

# Rodolphe Vaillant

Tokyo – Japan

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## Education

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**University of Victoria & Université Paul Sabatier**

*Ph.D in Computer Graphics*

**Université Paul Sabatier**

*MS in Computer Science*

**Victoria & Toulouse (Canada/France)**

*September 2015*

**Toulouse (France)**

*June 2011*

## Experience

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**Namco Bandai Studios**

*Research engineer*

Advanced character skinning for games

**Tokyo (Japan)**

*Since September 2015*

**Namco Bandai Studios**

*Internship - supervised by Ando Kumiko*

Advanced character skinning for games

**Tokyo (Japan) - Vancouver (Canada)**

*September 2014 – June 2015*

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**

*Université Paul Sabatier and the University of Victoria,*

Title: "Study of potential fields composition and their joint use with meshes"

Co-supervised by Loïc Barthe and Brian Wyvill

**Toulouse (France) - Victoria (Canada)**

*July 2011 - September 2015*

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**

*Internship - supervised by Loïc Barthe*

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](#) .

**Toulouse**

*January–July 2011*

**IRIT laboratory**

*Internship - supervised by Hugues Cassé*

Optimizing microprocessor simulation softwares.

It required a large range of technical skills: programming (**C**, **ARM** assembly, **OCaml**); language parsing with

**Toulouse**

*June –July 2010*

**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

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Our current research [VBG\*13, VBG\*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

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[VBG\*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

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**Languages:** C/C++ (4 years experience, template meta-programming), JAVA, Python, Ocaml, ARM.

**GPU:** 4 years experience in Opengl, 2 years experience in 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

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### 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

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

## Teachings

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### 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

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**French:** native

**English:** fluent

**Japanese:** conversational