

HCERES

Haut conseil de l'évaluation de la recherche
et de l'enseignement supérieur

Annexes HCERES vague D

2012 – 2017

Laboratoire d'Informatique de Paris 6

UMR 7606 CNRS – UPMC

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Annexes LIP6

Annexe 2 : Équipements, plateformes

LIP6 has its own IT infrastructure, managed by its own IT department. It is composed of 13 engineers, including 8 CNRS staff and 5 UPMC staff. Most of the equipment is gathered in a few specific technical rooms called "server rooms". They are equipped with a protected electrical infrastructure, itself also managed in-house. These premises represent a little more than 200m², to which are added the distribution and/or printing rooms.

The LIP6 offers its members common services, hosted on servers managed by computer engineers. These include e-mail servers, files, printers, backup robots. For servers and desktops, as well as document sharing (e.g., forge, cloud, nfs, git, svn, . . .). It is also the IT department that manages the global network architecture, consisting of a 10 Gbytes wired network and a wireless infrastructure.

In addition to these common services, the IT department manages test and calculation platforms, most of which are offered to free access. Some of them are intended for laboratory members, for instance lab rooms for electronic experiments, others are part of major and international projects, e.g., *OneLab* (European projet) and Equipex *FIT* recently labeled *Research Infrastructure* by the French government.

Below is a non exhaustive list of platforms and facilities, some or all of which are managed by the LIP6.

- **OneLab** (<https://onelab.eu/>).

OneLab is an international federation of experimental platforms offering a unique, open and sustainable service. Initiated in 2014 by LIP6, OneLab combines various technologies of sensor networks, wireless networks, and distributed networks, offering a large scale heterogeneous set of devices and softwares that it is possible to experience in the same experiment. LIP6 hosts a part of the servers/nodes and has the control room of the entire platforms. Users are academics, SMEs, start-ups, and manufacturers. OneLab is linked with numerous European projects, e.g., F-Interop, ARMOR, and H2020 FED4FIRE+.

- **FIT** (<https://fit-equipex.fr/>).

FIT was initiated by LIP6 and started in 2013. FIT offers large-scale state-of-the-art wireless, sensing and mobility infrastructures for any builder of tomorrow's systems and services, who wish to try out, test and validate his/her solution before implementing it in real-life. FIT gathers close to 3000 nodes grouped in various topologies. Platforms are spread across France. LIP6 hosts the control room, a wireless platform, and a Cloud platform. Two IT engineers (1 CNRS, 1 UPMC) are devoted to manage the whole infrastructure. Users are academics, SMEs, start-ups, and manufacturers. In December 2015, FIT has been labelled *Research Infrastructure* by the French government.

- **PlanetLab Europe** (<https://www.planet-lab.org/>).

PlanetLab Europe is the European portion of the publicly available PlanetLab testbed, a global facility for the deployment of new network services. Since 2008, hundreds researchers at top academic institutions and industrial research labs have tested their experimental technologies on PlanetLab Europe, including: distributed storage, network mapping, peer-to-peer systems, distributed hash tables, and query processing. PlanetLab Europe currently consists of 343 nodes at 205 sites, LIP6 being one of them. The consortium operates under the direction of Timur Friedman of the LIP6 laboratory.

- **Software Platform.** The software platform provides LIP6 projects with project management tools including an open source automation server (jenkins), a version management server (Git and SVN), a Cloud, and virtual machines for deployment (QEMU).

