Christophe JOUBERT

Office address:	Universidad de Málaga, Campus de Teatinos s/n, 29071 Málaga, Spain
Tel:	+34 952 13 71 99
Fax:	+34 952 13 13 97
E-mail:	joubert@lcc.uma.es
Webpage:	http://www.lcc.uma.es/~joubert/

Curriculum Vitae

Employment History

01/2006-onwards	**Post-doctoral researcher**	Department of Computer Science Universidad de Málaga (Spain)
09/2005-01/2006	**Part-time Assistant Professor (Ater)**	Department of Computer Science (Ufrima), Université Joseph Fourier, Grenoble (France)
11/2002-12/2005	**Ph.D. researcher**	Inria Rhône-Alpes, Vasy project, Grenoble (France)
09/2002-06/2005	**Short-term Teacher Assistant (vacataire)**	Department of Computer Science (Ufrima), Université Joseph Fourier, Grenoble (France)
06/2002-09/2002	**Assistant researcher**	Department of Computer Science, Universiteit Twente, FMT group, Enschede (Holland)
09/2001-06/2002	**Master researcher**	Inria Rhône-Alpes, Vasy project, Grenoble (France)
09/2000-06/2001	**Short-term Teacher Assistant**	Department of Computer Science University of California, Santa Barbara (Usa)

Degrees

27/01/2006 **Qualification to Maître de Conférences, section 27 (computer science)**
Center: French Ministry of Education and Research (Menesr)
Certification granted by the French Ministry of Education and Research during a national committee meeting once a year. This certification is needed to apply for a permanent professor position in French universities.

2002-2005 **Ph.D. (Docteur), Computer Science, specialty: System and Software**
Center: Institut National Polytechnique de Grenoble, France
Title: Distributed on-the-fly verification of large state spaces
Thesis defense: December 12^{th}, 2005
Advisors: Hubert Garavel and Radu Mateescu
Committee:

- Brigitte Plateau, Professor at INPG (chair)
- Alessandro Fantechi, Professor at the Università degli Studi di Firenze (rapporteur)
- François Vernadat, Professor at INSA Toulouse (rapporteur)
- Yves Robert, Professor at ENS Lyon (examiner)
- Eric Madelaine, Researcher at INRIA Sophia Antipolis (examiner)
- Hubert Garavel, Director of Research at INRIA Rhône-Alpes (advisor)
- Radu Mateescu, Researcher at INRIA Rhône-Alpes (advisor)

2001-2002 **Research Master (DEA), Computer Science,**
Specialty: System and Communication, with distinction "Bien"
Center: Université Joseph Fourier, Grenoble, France
Title: Techniques and tools for massively parallel generation of transition systems
Thesis defense: June 19^{th}, 2002
Advisors: Hubert Garavel and Radu Mateescu
Committee:

- Nicolas Halbwachs, Director of Research at VERIMAG (co-chair)
- François Rechenmann, Director of Research at INRIA Rhône-Alpes (co-chair)
- Yves Denneulin, Professor at INPG (examiner)
- Hubert Garavel, Director of Research at INRIA Rhône-Alpes (advisor)
- Radu Mateescu, Researcher at INRIA Rhône-Alpes (advisor)

2000-2001 **Research Maîtrise (Master degree), Computer Science**
with Dean's honors and distinction "Très Bien"
Center: University of California, Santa Barbara, USA

1997-2000 **Research Licence (Bachelor degree), Computer Science**, with distinction "Très Bien"
Center: Université Joseph Fourier, Grenoble, France

1997 **Baccalauréat, specialty S (mathematics)** with distinction "Assez Bien"
Center: Lycée Hector Berlioz, La Côte St André, France

