Rodolphe Vaillant

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Education

University of Victoria & Université Paul Sabatier — **Victoria & Toulouse (Canada/France)**
Ph.D in Computer Graphics — *September 2015*

Université Paul Sabatier — **Toulouse (France)**
MS in Computer Science — *June 2011*

Experience

Namco Bandai Studios — **Tokyo (Japan)**
Research engineer — *Since September 2015*
Advanced character skinning for games

Namco Bandai Studios — **Tokyo (Japan) - Vancouver (Canada)**
Internship - supervised by Ando Kumiko — *September 2014 – june 2015*
Advanced character skinning for games

Mainly in Vancouver's studios and 2 months in Tokyo's studios. Research and development of several character skinning algorithms in a **C++/DirectX** game engine (**Compute Shader** implementation). Development of **Maya** plugins (**C++**, **Python** and **MEL**) for character skinning.

Ph.D in computer graphics — **Toulouse (France) - Victoria (Canada)**
Université Paul Sabatier and the University of Victoria, — *July 2011 - September 2015*
Title: "Study of potential fields composition and their joint use with meshes"
Co-supervised by Loïc Barthe and Brian Wyvill

Two years in France and Two years in Canada. My research involved mesh deformation, character animation (skinning), and implicit surface modeling. I presented at **SIGGRAPH** 2013 Implicit Skinning: a real-time algorithm with skin folds, skin contacts and muscular bulge for character skinning [VBG*12, VBG*13, VGB*14]. We collaborated with France (INRIA Bordeaux, Inria Grenoble) and Canada (University of Victoria). Among other things, I taught computer graphics classes and honed my skills on linear algebra, optimization problems and finite elements methods.

IRIT laboratory — **Toulouse**
Internship - supervised by Loïc Barthe — *January–July 2011*
Implicit surface modeling and character skinning

Prototyping of a character animation software for skinning in **C++**, **Qt**, **CUDA** and **Opengl** including: state of the art and implementation of composition operators for implicit surfaces (boolean modeling); implementation of surface reconstruction methods (from point clouds); skinning weights generation using harmonic/biharmonic functions; **GPU** implementation in **CUDA** of Dual Quaternion Skinning .

IRIT laboratory — **Toulouse**
Internship - supervised by Hugues Cassé — *June –July 2010*
Optimizing microprocessor simulation softwares.

It required a large range of technical skills: programming (**C**, **ARM** assembly, **OCaml**); language parsing with **Lex&Yacc**; debugging and benchmarking (**GDB**, **Valgrind**) and shell scripts for automation. We published generic

methods [CBV*10] to speed-up any processor simulation. Results are ten time faster compared to standard implementations.

Miscellaneous

Created a non-profit organization (the APAAI) **Toulouse**
2003–2005

The goal was to provide web hosting services. It was my first project related to computer science and I learned everything on my own. Here are the technical skills:

- Administration of web services such as **Apache** server, **Bind** and **Horde** under Linux system.
- Implementation of a website in **PHP/MySQL** and **CSS** (written from scratch) with automatic registration, user data base, password protected sessions and administration panel.

Technology transfer

Our current research [VBG*13, VGB*14] has an high impact on the animation industry. Several renowned companies contacted us and plan to transfer the Implicit Skinning framework. Codes under GNU GPL license are available to answer academic demands we had as well.

Publications

[VGB*14] Rodolphe Vaillant, Gaël Guennebaud, Loïc Barthe, Brian Wyvill, Marie-Paule Cani.
Robust Iso-Surface Tracking for Interactive Character Skinning
ACM Transactions on Graphics, 33(6), proc. of ACM SIGGRAPH ASIA, 2014.

[VBG*13] Rodolphe Vaillant, Loïc Barthe, Gaël Guennebaud, Marie-Paule Cani, Damien Rhomer, Brian Wyvill, Olivier Gourmel and Mathias Paulin.
Implicit Skinning: Real-Time Skin Deformation with Contact Modeling
ACM Transactions on Graphics, 32(4), Proc. of ACM SIGGRAPH, 2013.