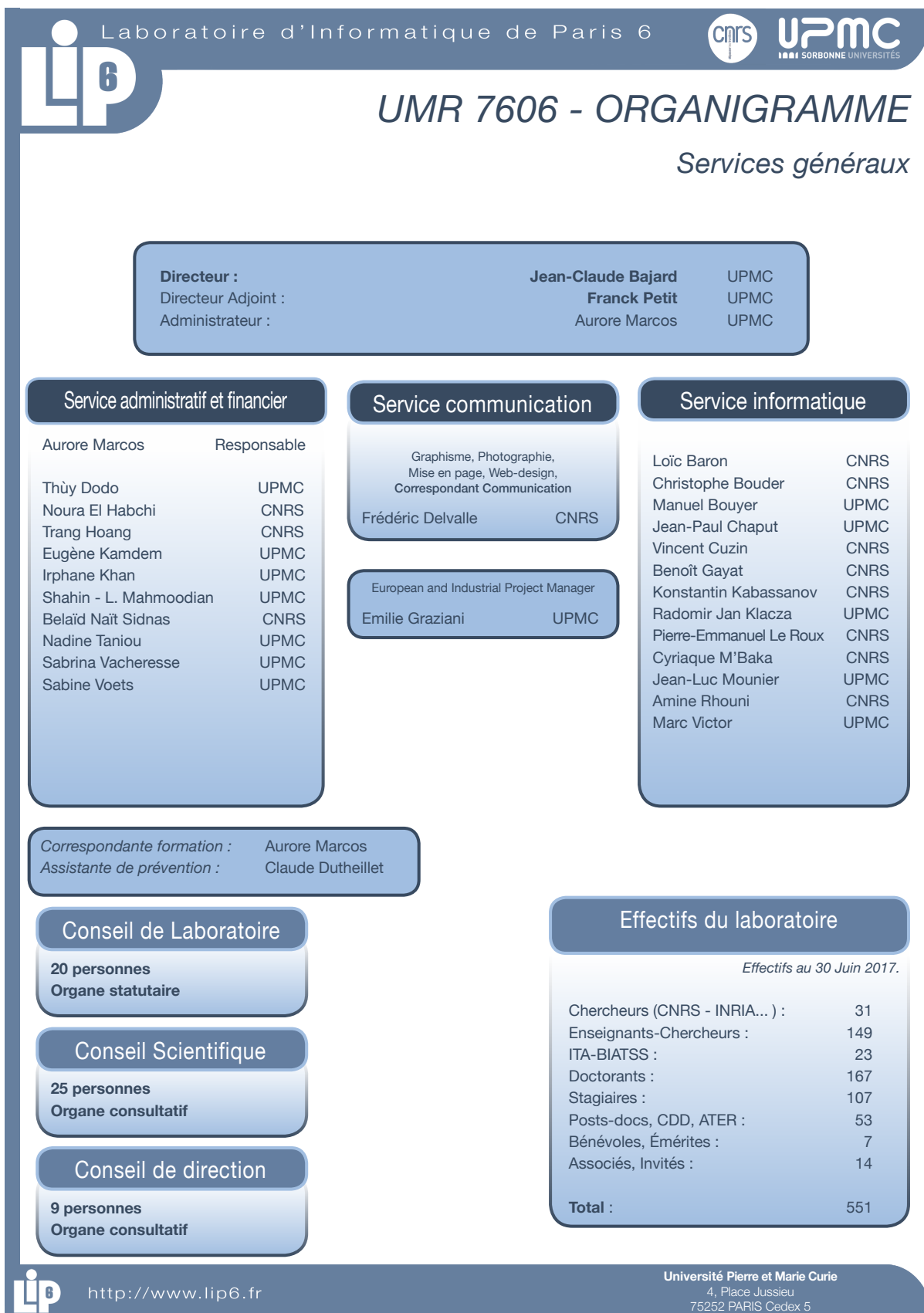
- **Computation and Manycore Platforms.** LIP6 provides several clusters dedicated to various experiments, reachable from front-end servers offering reservation tools such as oar and kadeploy. The main set of platforms includes:

- A GPU (Graphics Processing Unit) cluster made of 8 cards TESLA M2090, 2 processors Intel(R) Xeon(R) CPU X5690 @ 3.47GHz, and 192 GB of RAM;
- Two HPC clusters, one with 29 nodes (112 cores, mainly processors Intel Xeon and some AMD Opteron Shangai) and a total of 752 GB, the other with 50 nodes (DELL PowerEdge);
- Several multicore servers, including 3 servers based on Intel Core i7-3820 processors, a server 80 cores based on Intel Xeon Processor E7-8870, 3 servers ADM 48 cores, etc.

- **Embedded Systems CAD.** LIP6 has a long experience in designing and maintaining Linux (CAD) tools for the design of digital integrated circuits. These tools (Alliance, Coriolis, Oceane, TAS/YAGLE, Cadence, Synopsys, Mentor Graphics) are hosted on Linux servers and are used by academic researchers and manufacturers from various countries (Japon, Brazil, Egypt,...). They are also used for training. They allow FPGA designing, VHDL simulation and debug, synthesis, placement and routing, temporal analysis of VLSI, etc.
- **Electronics Labs.** LIP6 maintains two rooms dedicated to electronic experiments. The former is dedicated to instrumentation and design in analog and digital electronics. It offers measuring devices (oscilloscopes, power supplies, multimeters, network analyzers, clock generators, etc.) and stations with CAD tools. The latter is dedicated for experiments using optical sources, requiring airtight container, away from the sunlight.

