INRIA-REVES

Institut National de Recherche en Informatique et Automatique
REVES - Rendering and Virtual Environments with Sound
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Core Competence

Real-time Rendering, Virtual and Augmented Environments, Sound rendering, Auralization, Photorealistic Rendering, Global Illumination, Real-time Rendering, Point Based Rendering, Relighting, 3D Interaction

Head of the Project
George Drettakis

History

REVES is a new research project at INRIA Sophia-Antipolis, in the French Riviera. Our specialisation is rendering for virtual environments with sound, with particular emphasis on the combination of sound and images. As part of a national research institution, we conduct research and supervision of graduate students and are involved in European Union and French national research projects. We have close collaboration with local industry in 3D and architecture/urban planning, and we are interested in virtual heritage applications of our research.

Staff

1 Group leader: George Drettakis
1 Full-time researcher: Nicolas Tsingos
3 Ph.D. students: Marie-Claude Frasson, Florent

Duguet, Alex Reche
1 Associated engineer: Gael Braconier
1 Part-time engineer on the workbench project:
David Geldreich
1 Administrative assistant: Agnes Clement-Bessiere

Rooms and Locations

We are located at the INRIA Sophia-Antipolis Campus.

Financing

All INRIA projects receive standard funding from the national INRIA budget (direct government funding), and external funding in the form of contracts and research projects. Salaries of permanent staff are paid by the government (civil service status), and Ph.D. students receive government or industry co-financed fellowships.

Current Structure and Important Partners

REVES is a INRIA research group and as such has a double prerogative for scientific excellence and technology transfer. We closely collaborate with the CSTB (a partially self funded institute for the AEC industry) in the context of French and European projects, and RealViz in bilateral projects as well as the IST project CREATE. We collaborate closely with the University of Montreal, ARTIS and EVASION (ex-iMAGIS), MPII, Cornell University, the University of Dresden etc.
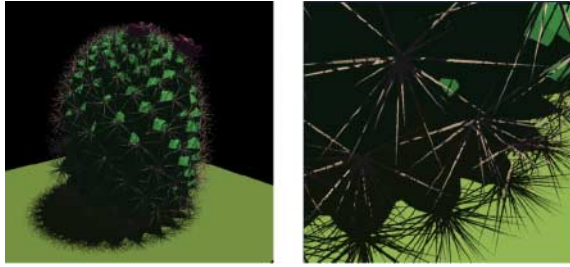
Current Research

Our research focuses on computer rendering of images and sound. Our goal is to develop novel algorithms to improve the speed and quality of computer-generated images and spatialized audio, as well as that of virtual and augmented environments. We are specifically interested in the interaction between the two media, since it is well established that the sense of immersion and presence is greatly enhanced in virtual environments when combining them. We investigate "plausible rendering" approaches, for both images and sound, which are typically approximate but efficient techniques. We also develop algorithms for slower, but accurate rendering approaches, which are often based on simulation of the underlying physical phenomena. Developing smooth transitions between the two extremes is an important concern in our research. The rendering algorithms we develop can be applied to virtual and augmented environments. We develop relighting methods which allow us to virtually change lighting conditions, striving to make them efficient and usable. We also investigate how to enrich 3D scenes with sound, and appropriate representations to improve interaction in these environments. Through our industrial and academic collaborations we are applying our research to virtual heritage, architecture and urban planning, computer games and audio-visual production.
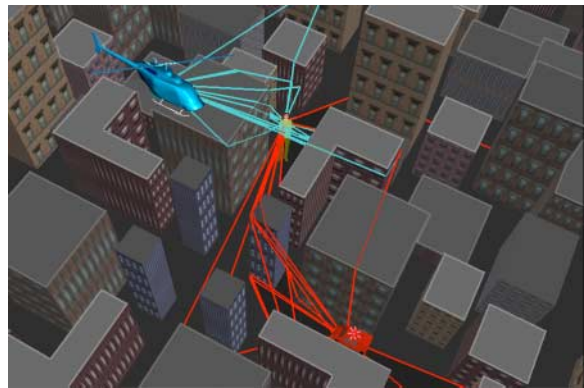

Important Recent Project Participations

- CREATE, EU IST EVE-VISIT, PREDIT (French government)
- ARC ARCHEOS (www-sop.inria.fr/reves/Archeos)

Important Recent Industrial Partners

RealViz SA (www.realviz.com), CSTB (www.cstb.fr), Foundation of the Hellenic World (www.fhw.gr)

Future of the Lab

We plan on continuing research on rendering algorithms for both images and sound, as well as applying our research to virtual heritage and architecture applications among others. We are in the process of developing partnerships with the industrial sector for more mature aspects of our research, which we hope will allow wider application of our research results.