

Cyril Crassin

Ph.D Candidate & Engineer

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<http://www.icare3d.org>

Research interests: real-time voxels ray-casting, parallel GPU algorithms and data structures, photo-realistic rendering.

EDUCATION

- 2007 – present **Ph.D candidate in Computer Graphics.**
Joseph Fourier University (**UJF**), Grenoble, France. ARTIS Team (LJK-INRIA).
Dissertation topic: **Interactive exploration and rendering of large and detailed volumetric scenes.**
Working on hierarchical GPU data structures and algorithms for volume raycasting and raytracing of very large animated voxels based scenes (eg. clouds). *Main aspects: rendering, volume visibility and large data sets management (out-of-core), GPU complex structures creations, procedural details.*
Advisor: [Fabrice Neyret](#). Merit-based Ph.D grant **MENRT**. Ministry of Research and Higher Education.
- 2006 – 2007 **M.Sc in Computer Graphics.** With honors.
National Polytechnic Institute of Grenoble (**INPG**), Grenoble, France. EVASION Team (LJK-INRIA).
Thesis: **Structures and algorithms for real-time large and detailed procedural volumes exploration.**
Advisor: [Fabrice Neyret](#). In collaboration with [Sylvain Lefebvre](#).
- 2003 – 2006 **M.Eng in Computer Science (Engineering School)** with Computer Graphics specialization. With honors.
Belfort-Montbéliard University of Technology (**UTBM**), Belfort, France.
Many academic projects: *3D engine based on OpenSceneGraph for [SeT](#) laboratory Virtual Reality Platform, Multi-Agent based stereo matching, large 3D terrain rendering, 3D TicTacToe for mobile devices, 3D simulation of urban transports*, and more. See www.icare3d.org for details.

PROFESSIONAL EXPERIENCE

- 2008 **NVIDIA.** Developer Technology group. London, UK.
PhD 3 months research internship on CUDA sparse voxel octree for video games.
- 2007 **INRIA Rhone-Alpes.** EVASION Team of LJK Laboratory. Grenoble, France
Master's degree 6 months internship. Design and development of new data structures and algorithms for interactive exploration and rendering of large and detailed volumes on GPU. Under the supervision of Fabrice Neyret and in collaboration with Sylvain Lefebvre from INRIA.
- 2006 **Dassault Systemes (CAD-CAM Softwares).** Research team (3D4All). Suresnes headquarters, France.
Ingeneer's degree 6 months internship. Development of a real time 3D Navier-Stokes fluid simulation for gaseous and liquids phenomena on GPU (GPGPU). Prototype targeting *Catia* and *Virtools*.
- 2005 **CEA (Atomic Energy Commission).** Military applications center. **CEA/DAM**, Bruyères le Chatel, France.
Ingeneer's degree 2nd year 6 months internship. R&D in 3D scientific visualization and parallel computing. GPU Volume Rendering on distributed memory parallel environment module for VTK (Visualization ToolKit).
- 2003 **Computer Science laboratory of Orléans University (LIFO).** VR research team, Orléans, France.
Associate's Degree 3 months internship. Parallel Virtual Reality R&D. Development of a distributed Virtual Reality demo on PC cluster using parallel physics simulation and cellular automata.

PUBLICATIONS

- C. Crassin, F. Neyret, S. Lefebvre, E. Eisemann, **GigaVoxels : Ray-Guided Streaming for Efficient and Detailed Voxel Rendering**, In *ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games (I3D)*, feb 2009.
- A. Bouthors, F. Neyret, N. Max, E. Bruneton, C. Crassin, **Interactive multiple anisotropic scattering in clouds**, In *Proceedings of ACM Symposium on Interactive 3D and Games (I3D)*, 2008.
- A. Bouthors, F. Neyret, N. Max, E. Bruneton, C. Crassin, **Rendu interactif de nuages réalistes**, In *Proceedings of Journées de l'Association Francophone d'Informatique Graphique (AFIG)*, 2007.
- C. Crassin, F. Neyret, S. Lefebvre, **Représentation et algorithmes pour l'exploration interactive de volumes procéduraux étendus et détaillés**, French Master Thesis, 2007.

TEACHING EXPERIENCE & OTHER WORKS

- 2007 – 2008 **Teaching assistant** at Joseph Fourier University (UJF), Grenoble, France.
Computer Graphics, [Rendering techniques for image synthesis](#). Lectures and GPU practical courses (OpenGL 3.0 style practical course and CUDA development), Graduate level.
- 2007 – 2008 **Teaching assistant** at Institut National Polytechnique de Grenoble (INPG), France.
Programing, *C programming and UNIX basis*. Lectures and practical courses, Undergraduate level.
- 2007 **Scholar scientific animation** for [Mobinet](#).
Practical courses to high school students on Mobinet, a pedagogic platform, for initiating students to games programming.
- 2005 – present Maintaining on-line advanced-level technical website www.icare3d.org. Personal technical website, introducing many computer graphics projects (scholars ans personals), GPU news and demos.
- 2007 – present **Consulting** at [Digisens](#), Chambéry, France. Computed Tomography Software developer and provider. Open source GPU volume rendering library development and consulting as GPU and VR expert.

TECHNICAL KNOWLEDGE

- Main skills : Computer graphics, real time rendering, GPGPU, scientific visualization, parallel computing, software engineering, image processing, computer vision, artificial intelligence, multi-agents systems, optimization methods.
- Languages : Expert in C/C++, Java, x86 assembly, Visual Basic, Pascal, LISP, PROLOG, PHP, SQL, Javascript.
- GPU Dev. : Expert in OpenGL, Shading languages (GLSL,Cg,ASM,...), CUDA, Direct3D.
- Libraries : STL, Boost, QT, MPI, VTK, FlowVR...
- OSs : Windows 9x/NT/2000/XP, Linux, MacOS.
- Tools & Soft- Visual Studio, CVS/SVN, Doxygen, gDEDebugger, FX Composer, 3D Studio MAX, Blender, Adobe Photo-
ware : shop, Gimp, LaTeX, MS Office, Open Office...

LANGUAGES

- French Native language
- English** **Fluent. TOEIC score: 850/990** (2005)

OTHER ACTIVITIES

- Sports Mountain biking for 10 years, mountaineering, skiing, rock climbing as beginner.
- Design Visual communication for university, design of 3D short movies, 3D modeling and animation.
- Cultural Digital arts, guitar as beginner.

REFERENCES

Fabrice Neyret, Researcher
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