Skills

Computer Science *Operating systems*: Unix (Linux, Solaris), Windows, Nachos (teaching OS)
Specification languages: Lotos, Lustre, B, Z, UML, DOM, Esterel, Argos, Aslan, Astral
Programming languages: imperative (C/C++, Java, Ada, Pascal), logical (Prolog), functional (Caml, Scheme), relational (Sql), assembly (Arm, Sparc, 68000, Mips, Jasmin), descriptive (LaTeX, (X)HTML, CSS), script (Perl, Awk, Sed, Grep), mathematical (Mapple, Mupad, Matlab)
Compilers: Lex -Yacc, JLex - JavaCup - Jasmin, SYNTAX-LOTOSNT-C
Network: sockets (C, Java, PhP), UDP/TCP-IP, MPI, DNS, routing
Software development: CVS, SCCS, Valgrind, Vim, Make, RAD, Xtreme programming, project management tool (MsProject), documentation (JavaDoc, Doxygen), coding rules (Checkstyle), bug management (Bugzilla)

Languages French (native), english (fluent: one-year Master student at the University of California (USA), numerous stays abroad, TOEFL 210/300), spanish (read, written, spoken: one-year postdoc at the University of Málaga, DELE intermediate level), german (7 years)

Research

Research Experience

01/06-onwards
Post-doctoral researcher

Department of Computer Science (Lcc), Universidad de Málaga – *Málaga (Spain).*
Title: On-the-fly static analysis of software
Research domain: Formal verification methods
Collaborators: Pedro Merino, Ernesto Pimentel, María del Mar Gallardo, Jesus Martinez, and David Sanán (Fmse team from the Gisum group)
Funding: Lavoisier grant from the French Ministry of Foreign Affairs
Project: Research work part of the Software Engineering and Lightweight Formalisms (Self) project of the Spanish Program of Computer Science Technology (Tin) number 2004-7943-C04

Abstract: To enable the verification of real size programs, a research trend is to focus on the combination of abstract interpretation and model checking techniques. We propose to employ Boolean Equation Systems for sub and over approximation relation analysis. In particularly, we dealt with the following problem:

- Implementing on-the-fly static analysis during software verification, in particular for abstract matching in C.Open, a tool that allows the verification of C programs using well-specified Apis, thanks to an over approximated model of the original application behavior.

This work extensively used the Open/Cæsar environment to design a new tool, called Annotator, combining the technology developed in the Fmse team and the Cadp toolbox. The approach has been validated on a set of industrial case-studies extracted from the Cadp testbench.

Keywords: Abstract interpretation, model checking, formal verification, boolean equation system, static analysis
Publications: [7, 10, 1, 12]
Talks: [20, 23]
Tool demonstration: `http://www.lcc.uma.es/gisum/tools/smc`

10/02-12/05 *Ph.D. student*

Institut National de Recherche en Informatique et en Automatique (INRIA), Rhône-Alpes research unit, VASY project – *Grenoble (France).*
Title: Distributed on-the-fly verification of large state spaces
Research domain: Formal verification methods
Advisors: Hubert Garavel (director) and Radu Mateescu (scientific advisor)
Funding: French research ministry grant
Project: Research work part of Standard Process Algebra Research and Tools SENVA, Associated Team INRIA program between INRIA/VASY and CWI/SEN2, section *distributed algorithms for the verification of finite-state systems*

Abstract: The verification of concurrent finite-state systems is confronted in practice with the state explosion problem (prohibitive size of the underlying state spaces), which occurs for realistic systems containing many parallel processes and complex data structures. Various techniques for fighting against state explosion have been proposed, such as on-the-fly verification, partial order reduction, and distributed verification. However, practical experience has shown that none of these techniques alone is always sufficient to handle large-scale systems. In this thesis, we propose a combination of these techniques in order to scale up their capabilities. Our approach is based upon Boolean Equation Systems (BESs), which provide an elegant intermediate representation for verification problems defined on Labelled Transition Systems (LTSs) such as equivalence checking, τ-confluence reduction, model checking of alternation-free μ-calculus and test-case generation. We propose DSOLVE [5], a new algorithm for distributed on-the-fly resolution of BESs, and employ it as computing engine for four on-the-fly verification tools developed within the CADP toolbox using the OPEN/CÆSAR environment: the BISIMULATOR equivalence checker [8, 4], the TAU_CONFLUENCE reductor, the EVALUATOR model checker [3, 11], and the EXTRACTOR test-case generator [3, 11]. Experimental measures performed on clusters of machines part of the Grid'5000 platform show quasi-linear speedups and a good scalability of the distributed versions of these tools w.r.t. their sequential counterparts.

