



Personal, Contact

 December 27, 1981
 Single
 Available

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Professional Experience

09/2008 to 02/2017: Lead R&D engineer at Lumiscaphe, a company specializing in processing and photo-realistic real-time rendering of Digital Aspect Mock-up, with clients mostly in design, engineering and marketing departments of automotive, luxury and transportation industry leaders. Main developer for the flagship authoring software (Patchwork3D) and the VR viewer (P3D Virtual Sight). Major contributions to all workstation-based solutions and technical foundations over which all of Lumiscaphe software is built. Team technical advisor and living code memory.

Main realisations, supervised developments, and activities:

- *Virtual and Augmented Reality*: Scale 1:1 stereoscopic rendering in CAVE systems, HMDs, zSpace. Navigation, object positioning, clipping planes, interactions, and dynamic flash-light using hand-held tracked controllers. Distant setups synchronisation. Cluster-based rendering. 2 and 4 wall immersive structures conception. Omnidirectional stereo video export. Projection warping correction. Projection mapping, webcam-based AR.
- *Interaction*: Product configuration (geometric variants, object positioning, trim&finish, lighting, environment), animation (rigid-body geometric animation with constraints, cameras, animated textures).
- *Rendering*: Proprietary OpenGL and ray-tracing engines. Dynamic multilayer material (on the fly shading code generation), existing material models modernisation. Linear physically based rendering with end-to-end colour management. Real-time 2D post-processing of 3D rendering. Clipping planes. Transparency. Anti-aliasing. Compositing. New multi-platform & multi-API engine in C++, and in JavaScript/WebGL. Fryrender (now Arion), Vray, Iray interoperability.
- *Lighting*: Light-maps baking (local or distributed). Dynamically combinable and colourable lights. IES profiles. Real-time sun and spotlight. Global illumination.
- *Environments* : Parallax mapping, dynamic local reflections, isotropic/anisotropic roughness, HDR Light Studio integration.
- *Geometry*: Topology cleaning. Mesh unfolding, parametrisation, fusion. CAD imports.
- *Misc*: Production environment improvements, software architecture & patterns, build (Jenkins), multi-threading, UI/UX, Android POC.
- *Social*: Mentoring, training, animation of the rendering team. External training & support, interactions with CG artists, partners and clients in Europe, USA, Asia. Exhibition setup and animation.

Academic Experience

09/2004 to 08/2008: Ph.D. student and Temporary lecturer, research assistant at Université de Limoges (“Realistic image synthesis” team of XLIM Institute).

Themes:

- Real-time rain animation and rendering: image-based refraction through raindrops, specific motion-blur technique, GPU-based particle animation taking into account wind and collisions.
- Cryptographic file-transfer protocol acceleration on the GPU: client-server protocol, server part accelerated through CUDA implementation.

Publications:

- *Simulation réaliste de pluie en temps réel.* P. Rousseau - Ph.D. dissertation - 2007.
- *GPU Rainfall.* P. Rousseau, V. Jolivet, D. Ghazanfarpour - Journal of Graphics Tools - 2008.
- *Realistic real-time rain rendering.* P. Rousseau, V. Jolivet, D. Ghazanfarpour - Computers & Graphics - 2006.
- *Rendu Réaliste de Pluie en Temps-Réel.* P. Rousseau, V. Jolivet, D. Ghazanfarpour - AFIG - 2006.
- *High-Speed Single-Database PIR implementation.* C. Aguilar Melchor, B. Crespin, P. Gaborit, V. Jolivet, P. Rousseau - SECURWARE - 2008.
- *High-speed Private Information Retrieval Computation on GPU.* C. Aguilar Melchor, B. Crespin, P. Gaborit, V. Jolivet, P. Rousseau - PETS - 2008.

Reviewer:

SIGGRAPH 2009, ANR 2013 (French national agency for research).

Teaching:

2005 to 2008: Lectures, directed exercises, practical work at the Faculty of Sciences of Université de Limoges, 310 teaching hours. Algorithmic/programming, computer architecture, UNIX usage and programming, databases, computer graphics.

Education

2007 : Computer Science Ph.D., Université de Limoges (with First Class Honours).
2004 : MSc "Image, Vision, Robotics", INP Grenoble (with Honours).
2002 : BSc computer science, Université de Limoges (with High Honours - head of class).

Qualifications

Independent work or team work, leadership, initiative, pedagogy, technological watch and advise.
Respect for people, functional goals and deadlines.
Problem peeler, bug exterminator, conflicts deminer, Google search black-belt.

OS: Windows, Linux.

Programming languages: C/C++, GLSL, PHP, SQL, HTML, L^AT_EX, Bash.

Libraries: OpenGL/OpenGL ES, QT, FreeImage, LibAV, LittleCMS, VRPN.

Development environment: MS Visual Studio, QtCreator, Git, Jenkins.

Computer graphics : Lumiscaphe suite, Gimp, ICC colour profiles.

Languages: English (fluent). French (native). Spanish (basic).

Misc

Driving license, personal car.

Institutional or associative websites:

- Since 2005 : co-founder, web-master of www.beaublanc.com (>2000 unique visitors/day). Entirely rewritten in 2015.
- 2005-2007 : web-master of the Doctoral College of Université de Limoges websites.

Since 2007 : President of "Beaublanc.com" association.

2002-2003 : President of "Le GIL" student association.

2000-2003 : Sailing instructor (summer job).

Guitar, piano, DAW.

Amateur short films (fiction, documentary, animation).