LIP6 hosts numerous other platforms/servers, mainly related to research projects (ANR, FUI,...). Due to their impact with respect to the above list, they are omitted here but appear in each Appendix 4 of the concerned teams.

Annexe 3 : Organigramme fonctionnel



Laboratoire d'Informatique de Paris 6

Départements et équipes de recherche

Dpt : CalSci

Calcul Scientifique

Mohab SAFEY EL DIN

PEQUAN : PErformance et QUalité des Algorithmes Numériques
 PolSys : Polynomial Systems

Stef GRAILLAT
Jean-Charles FAUGÈRE

Dpt : DESIR

Decision making, Intelligent Systems and Operations Research

Patrice PERNY

RO : Recherche Opérationnelle
 DECISION : Décision
 SMA : Systèmes Multi-Agents
 MOCAH : Modèles et Outils en ingénierie des Connaissances pour l'Apprentissage Humain

Christoph DÜRR
Patrice PERNY
Amal EL FALLAH SEGHROUCHNI
Vanda LUENGO

Dpt : DAPA

Données et Apprentissage Artificiel

Bernd AMANN

LFI : Learning, Fuzzy and Intelligent Systems
 MLIA : Machine Learning and Information Access
 BD : Bases de Données
 ACASA : Agents Cognitifs et Apprentissage Symbolique Automatique

Christophe MARSALA
Patrick GALLINARI
Bernd AMANN
Jean-Gabriel GANASCIA

Dpt : NetSys

Networks Systems

Sébastien TIXEUIL

REGAL : Répartition et Gestion des Applications à Large Echelle
 NPA : Networks and Performances Analysis
 PHARE : Réseaux émergents, Post-IP, contrôle applicatif
 WHISPER : Well Honed Infrastructure Software for Programming Environments and Runtimes
 ALMASTY : Algorithmes pour la sécurité des communications

Pierre SENS
Marcelo DIAS DE AMORIM
Guy PUJOLLE
Gilles MULLER
Antoine JOUX

Dpt : SysComp

Systèmes complexes

Matthieu LATAPY

COMPLEX NETWORKS : Graphes, réseaux sociaux, internet
 APR : Algorithmes, Programmes et Résolution
 MOVE : Modélisation et Vérification

Clémence MAGNIEN
Emmanuel CHAILLOUX
Fabrice KORDON

Dpt : SOC

System On Chip

Marie-Minerve LOUERAT

ALSOC : Architectures et Logiciels pour Systèmes Embarqués sur Puce
 CIAN : Conception de circuits Intégrés Analogiques et Numériques
 SYEL : Systèmes ELectroniques, modélisation des performances des systèmes hétérogènes
 QI : Quantum Information

Lionnel LACASSAGNE
Habib MEHREZ
Bertrand GRANADO
Damian MARKHAM

Actions spécifiques de recherche

- ERC Modular Open Platform for Static Analysis (Mopsa). Antoine Miné
- ERC «Flow Machine» F. Pachet - «AlmaCrypt» A. Joux
- Chaire UPMC, Atos, Renault : La voiture connectée. Giovanni Pau
- Chaire Fondation partenariale UPMC : Cryptologie. Antoine Joux
- Chaire EIAH à l'UPMC- Sorbonne Universités. Vanda Luengo
- CLEAR : Laboratoire commun. Sur la perception, l'analyse et le contrôle de l'information avec Thalès Communication.

Plateformes

- Cluster calcul et stockage
- Cluster multi-coeur
- Cluster de cartes graphiques (GPU)
- Planetlab Europe

Implication du LIP6 dans : - 3 LABEX

- SMART : Interactions humains machines intelligentes dans la société numérique (Consortium de laboratoires).
- Obvil : Observatoire de la vie littéraire.
- CALSIMLAB : Pour la modélisation et la simulation scientifique en recherche.