Keywords: Boolean equation system, distributed memory algorithm, on-the-fly verification, equivalence checking, partial order reduction, model checking, test case generation
Publications: [13, 3, 11, 4, 5, 8, 9, 12, 14, 15, 16]
Talks: [20, 23, 21, 24, 22, 26, 25, 27]
Tool demonstration: [32]

06/02-09/02 *Assistant researcher*

Department of Computer Science, Universiteit Twente, FMT group – *Enschede (Holland).*
Title: A set of performance and dependability analysis components for CADP
Research domain: Formal verification methods
Advisors: Ed Brinksma (director) and Holger Hermanns (scientific advisor)
Funding: Isère department grant
Project: Research work part of Advanced Methods for Timed Systems AMETIST, European project IST-2001-35304, EC 5^{th} Framework Program, section *analysis and tools: stochastic techniques*

Abstract: This work aimed at designing a set of analysis components that open the way to perform performance and dependability analysis with the CADP toolbox, originally designed for verifying the functional correctness of LOTOS specifications. Three new tools (named BCG_STEADY, BCG_TRANSIENT, and DETERMINATOR) have been added to the toolbox. The approach taken fits well within the existing architecture of CADP, which doesn't need to be altered to enable performance evaluation.

Keywords: Performance evaluation, functional verification, state space, steady state and transient analysis, on-the-fly elimination of non-determinism for stochastic systems
Publication: [6, 12, 15, 16, 18]
Talks: [28, 29]
Tool demonstration: [34]

10/01-06/02 *Master student*

Institut National de Recherche en Informatique et en Automatique (Inria), Rhône-Alpes research unit, VASY project – *Grenoble (France).*
Title: Massively parallel generation of very large transition systems
Research domain: Formal methods
Advisors: Hubert Garavel (director) and Radu Mateescu (scientific advisor)
Funding: Merit grant according to academic honors
Project: Research work part of Architecture Evolvable Software Archware, European project Ist-2001-32360, Ec 5^{th} Framework Program, section *description and verification of functional properties*

Abstract: This master research work aimed at designing and implementing new algorithms for the massively parallel generation of large transition systems problem, in order to prepare distributed model checking. We gave a complete state of the art of research works on parallel generation of models. Then, we proposed a new algorithm for the parallel construction of models obtained from programs described with high level languages, such as Lotos. One novel aspect of our approach is the distributed management of dynamic data structures (lists, trees, etc.) between several machines. We also specified our algorithm in Lotos and verified its functional properties (absence of deadlock, termination detection, safety) by mean of the Cadp toolbox. A prototype implementation of our algorithm has been implemented in Distributor tool of Cadp. The experiments on a cluster of Pcs confirmed the good behavior of our algorithm and showed important performance gain in memory and time execution.

Keywords: State space, on-the-fly generation, distributed algorithm, partitioned Lts
Publication: [2, 17, 12, 14, 15, 16, 18, 19]
Talks: [30]
Tool demonstration: [31, 33]

04/01-07/01 *Bachelor student*

Department of Computer Science, University of California – *Santa Barbara (*Usa*).*
Title: Integrating shape analysis, a static computation of program configuration topology, into Action Language Verifier
Research domain: Formal verification methods
Advisors: Saddek Bensalem (director) and Tevfik Bultan (scientific advisor)
Funding: Rhône-Alpes region grant
Keywords: Shape analysis, static analysis, infinite state symbolic model

