GRAVIR - IMAG

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Core Competence

Specification of natural scenes and objects; Alternative representation for geometry, animation, and rendering; Accelerated computing techniques, Validation techniques, Natural Scenes: mineral, vegetal and animal. Analysis and simulation of lighting: efficient photorealistic rendering, data acquisition based on lighting analysis; Non-Photorealistic Rendering: Definition of rendering styles, extraction of styles from existing documents; Simplification and Transformation of models

Head of the Lab
Claude Puech

History

Computer Graphics research in Grenoble has been driven in the past ten years by the iMAGIS project at INRIA. Currently the iMAGIS project is reorganizing into two new projects. Since this reorganization is not finalized yet, this short document first summarizes the activities at iMAGIS, and gives some insight on the reorganization currently taking place.

Staff

Chief Scientist EVASION: Marie-Paule Cani (Professor at INPG)

Scientists EVASION: Georges-Pierre Bonneau (Professor at UJF), François Faure (Assistant Professor at UJF) , Fabrice Neyret (Tenured Researcher at CNRS), Lionel Reveret (Tenured Researcher at INRIA)

Chief Scientist ARTIS: François Sillion (Senior Researcher at INRIA)

Scientists ARTIS: Gilles Debunne (Tenured Researcher at CNRS), Jean-Dominique Gascuel (Tenured Researcher at CNRS), Jean-Marc Hasenfratz (Assistant Professor at UPMF), Nicolas Holzschuh (Tenured Researcher at INRIA), Cyril Soler (Tenured
Researcher at INRIA), Joelle Thollot, (Assistant Professor at INPG)

Rooms and Locations

The Lab has recently moved to a new place in Montbonnot.

Financing

The lab is funded by CNRS, INRIA, UJF de Grenoble and INPG. Most people are employed at one of these funding institutions.

Current Structure and Important Partners

iMAGIS is reorganizing into two new projects, called EVASION, and ARTIS. Although research conducted in these two new projects will of course be strongly related to past research work at iMAGIS, original and new research topics will be initiated as well. EVASION: Environnements Virtuels pour animation et la Synthèse Images Objets Naturels (Virtual Environments for Animation and Image Synthesis of Natural

Objects). Research themes: Specification of natural scenes and objects; Alternative representation for geometry, animation, and rendering; Accelerated computing techniques, Validation techniques, Natural Scenes: mineral, vegetal and animal. ARTIS: Acquisition, Représentation et Transformations pour Image de Synthèse (Acquisition, Representation and Transformation for Image Synthesis). Research themes: Analysis and simulation of lighting: efficient photorealistic rendering, data acquisition based on lighting analysis; Non-Photorealistic Rendering: Definition of rendering styles, extraction of styles from existing documents; Simplification and Transformation of models.
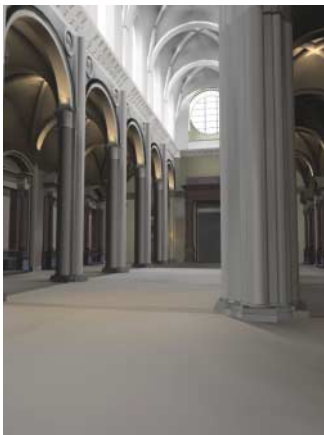
Current Research

The research at iMAGIS is driven by the simulation of complex phenomena. Users of virtual prototypes, such as scientists, engineers and architects, require interactive environments where they can create realistic models and run efficient simulations. Using current graphics systems, these competing requirements cannot be mutually satisfied. Therefore, research at iMAGIS focuses on finding acceptable compromises using innovative approaches. To this end we are both investigating fundamental problems and applying this new technology to practical systems. Fundamental issues include the development of efficient algorithms and the creation of geometric or physical models. Among our application domains are site evaluation, training
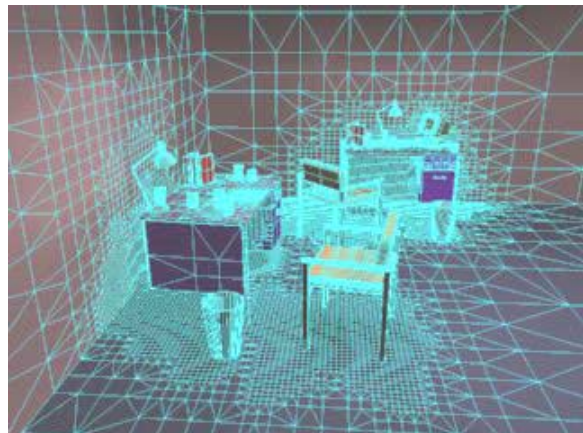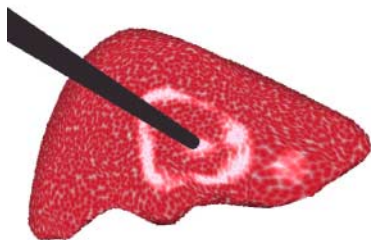
simulators, medical images, and scientific visualization. Research themes at iMAGIS Modelling the shape of complex objects: procedural techniques, constraint systems, high-level primitives, construction by deformation of simple shapes, etc. Modelling the physical behaviour of deformable objects: construction, simulation of movement, interactive manipulation, collision detection and response. Modelling light and its interaction with objects: use of complex reflectance models (diffuse and specular reflection), global illumination and interactive simulation. Study of fundamental geometric problems linked to the notions of visibility and coherence.

Future of the Lab

Currently the iMAGIS project is reorganizing into two new projects: EVASION and ARTIS, see "Current Structure".