona, Barcelona, Zaragoza, Jaén and Murcia, as well as the machine vision group from Granada.
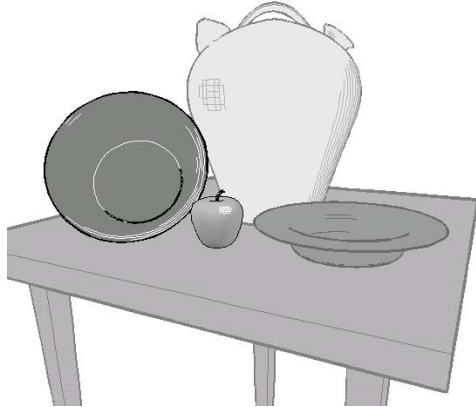
Important Recent Project Participations

- "Precise simulation of illumination". TIC95-0614-C03-02.
- "Integrated CAD system for illumination devices design". TIC98-0973-C03-01.
- "CAD for element of road security based on illumination computation".

TIC2001-2392-C03-03

- "Solid and volumes representation for progressive transmission. TIC2001-2099-C03-02

Current Research

We are working on modelling interactive system using formal methods. Currently we have several prototypes to describe interactive system based on direct manipulation style in algebraic and temporal logic allowing the translation to the software development with automated tools. We have also proposed a extended notation in UML to describe cooperative system allowing the analysis of cognitives issues, organisation knowledge and translating them to formal notation based on Coloured Petri Nets. The work been done in the modelling area focuses on the development of new representation schemes for solid and volumes that are adapted to carry out progressive transmission. Actually we have result with three different approaches, that combine some hierarchical representation with a brep or enumeration models. We are also working on model for non-photorealistic rendering. Another line of work in our group is related to research in realistic rendering. We focus on the usage of Monte-Carlo methods for the solution of the Global Illumination problem. We are working in a new density estimation technique for radiosity or radiance estimation after photosimulation, and exploring its applications to rendering complex scenes and to interactive rendering of dynamic scenes. In this context we are also working on algorithms for random sampling of arbitrary BRDFs.

Important Recent Industrial Partners

Puleva S.A. DGF-Universal fragances S.A. Trevenque Sistemas de Información Comité Español de Iluminación Hospital Virgen de las Nieves Valeo S.A.

Future of the Lab

The group will continue working on the three research areas, trying to consolidate them. Our priority now is to participate in international projects.