11/99-07/00 *Licence student*

Institut d'Informatique et de Mathématiques Appliquées de Grenoble (Imag), LEIBNIZ laboratory, MAGMA project – *Grenoble (France).*
Title: Communication model for multi-agent systems
Research domain: Multi-agent systems
Advisors: Yves Demazeau (director) and Christof Baeijs (scientific advisor)
Keywords: Cooperation, communication, Robocup simulation, Aeio model

Publications

Refereed International Conference Papers

[1] María-del-Mar Gallardo, Christophe Joubert, and Pedro Merino. Implementing influence analysis using parameterised boolean equation systems. In *Proceedings of the 2nd International Symposium on Leveraging Applications of Formal Methods, Verification and Validation ISOLA'06 (Paphos, Cyprus)*. IEEE Computer Society Press, November 2006.

[2] Hubert Garavel, Radu Mateescu, Damien Bergamini, Adrian Curic, Nicolas Descoubes, Christophe Joubert, Irina Smarandache-Sturm, and Gilles Stragier. Distributor and Bcg_Merge: Tools for distributed explicit state space generation. In Holger Hermanns and Jens Palsberg, editors, *Proceedings of the 12th International Conference on Tools and Algorithms for the Construction and Analysis of Systems* Tacas*'2006 (Vienna, Austria)*, volume 3920 of *Lecture Notes in Computer Science*, pages 445–449. Springer Verlag, April 2006.

[3] Christophe Joubert and Radu Mateescu. Distributed on-the-fly model-checking and test case generation. In A. Valmari, editor, *Proceedings of the 13th International SPIN Workshop on Model Checking of Software SPIN'06 (Vienna, Austria)*, volume 3925 of *Lecture Notes in Computer Science*, pages 126–145. Springer Verlag, April 2006.

[4] Damien Bergamini, Nicolas Descoubes, Christophe Joubert, and Radu Mateescu. BISIMULATOR: A modular tool for on-the-fly equivalence checking. In Nicolas Halbwachs and Lenore Zuck, editors, *Proceedings of the 11th International Conference on Tools and Algorithms for the Construction and Analysis of Systems* TACAS*'2005 (Edinburgh, Scotland)*, volume 3440 of *Lecture Notes in Computer Science*, pages 581–585. Springer Verlag, April 2005.

[5] Christophe Joubert and Radu Mateescu. Distributed local resolution of boolean equation systems. In *Proceedings of the 13th Euromicro Conference on Parallel, Distributed and Network based Processing* PDP*'05 (Lugano, Switzerland)*, pages 264–271. IEEE Computer Society Press, February 2005.

[6] Holger Hermanns and Christophe Joubert. A set of performance and dependability analysis components for CADP. In Hubert Garavel and John Hatcliff, editors, *Proceedings of the 9th International Conference on Tools and Algorithms for the Construction and Analysis of Systems* TACAS*'2003 (Warsaw, Poland)*, volume 2619 of *Lecture Notes in Computer Science*, pages 425–430. Springer Verlag, April 2003.

Refereed International Workshop Papers

[7] María del Mar Gallardo, Christophe Joubert, and Pedro Merino. On-the-fly data flow analysis based on verification technology. In Rolf Drechsler, Sabine Glesner, and Jens Knoop, editors, *Proceedings of the 6th International Workshop on Compiler Optimization meets Compiler Verification COCV'2007 (Braga, Portugal)*, Electronic Notes in Theoretical Computer Science. Elsevier, March 2007.

[8] Christophe Joubert and Radu Mateescu. Distributed on-the-fly equivalence checking. In Lubos Brim and Martin Leucker, editors, *Proceedings of the 3rd International Workshop on Parallel and Distributed Methods in Verification* PDMC*'2004 (London,* UK*)*, volume 128 of *Electronic Notes in Theoretical Computer Science*, pages 47–62. Elsevier, September 2004.

