

Contact Résidence le Fontonne - bât B
847, chemin des quatre chemins
06 600 Antibes - France
Phone +33 (0)4 97 15 53 27
Email Emmanuel.Gallo@gmail.com
Nationality French
<http://www-sop.inria.fr/reves/Emmanuel.Gallo/>

Real-time 3D Audio Rendering
Audio for Virtual Reality and Games
Spatial Audio Acquisition And Coding
Perceptual Audio Processing

CAREER PLAN

During my education and various projects, I acquired experience and skills in programming real-time 3D graphics algorithms, digital signal processing, psycho-acoustics and advanced interactive sound simulation. My current research interest is in the field of 3D audio rendering where I contributed to several publications and patents. My objective is to conduct further R&D projects in this field.

RESEARCH EXPERIENCE

PhD Thesis
at REVES, INRIA.
Apr 2004 - Apr 2007

"Perceptual Sound Rendering for Multi-Modal Virtual Environments."
under the supervision of Nicolas Tsingos and George Drettakis and in collaboration with the CSTB (French Scientific Center for Building Physics).

We developed solutions for virtual 3D sound rendering of complex scene comprising thousands of point sources in real-time. We also created an recording/authoring/re-rendering pipeline for live recordings in the field. It builds a spatial representation from a sparse set of recordings throughout the environment. This spatial representation is independent of the restitution setup, allows for post-editing of the recordings and virtual walkthroughs.

Software engineer
at REVES, INRIA.
Oct 2002 - Jul 2003

As part of the Create project, I implemented several computer audio and graphics algorithms into a virtual reality platform: point based rendering, perspective shadow maps, outdoors lighting and 3D sound system.

Masters project
at REVES, INRIA.
Oct 2002 - Sep 2002

Worked on algorithms for accelerating the rendering of a 3D auditory scene using perceptual masking, adaptive clustering and parallel audio processing with programmable graphics hardware (GPU).

Freelance
at I3S, CNRS.
Jul 2001 - Sep 2001

Worked on seafloor image classification and segmentation by unsupervised adaptive clustering.

Bachelor of science
project at I3S, CNRS.
May 2001 - Jun 2001

Worked on cartography of seafloor: Video image correspondence, 3D visualization using Real-time Optimally Adaptive Meshes and communication software with a profiler sonar.

EDUCATION

2004 - 2007
2001 - 2002
1999 - 2001

PhD in Computer Science at REVES, INRIA Sophia Antipolis.
Master of science at university of Nice Sophia-Antipolis.
Bachelor of science at university of Nice Sophia-Antipolis.

SKILLS

Programming skills:

C/C++, Matlab, Maple, Assembler X86, Assembler 68000, VHDL, Java, Elisp, Perl, Ada, Python, Scheme, Php, Html.

Graphics libraries:

OpenGL, DirectX, OpenGL Performer, Open AL, Cavelib.

Operating systems:

Windows(9x,NT,XP), Unix(Linux, Solaris, Irix).

Applications:

3dsmax, Maya, Photoshop, Illustrator, Latex.

COLABORATIVE PROJECTS

2004 - 2007

OPERA 2-year RNTL project, co-funded by the French Ministry of Research and Ministry of Industry. This project aims to apply our knowledge of auditory perception to the design of efficient audio rendering pipelines: <http://www-sop.inria.fr/rees/OPERA>.
Project partner : REVES / INRIA, IRCAM, LIMSI / CNRS, France Telecom R&D, Virtools and CSTB.

2002 - 2003

CREATE 3-year project funded by the 5th Framework Information Society Technologies (IST) Program of the European Union (IST-2001-34231): <http://www.cs.ucl.ac.uk/create/>
The project's goal to combine innovative work performed in VR, simulation, visualisation, graphics, audio, and interfaces into the development of applications informed by a "constructivist" approach.
Project partner : REVES / INRIA, University College London (UCL), Foundation of the Hellenic World (FHW), University of Cyprus (UCY), RealViz, PERCRO and CSTB.

