

# Alexandre Dupas

5 rue Lally Tollendal  
75019 Paris,  
FRANCE

Cell phone: +33 (0)610281693  
Home: +33 (0)549216539  
Email: [alexandre.dupas@gmail.com](mailto:alexandre.dupas@gmail.com)  
Homepage: <http://adupas.org/>

## Personal Information

Date of Birth: December 13, 1983

Citizenship: France

## Research Experience

**Postdoctoral Research Fellow**, INSERM U698, 2010-2011

PROJECT: Segmentation of the aortic vascular wall for the correction of partial volume effect in PET image

DESCRIPTION:

- development of realistic digital PET phantom using Monte-Carlo simulations;
- developpement on the Gate software stack;
- implementation of partial volume effect correction algorithms;
- implementation of tools for the segmentation of the aortic vascular wall.

**Postdoctoral Research Fellow**, ENSMA/XLIM-SIC, (6 months) 2010

PROJECT: VISA

DESCRIPTION:

- definition of a topological model to represent buildings in an archaeological setting;
- development of an intuitive interface to create buildings model.

**Ph.D Candidate**, XLIM-SIC, 2006-2009

SUBJECT: Operations and Algorithms for Topological Segmentation of 3D Images

DESCRIPTION:

- topological representation of 3D images;
- development of split and merge operations on topological maps;
- definition of segmentation tools with topological constraints;
- definition of ML-simple point that preserve the topology of a partition during deformations.

Visiting student, Liris Lyon, (9 months) 2009

**Teaching Assistant**, University of Poitiers, 2006-2009

DESCRIPTION: teaching undergraduate course in computer science.

## Education

**Ph.D. in Computer Science**, University of Poitiers, 25 November 2009.

THESIS: Operations and Algorithms for Topological Segmentation of 3D Images

ADVISERS: Prof. Pascal Lienhardt, and Dr. Guillaume Damiand

EXAMINERS: Prof. Annick Montanvert, Prof. Michel Couprie, Prof. Achille Braquelaire, and Prof. Yves Bertrand

**Master** in Computer Science, University of Poitiers, 2006.

THESIS: Segmentation in Topological Maps

ADVISER: Dr. Guillaume Damiand

**Bachelor** in Computer Science, University of Poitiers, 2004.

## Fields of Interest

Image processing, Topological modeling, Discrete Geometry, Medical Imaging

## Skills

### *Theoretical Skills*

Image Processing, Segmentation, Topological model, Combinatorial map, Algebraic Topology, Discrete geometry, Simple points, Deformable model, Point Processes, Monte-Carlo Simulation.

### *Computer Skills*

OPERATING SYSTEMS: Unix/Linux, Windows.

PROGRAMMING: C/C++, Python, Java, Perl, HTML, PHP, SQL, Prolog, OCaml, Matlab, LaTeX.

TOOLS AND LIBRARIES: Qt, GTK+, OpenGL, ITK, VTK.

### *Languages*

French: native

English: proficient (TOEIC 945/990, 2010)

German: working knowledge

## Publications and Presentations

### *Journal Papers*

O. Alata, S. Burg, A. Dupas, **Grouping/Degrouping Point Process, a Point Process Driven by Geometrical and Topological Properties of a Partition in Regions**. In Computer Vision and Image Understanding, *Accepted, May 2011*.

G. Damiand, A. Dupas, J.-O. Lachaud, **Fully Deformable 3D Digital Partition Model with Topological Control**. In *Pattern Recognition Letters*, Article In Press, April 2011.

A. Dupas, G. Damiand, **Region Merging with Topological Control**. In *Discrete Applied Mathematics*, Volume 157, Issue 16, August 2009, pages 3435-3446.

### Conference Papers

G. Damiand, A. Dupas, J.-O. Lachaud, **Combining Topological Maps, Multi-Label Simple Points, and Minimum-Length Polygons for Efficient Digital Partition Model**. In proceedings of 14th International Workshop on Combinatorial Image Analysis (IWCIA'11), Madrid, Spain. LNCS To Appear. May 2011.

A. Dupas, G. Damiand., J.-O. Lachaud, **Multi-Label Simple Points Definition for 3D Images Digital Deformable Model**. In proceedings of 15th IAPR International Conference on Discrete Geometry for Computer Imagery (DGCI'09), Montréal, Québec, Canada. LNCS Volume 5810, pages 156-167. September 2009.

A. Dupas, G. Damiand, **First Results for 3D Image Segmentation with Topological Map**. In proceedings of 14th IAPR International Conference on Discrete Geometry for Computer Imagery (DGCI'08), Lyon, France. LNCS Volume 4992, pages 507-518. April 2008.

A. Dupas, G. Damiand, **Comparison of Local and Global Region Merging in the Topological Map**. In proceedings of 12th International Workshop on Combinatorial Image Analysis (IWCIA'08), Buffalo, NY, USA. LNCS Volume 4958, pages 420-431. April 2008.

### Talks

A. Dupas, G. Damiand, **Topologically Constrained Segmentation with Topological Maps**. International Workshop on Computational Topology in Image Context, Poitiers, France. June 2008.

### Thesis

A. Dupas. **Opération et Algorithmes pour la Segmentation Topologique d'Images 3D**. Thèse de Doctorat, Poitiers, France. November 2009.

## Awards

**Best Student Paper** at 15th IAPR International Conference on Discrete Geometry for Computer Imagery (DGCI'09), Montréal, Québec, Canada.

## Teaching Experience

### University of Poitiers, XLIM-SIC Laboratory

Supervision related to research, 2010

1 M. Sc. student (2st year) co-supervised with Daniel Meneveau and Pascal Lienhardt

Subject: Hierarchical topological representation of archaeological building

3 M. Sc. students (1st year) co-supervised with Xavier Skapin

Subject: Realization of a 3D Graphics View Framework based on the Qt Library

Supervision related to research, 2008

3 M. Sc. students (1st year) co-supervised with Guillaume Damiand

Subject: Improve visualization of 3D images in the research software

Supervision related to research, 2007

2 M. Sc. students (1st year) co-supervised with Guillaume Damiand

Subject: Build of a software GUI using Qt4

### *University of Poitiers, Department of Computer Science*

Undergraduate classes, 2008-2009.

**Algorithms & Ada Programming** (42h) B. SC. 1st year

**Operating System (Linux)** (26h) B. SC. 1st year

**Databases** (12h) B. SC. 3rd year

Undergraduate classes, 2007-2008.

**Algorithms & Ada Programming** (42h) B. SC. 1st year

**Operating System (Linux)** (20h) B. SC. 1st year

**Databases** (12h) B. SC. 3rd year

**Computer Architecture** (8h) B. SC. 1st year

Undergraduate classes, 2006-2007.

**Algorithms & Ada Programming** (48h) B. SC. 1st & 2nd year

**Office Suite (OpenOffice.org)** (18h) B. SC. 1st year

**Ada Programming** (18h) B. SC. 2nd year

## References

Guillaume Damiand (PhD)

Researcher

University of Lyon, Liris, CNRS

+33 (0)472432662

guillaume.damiand@liris.cnrs.fr

Samuel Burg (MD, PhD)

Praticien Hospitalier

CHU X. Bichat, Department of Nuclear Medicine

samuel\_burg@yahoo.fr

Olivier Alata (PhD)

Associate Professor of Electrical Engineering and Computer Science

University of Poitiers, XLim-SIC, CNRS

+33 (0)549496624

alata@sic.univ-poitiers.fr

Last updated: May 20, 2011

<http://adupas.org/cv-en.pdf>