[9] Christophe Joubert. Distributed model checking: From abstract algorithms to concrete implementations. In Lubos Brim and Orna Grumberg, editors, *Proceedings of the 2nd International Workshop on Parallel and Distributed Model Checking* PDMC*'2003 (Boulder, Colorado,* USA*)*, volume 89 of *Electronic Notes in Theoretical Computer Science*. Elsevier, July 2003.

Research Reports

[10] María-del-Mar Gallardo, Christophe Joubert, and Pedro Merino. Static analysis using parameterised boolean equation systems. Technical Report LCC-ITI-2006-05, University of Málaga, Spain, June 2006.

[11] Christophe Joubert and Radu Mateescu. Distributed on-the-fly model checking and test case generation. Research Report RR-5880, INRIA, Grenoble, April 2006.

[12] Project-Team VASY. Activity report, INRIA, Grenoble, December 2006.

[13] Christophe Joubert. *Vérification distribuée à la volée de grands espaces d'états*. Manuscrit de thèse en informatique, Institut National Polytechnique de Grenoble, Grenoble, December 2005.

[14] Project-Team VASY. Activity report, INRIA, Grenoble, December 2005.

[15] Project-Team VASY. Activity report, INRIA, Grenoble, December 2004.

[16] Project-Team VASY. Activity report, INRIA, Grenoble, December 2003.

[17] Christophe Joubert. *Techniques et outils pour la construction massivement parallèle de systèmes de transitions*. Mémoire de DEA en informatique, Institut National Polytechnique de Grenoble and Université Joseph Fourier, Grenoble, June 2002.

[18] Projet VASY. Rapport d'activité, INRIA, Grenoble, December 2002.

[19] Projet VASY. Rapport d'activité, INRIA, Grenoble, December 2001.

Non-Refereed National and International Talks

[20] Christophe Joubert. Caesar_solve_2: A generic distributed on-the-fly solver for alternation-free boolean equation systems and its application to verification. Invited presentation at the ELP group, Department of Information Systems and Computation (DSIC), Technical University of Valencia (Valencia, Spain), February 2007.

[21] Christophe Joubert. Distributed on-the-fly resolution of boolean equation systems. 3rd International Workshop on System Engineering and Validation, meeting on Clusters and Grids for Verification and Performance Evaluation SENVA-GRID'2005 (Montbonnot, Isère, France), November 2005.

[22] Christophe Joubert. Distributed on-the-fly verification of finite-state systems. Invited presentation at the ELP group, Department of Information Systems and Computation, Technical University of Valencia (Valencia, Spain), May 2005.

[23] Christophe Joubert. Distributed on-the-fly verification of large state spaces. Presentation at the GISUM group, Department of Computer Science, University of Malaga (Malaga, Spain), December 2005.

[24] Christophe Joubert. Distributed on-the-fly verification of transition systems. 2nd International Workshop on System Engineering and Validation SENVA'2005 (Saint Pierre de Chartreuse, France), June 2005.

[25] Christophe Joubert. Analyse d'espaces d'états par résolution distribuée de systèmes d'équations booléennes. Doctoral Symposium of Ecole Doctorale de Mathématiques, Sciences et Technologies de l'Information, Informatique MSTII'2004 (Grenoble, France), November 2004.

[26] Christophe Joubert. Distributed local resolution of boolean equation systems for distributed on-the-fly equivalence checking. 1st International Workshop on System Engineering and Validation SENVA'2004 (Allevard-les-Bains, France), June 2004.

[27] Christophe Joubert. Approches massivement parallèles pour l'analyse de très grands espaces d'états. Summer School of Jeunes Chercheurs en Programmation EJCP'2003 (Aussois, France), May 2003.

[28] Christophe Joubert. Combiner vérification compositionnelle et évaluation de performances dans CADP. Annual team meeting VASY'2003 (Saint Pierre de Chartreuse, France), June 2003.