PATENTS AND TECHNOLOGY TRANSFER

French and US patent on clustering and masking algorithms for 3D sound "Dispositif et méthode perfectionnés de spatialisation du son" (Advanced System and Method for Sound Spatialisation).

French patent FR n°03 13 875 (11/26/2003) and US patent N°10/748,125 (12/31/2003) which are currently pending.

This technologies was licensing to Eden Games (an ATARI game studio)

Journals

3D-Audio Matting, Post-editing and Re-rendering from Field Recordings.

Emmanuel Gallo, Nicolas Tsingos, and Guillaume Lemaitre.

EURASIP Journal on Applied Signal Processing, 2007

(Special Issue on Spatial Sound and Virtual Acoustics)

Perceptual Audio Rendering of Complex Virtual Environments.

Nicolas Tsingos, Emmanuel Gallo and George Drettakis.

ACM Transactions on Graphics (SIGGRAPH Conference Proceedings) number 3 volume 23, July 2004

International Peer-reviewed conferences

Extracting and Re-rendering Structured Auditory Scenes from Field Recordings.

Emmanuel Gallo and Nicolas Tsingos.

AES 30TH International Conference, March 2007

Prioritizing Signals for Selective Real-time Audio Processing.

Emmanuel Gallo, Guillaume Lemaitre, Nicolas Tsingos.

International Conference on Auditory Display (ICAD'05) , July 2005

Image-based Techniques for the Creation and Display of Photorealistic Interactive Virtual Environments.

George Drettakis, Maria Roussou, Nicolas Tsingos, Alex Reche, Emmanuel Gallo.

Proceedings of the Eurographics Symposium on Virtual Environments, June 2004

Technical reports

Les Descripteurs d'un Son Librairie Matlab SPL et Fichiers de Descriptions ".sig"

Guillaume Lemaitre, Emmanuel Gallo.

INRIA number RT-031 , January 2006

Perceptual Audio Rendering of Complex Virtual Environments.

Nicolas Tsingos, Emmanuel Gallo and George Drettakis.

INRIA technical report #4734, Feb. 2003.

Others

The CREATE Project: Mixed Reality for Design, Education, and Cultural Heritage with a Constructivist Approach.

Céline Loscos, Hila Ritter Widenfeld, Maria Roussou, Alexandre Meyer, Franco Tecchia, Emmanuel Gallo,

George Drettakis, Alex Reche, Nicolas Tsingos, Yiorgos Chrysanthou, Luc Robert, Massimo Bergamasco,

Andrea Dettori, Souheil Soubra.

ISMAR 03, The Second IEEE and ACM International Symposium on Mixed and Augmented Reality, October 2003

Efficient 3D Audio Processing on the GPU.

Emmanuel Gallo and Nicolas Tsingos.

GP2, ACM Workshop on General Purpose Computing on Graphics Processors, August 2004

A User-Centered Approach on Combining Realism and Interactivity in Virtual Environments.

Maria Roussou, George Drettakis, Nicolas Tsingos, Alex Reche, Emmanuel Gallo.

Proceedings of IEEE VR 2004 (ext. abstract), pages 251-252, March 2004

PUBLICATIONS (continued)

Breaking the 64 Spatialized Sources Barrier.
Nicolas Tsingos, Emmanuel Gallo and George Drettakis.
Gamasutra Audio Resource Guide 2003, May 2003.

REFERENCES

George Drettakis	Senior researcher and leader of REVES / INRIA	george.drettakis@sophia.inria.fr phone: +33 4 92 38 50 32
Nicolas Tsingos	Researcher at REVES / INRIA research group	nicolas.tsingos@sophia.inria.fr phone: +33 4 92 38 76 23
Souheil Soubra	Head of Division of EVE / CSTB Sophia Antipolis	souheil.soubra@cstb.fr
Maria-João Rendas	Researcher at SAM / CNRS research group	maria-joao.rendas@i3s.unice.fr

MISCALLENOUS

Languages: French: mother tongue
English: good
Practiced sports: Jogging, gym, squash, surf and skating.
Licences: Driving licence.
Boat licence.