- 1 EQUIPEX : FIT (Internet du Futur des «objets»)

http://www.lip6.fr

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 4, Place Jussieu
 75252 PARIS Cedex 5

**Vague D :
campagne d'évaluation 2017 - 2018
Dossier d'évaluation des unités de recherche
Données du contrat en cours**

HCERES
Haut conseil de l'évaluation de la recherche
et de l'enseignement supérieur

1 - Informations administratives sur l'unité au 30 juin 2017

Intitulé complet de l'unité de recherche
Intitulé en français : Laboratoire d'Informatique de Paris 6
Intitulé en anglais : LIP6

Responsable
M. / Mme : BAJARD Jean-Claude
Monsieur / Madame : Professeur

Autorise la diffusion de mon nom sur internet (annuaire des unités de recherche)

Labels et n°
UMR 7606 : 0
199712651U

Établissement(s) et organisme(s) de rattachement de l'unité (tutelles)
 Tout dossier déposé doit être préalablement validé par l'ensemble des tutelles de l'unité.
 (sélectionner l'organisme(s) de recherche et de rattachement de l'unité de recherche)
 établissement : UNIVERSITE PIERRE ET MARIE CURIE - U PARIS 6
 organisme(s) de recherche : CNRS
 (sélectionner l'organisme(s) de rattachement de l'unité de recherche)
 organisme : U PARIS 6
 Intitulé, département, commission de rattachement : INRS2
 ...

Préciser l'établissement ou organisme responsable du dépôt du dossier :
 (sauf exception, le dossier est déposé par l'intermédiaire de l'unité de recherche)
 U PARIS 6
 DGG U PARIS 6

Préciser le cas échéant le délégué unique de gestion :

Autres partenaires de l'unité (hors tutelles)
 (sélectionner l'établissement ou l'organisme soutenu dans les menus déroulants)
 établissement(s) d'enseignement supérieur et de recherche : INRIA
 organisme(s) de recherche : INRIA
 autres :

Écoles (s) doctorales de rattachement au 30 juin 2017 (n°, intitulé, responsable, établissement support)
 ED 130 : Informatique, Télécommunications et ... : 0 0 0 0

Participation à une ou plusieurs structures fédératives au 30 juin 2017 (label et n°, intitulé, responsable, établissement support)

Première scientifique de l'unité
 (sélectionner le domaine soutenu dans les menus déroulants si vous le souhaitez)
 Indiquer les domaines disciplinaires par ordre décroissant d'importance

Domaine scientifique
 ST : ST6_1 Informatique
 Domaine scientifique 1 :
 Domaine scientifique 2 :
 Domaine scientifique 3 :

mois-clés
 livres (5 maximum) : Sécurité, Intelligence artificielle, Objets connectés, Science des données

Coordonnées de l'unité
 Localisation et établissement :
 Numéro, voie : Couloir 26-00, 2ème étage, Administration, bureau 202
 Boîte postale : Boîte courrier 169
 Code Postal et ville : 75252 Paris cedex 05

Date et signature du responsable de l'unité
 (Document complété à imprimer, à signer, à numériser et à insérer en annexe du dossier de l'unité)
 le 08.09.2017

**Annexe 4 DEPARTEMENT
CALSCI**

Annexe 4 EQUIPE PEQUAN

Nom de l'équipe : Performance and Quality of Numerical Algorithms

Acronyme : PEQUAN

Nom du responsable pour le contrat en cours : Stef Graillat & Fabienne Jézéquel

Nom du responsable pour le contrat à venir : Stef Graillat & Fabienne Jézéquel

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

- [PEQUAN-J-1] Alexandre Benoit, Mioara Joldes, and **Marc Mezzarobba**. Rigorous uniform approximation of D-finite functions using Chebyshev expansions. *Mathematics of Computation*, 86(305):1303–1341, 2017.
- [PEQUAN-J-2] Nicolas Brisebarre, **Christoph Lauter**, **Marc Mezzarobba**, and Jean-Michel Muller. Comparison between binary and decimal floating-point numbers. *IEEE Transactions on Computers*, 65(7):2032–2044, 2016.
- [PEQUAN-J-3] **Pierre Fortin**, **Mourad Gouicem**, and **Stef Graillat**. GPU-Accelerated Generation of Correctly Rounded Elementary Functions. *ACM Transactions on Mathematical Software*, 43(3):22:1–22:26, December 2016.
- [PEQUAN-J-4] **Julien Tierny** and Hamish Carr. Jacobi Fiber Surfaces for Bivariate Reeb Space Computation. *IEEE Transactions on Visualization and Computer Graphics*, August 2016.
- [PEQUAN-J-5] **Dominique Béréziat** and Isabelle Herlin. Coupling dynamic equations and satellite images for modelling ocean surface circulation. *Communications in Computer and Information Science*, 550:191–205, 2015.
- [PEQUAN-J-6] Sylvain Collange, David Defour, **Stef Graillat**, and **Roman Iakymchuk**. Numerical Reproducibility for the Parallel Reduction on Multi- and Many-Core Architectures. *Parallel Computing*, 49:83–97, November 2015.
- [PEQUAN-J-7] Pacôme Eberhart, Julien Brajard, **Pierre Fortin**, and **Fabienne Jézéquel**. High Performance Numerical Validation using Stochastic Arithmetic. *Reliable Computing*, 21:35–52, December 2015.
- [PEQUAN-J-8] **Stef Graillat**, **Christoph Q. Lauter**, Ping Tak Peter Tang, Naoya Yamanaka, and Shin'ichi Oishi. Efficient Calculations of Faithfully Rounded l2-Norms of n-Vectors. *ACM Transactions on Mathematical Software*, 41(4):24:1, October 2015.
- [PEQUAN-J-9] Attila Gyulassy, David Guenther, Joshua Levine, **Julien Tierny**, and Valerio Pascucci. Conforming Morse-Smale Complexes. *IEEE Transactions on Visualization and Computer Graphics*, 20(12):2595–2603, December 2014.
- [PEQUAN-J-10] **Stef Graillat** and **Valérie Ménissier-Morain**. Accurate summation, dot product and polynomial evaluation in complex floating point arithmetic. *Information and Computation*, (216):57–71, July 2012.