[29] Christophe Joubert. Outils logiciels pour la combinaison de vérification fonctionnelle et d'évaluation de performances au sein CADP. Annual team meeting VASY'2002 (Aix les Bains, France), October 2002.

[30] Christophe Joubert. Techniques et outils pour la construction massivement parallèle de systèmes de transitions. Annual team meeting VASY'2002 (Aix les Bains, France), October 2002.

Refereed Tool Demonstrations

[31] Hubert Garavel, Radu Mateescu, Damien Bergamini, Adrian Curic, Nicolas Descoubes, Christophe Joubert, Irina Smarandache-Sturm, and Gilles Stragier. DISTRIBUTOR and BCG_MERGE: Tools for distributed explicit state space generation. Tool session of the 12th International Conference on Tools and Algorithms for the Construction and Analysis of Systems TACAS'2006 (Vienna, Austria), April 2006.

[32] Damien Bergamini, Nicolas Descoubes, Christophe Joubert, and Radu Mateescu. BISIMULATOR: A modular tool for on-the-fly equivalence checking. Tool session of the 11th International Conference on Tools and Algorithms for the Construction and Analysis of Systems TACAS'2005 (Edinburgh, Scotland), April 2005.

[33] Hubert Garavel, Radu Mateescu, Damien Bergamini, Adrian Curic, Nicolas Descoubes, Christophe Joubert, Irina Smarandache-Sturm, and Gilles Stragier. DISTRIBUTOR and BCG_MERGE: Tools for distributed explicit state space. Tool session of the 4th International Workshop on Parallel and Distributed Methods in Verification PDMC'2005 (Lisboa, Portugal), July 2005.

[34] Holger Hermanns and Christophe Joubert. A set of performance and dependability analysis components for CADP. Tool session of the 9th International Conference on Tools and Algorithms for the Construction and Analysis of Systems TACAS'2003 (Warsaw, Poland), April 2003.

Professional Activities

International Journal Reviewer

- International Journal on Formal Methods in System Design (FMSD'2006)
- International Journal on Software Tools for Technology Transfer (STTT'2005)

International Workshop Reviewer

- International Workshop on Formal Methods for Industrial Critical Systems (FMICS'2006,2004)
- International Workshop on Parallel and Distributed Methods in VerifiCation (PDMC'2004)
- Workshop on Parallel and Distributed Model Checking (PDMC'2002)

Participation in Research Organizations

- ERCIM Working Group on Formal Methods for Industrial Critical Systems (FMICS), since 2004
- Spanish Research Consortium for Informatics and Mathematics (SpaRCIM), since 2006
- Scientific committee member of the International Science and Technology Conference (JICT), Málaga 21-23 March 2007

- European Association of Software Science and Technology (EASST), since 2006
- jETI (Electronic Tool Integration) software development platform, working group between POTSDAM/SSE and UMA/GISUM, since 2006
- SENVA (Standard Process Algebra Research and Tools), associated team between INRIA/VASY and CWI/SEN2(2004-2005)
- A-INPG, association of Ph.D. students at the National Polytechnic Institute of Grenoble (INPG), since 2004
- FOURMI, association of Ph.D. students at the computer science and mathematics doctoral school of Grenoble (MSTII), since 2003

Complementary Research Education

- 18th European Summer School in Logic Language and Information ESSLI'2006 (Málaga, Spain)
- Summer school of Jeunes Chercheurs en Programmation EJCP'2003 (Aussois, France)
- Tutorial on Using the BANDERA Toolset to Model-Check Properties of Concurrent Java Software, by J. Hatcliff, M. Dwyer and W. Visser, satellite event of ETAPS'2002 (Grenoble, France)

TEACHING

Teaching Experience

2005-2006
Invited Lecturer

Methods for the construction of reliable software – *Department of Computer Science (LCC), Universidad de Málaga, Málaga (Spain).*
Instructor: Pedro Merino and María del Mar Gallardo (FMSE)
Degree: 1^{st} year of doctoral studies
Type: Lecture
Teaching hours: 1h
Description: Distributed on-the-fly verification of large state spaces