[VBG*12] Rodolphe Vaillant, Loïc Barthe, Gaël Guennebaud, Marie-Paule Cani, Damien Rhomer and Brian Wyvill.
Déformation de la peau d'un personnage avec prise en compte des contacts
Revue Electronique Francophone d'Informatique Graphique 6(2), Best paper award AFIG/EGFR, 2012.

[CBV*10] Hugues Cassé, Jonathan Barre, Rodolphe Vaillant, Pascal Sainrat.
Fast Instruction-Accurate Simulation with SimNML
Workshop on Rapid Simulation and Performance Evaluation: Methods and Tools RAPIDO 2010.

Computer skills

Languages: C/C++ (template meta-programming as well), JAVA, Python, Ocaml, ARM.

GPU: Opengl, CUDA. Shading with GLSL and DirectX HLSL.

Libs/APIs: Qt, STL. Linear algebra with Eigen. Graphics: VCGLib, Maya (C++/Python API). Language parsing: Lex&Yacc.

Project management: CMake/QMake, Source control SVN/GIT/Perforce, Doxygen.

Softwares: Maya (&MEL scripts), Blender, Adobe Premiere, Maxima (Computer algebra system), Latex.

Miscellaneous: Unix operating systems, Shell scripts.

Internet: PHP, MySQL, CSS.

Talks & Workshops

Conference Talk 04/12/2014
Robust Iso-Surface Tracking
for Interactive Character Skinning
SIGGRAPH ASIA Technical Papers - Shenzhen, China

Invited Talk 05/01/2014
Workshop on Computer animation:
Appearance and Motion
Mc Gill University - Bellairs institute, Barbados

Invited Talk 28/02/2013
Introduction à l'Implicit Skinning.
Chapitre Français SIGGRAPH -
Cité des sciences Paris, France

Conference Talk 21/11/2012
Déformation de la peau d'un personnage
avec prise en compte des contacts.
AFIG Technical Papers - Calais, France

Invited Talk 13/08/2011
Skinning and Implicit Surfaces
University of Victoria - Victoria, Canada

Poster presentation 14/05/2014
Elastic Implicit Skinning: Robust Skin Deformation
with Contact Modeling
GRAND conference - Ottawa, Canada

Conference Talk 25/06/2013
Implicit Skinning: Real-Time Skin Deformation
with Contact Modeling
SIGGRAPH Technical Papers - Los Angeles, USA

Workshop 07/01/2013–10/01/2013
Implicit Models and Meshes - vol 2
INRIA - Grenoble, France

Workshop 03/08/2012–05/08/2012
Implicit Models and Meshes
Université Paul Sabatier - Toulouse, France.

Other services

Reviewer **SIGGRAPH** 2017, **SIGGRAPH Asia** 2014, Computer Graphics Forum 2016, **Eurographics** 2017, **SIGGRAPH** 2017.

Teachings

2013–2014 University of Victoria (40 hours):
- Master 1: *Introduction to character skinning* (lectures co-taught with Prof. Brian Wyvill)
- Tutoring: *Fundamentals of computer science*

2012–2013 Université Paul Sabatier (Toulouse) (65 hours):
- Master 2: *Image synthesis fundamentals* and *geometry processing* (labs)
- License 2: *Software development projects* and *introduction to computer graphics* (labs)
- Voluntary work: supervised a class of high school students (*Hyppocampe* internship).
  Introduction to scientific research through a three day project on campus.

2011–2012 Université Paul Sabatier (Toulouse) (62 hours):
- Master 1 (International class): *Image synthesis and CAD.* (lessons in English)
  In charge of the entire course: lectures, labs & exams.
- License 2: *Data structure and complexity* and *introduction to computer graphics* (lectures & labs)

Languages

French: native

English: fluent

Japanese: conversational