2005-2006
ATER

Formal specification – *Department of Computer Science, Université Joseph Fourier, Grenoble (France).*
Instructor: Yves Ledru (LSR)
Degree: IUP MIAGE 3, 4^{th} year of undergraduate studies
Language: UML and Z
Type: Tutorial and programming assignment
Teaching hours: 18h (eqTD)
Description: UML class diagrams designing, DOM prototype environment, Z formal specification
Collective tasks: Homework and programming assignments class report, proposition for changes in class content, midterm grading, participation to midterm and final exam conception, teaching evaluation by students and duty synthesis, participation to interdisciplinary teaching commission

2005-2006
ATER

Tools for software engineering – *Department of Computer Science, Université Joseph Fourier, Grenoble (France).*
Instructors: Didier Donsez and Ioannis Parissis (LSR)
Degree: 1^{st} year of Master in Computer Science
Language: Java
Type: Lecture and programming assignment
Teaching hours: 9h (eqTD)
Description: Coding rules, Checkstyle tutorial, documentation rules, Javadoc tutorial, bug management, introduction to Bugzilla
Collective tasks: Lectures and programming assignments class report, conception of lecture notes and programming assignments, programming projects grading, final exam conception, supervision and grading, teaching evaluation by students and duty synthesis

2005-2006
ATER

Network – *Department of Computer Science, Université Joseph Fourier, Grenoble (France).*
Instructor: Alain Cartade (PAST IMA)
Degree: IUP MIAGE 3, 4^{th} year of undergraduate studies
Type: Programming assignment
Teaching hours: 12h (eqTD)
Description: Network interconnection and routing, DNS application and server, nslookup, route, host
Collective tasks: Programming assignments class report, programming projects grading, teaching evaluation by students and duty synthesis, participation to interdisciplinary teaching commission

2005-2006
ATER

Operating System – *Department of Computer Science, Université Joseph Fourier, Grenoble (France).*
Instructor: Vania Marangozova (ID)
Degree: IUP MIAGE 3, 4^{th} year of undergraduate studies
Language: Java
Type: Programming assignment
Teaching hours: 18h (eqTD)
Description: Multi-threading, process synchronization, remote communication, RMI application
Collective tasks: Programming assignments class report, proposition for changes in class content, programming projects grading, teaching evaluation by students and duty synthesis, participation to interdisciplinary teaching commission, participation to midterm conception

2005-2006
ATER

Software architecture – *Ecole Polytechnique Universitaire de Grenoble (*EPUG*), Université Joseph Fourier, Grenoble (France).*
Instructor: Pascal Sicard (LSR)
Degree: RICM 1, 3^{rd} year of undergraduate studies
Language: Arm and C
Type: Tutorial and programming assignment
Teaching hours: 18h (eqTD)
Description: introduction to ARM, data representation, instruction set, introduction to C, data control, table, processor, stack, compiler output
Collective tasks: Homework and programming assignments class report, proposition for changes in class content, programming projects grading, teaching evaluation by students and duty synthesis

2005-2006
ATER

Network – *Department of Computer Science, Université Joseph Fourier, Grenoble (France).*
Instructor: Alain Cartade (PAST IMA)
Degree: IUP MIAGE 2, 3^{rd} year of undergraduate studies
Language: Java
Type: Programming assignment
Teaching hours: 12h (eqTD)
Description: Network setup and observation, OSI model, notion of throughput, Ethernet and Internet addresses, CSMA/CD protocol observation, performance analysis, ARP/RARP, IP, ICMP, TCP, UDP, netstat, socklab
Collective tasks: Programming assignments class report, proposition for changes in programming assignment content, programming projects grading, teaching evaluation by students and duty synthesis

2005-2006
ATER

Network – *Department of Computer Science, Université Joseph Fourier, Grenoble (France).*
Instructors: Patrick Reignier (Gravir), Philippe Genoud (Inria, Helix project) and Alain Cartade (PAST IMA)
Degree: Licence TAI, 3^{rd} year of undergraduate studies
Language: Java, PhP, Html, javascript, CSS
Type: Programming project
Teaching hours: 9h (eqTD)
Description: Remote management of a library, internet, PhP, TCP/IP socket
Collective tasks: Programming project supervision and grading, project defense committee member

2004-2005
Vacataire

Imperative algorithmic and programming – *Department of Computer Science, Université Joseph Fourier, Grenoble (France).*
Instructors: Catherine Parent Vigouroux and Pierre-Claude Scholl (Verimag)
Degree: Licence Sciences et Technologies, 2^{nd} year of undergraduate studies (L2)
Language: C
Type: Tutorial and programming assignment
Teaching hours: 37,5h (eqTD)
Description: Action language, iterative and recursive composition, table, set, sequence, queue, heap, linked sequence, C programming
Collective tasks: Homework and programming assignments class report, proposition for changes in class content, homework, programming projects and midterm grading, supervision of final exam, teaching evaluation by students and duty synthesis, participation to interdisciplinary teaching commission

2003-2004
Vacataire

Hardware and software architecture – *Department of Computer Science, Université Joseph Fourier, Grenoble (France).*
Instructor: Jean-Claude Fernandez (Verimag)
Degree: Iup Miage 2, 3^{rd} year of undergraduate studies
Language: Sparc and 68 000 assembly languages
Type: Tutorial
Teaching hours: 18h (eqTD)
Description: Information coding (Boole algebra and automata), processor architecture, machine language, hardware architecture (combinatorial and sequential circuits)
Collective tasks: Proposition for changes in class content and planning, midterm and final grading, teaching evaluation by students and duty synthesis, participation to interdisciplinary teaching commission

2003-2004
Vacataire

Euclidean geometry, analysis and introduction to linear algebra – *Department of Computer Science, Université Joseph Fourier, Grenoble (France).*
Instructors: Michel Burlet (Leibniz-Imag) and Claudine Chaffy (Lmc-Imag)
Degree: Licence Sciences et Technologies, 1^{st} year of undergraduate studies (L1)
Type: Tutorial
Teaching hours: 20h (eqTD)
Description: Complex numbers, n^{th} root, plane and space geometry (vectorial, affine, euclidean), linear algebra, differential equations, limited development
Collective tasks: Design, planning, teaching and grading homework, teaching evaluation by students and duty synthesis, participation to interdisciplinary teaching commission

2002-2003
Vacataire

Functional programming – *Department of Computer Science, Université Joseph Fourier, Grenoble (France).*
Instructor: Gérard Vivier (Lsr-Imag)
Degree: Iup Miage 1 and Deug Stpi 2, 2^{nd} year of undergraduate studies
Language: Caml
Type: Tutorial and programming assignment
Teaching hours: 33,25h (eqTD)
Description: Value and type, functional composition, top-down analysis, information structure, type constructor, recursive definition of type and function, higher order function, Caml programming
Collective tasks: Participation to final exam design, proposition for changes in class content and planning, homework, programming assignments and midterm grading, teaching evaluation by students and duty synthesis, participation to teaching commission

2000-2001 *Short-term assistant*

Computer architecture – *Department of Computer Science, University of California, teacher Santa Barbara (*Usa*).*

Instructor: Klaus E. Schauser, (Parallel Computing Group)
Degree: 4^{th} year of undergraduate studies
Languages: Mips and 68 000 assembly languages
Type: Tutorials, programming assignments, midterms and final exam grading
Teaching hours: 90h
Description: Design process, performance and cost analysis, computer arithmetic, controller and data path design, input/output systems, interrupts and exceptions, pipelining and parallelism, Mips and 68000 programming
Collective tasks: Participation to final exam design and grading