Articles de synthèse / revues bibliographiques

Néant

Autres articles (articles publiés dans des revues professionnelles ou techniques, etc.)

Néant

2. Ouvrages

Monographies et ouvrages scientifiques, éditions critiques, traductions

[PEQUAN-B-1] Alexandre Casamayou, Nathann Cohen, Guillaume Connan, Thierry Dumont, Laurent Fousse, Francois Maltey, Matthias Meulien, **Marc Mezzarobba**, Clément Pernet, Nicolas M. Thiéry, and Paul Zimmermann. *Calcul mathématique avec Sage*. CreateSpace, 2013. electronic version available under Creative Commons license.

Direction / édition scientifique

Néant

Chapitres d'ouvrage

[PEQUAN-CB-1] **Pierre Fortin**, Rachid Habel, **Fabienne Jézéquel**, **Jean-Luc Lamotte**, and Norman Stanley Scott. Numerical validation and performance optimization on GPUs of an application in atomic physics. In *Designing Scientific Applications on GPUs*, pages 369–414. Chapman & Hall/CRC, 2013.

Thèses publiées / éditées

[PEQUAN-T-1] Olga Kupriianova. *Towards a modern floating-point environment*. Theses, Université Pierre et Marie Curie - Paris 6, December 2015.

[PEQUAN-T-2] Issam Said. *Contributions of hybrid architectures to depth imaging: a CPU, APU and GPU comparative study*. Theses, UPMC, December 2015.

[PEQUAN-T-3] Julien Eynard. *RNS arithmetic approach of asymmetric cryptography*. Theses, Université Pierre et Marie Curie - Paris 6, May 2015.

[PEQUAN-T-4] Benoit Lopez. *Optimal implementation of linear filters in fixed-point arithmetic*. Theses, Université Pierre et Marie Curie - Paris 6, November 2014.

[PEQUAN-T-5] Mourad Gouicem. *Conception et implantation d'algorithmes efficaces pour la résolution du dilemme du fabricant de tables sur architectures parallèles*. Theses, Université Pierre et Marie Curie - Paris 6, October 2013.

[PEQUAN-T-6] Séthy Akpémado Montan. *On the numerical verification of industrial codes*. Theses, Université Pierre et Marie Curie - Paris 6, October 2013.

[PEQUAN-H-1] Julien Tierny. *Contributions to Topological Data Analysis for Scientific Visualization*. Habilitation à diriger des recherches, UPMC - Paris 6 Sorbonne Universités, April 2016.

[PEQUAN-H-2] Stef Graillat. *Contribution à l'amélioration de la précision et à la validation des algorithmes numériques*. Habilitation à diriger des recherches, Université Pierre et Marie Curie (Paris 6), December 2013.

3. Colloques / congrès, séminaires de recherche

Éditions d'actes de colloques / congrès

Néant

Articles publiés dans des actes de colloques / congrès

- [PEQUAN-C-1] **Dominique Béréziat**, Isabelle Herlin, and Yann Lepoittevin. Ensemble Kalman Filter based on the image structures. In *International Conference on Computer Vision Theory and Applications*, Porto, Portugal, February 2017.
- [PEQUAN-C-2] **Anastasia Volkova**, **Christoph Lauter**, and **Thibault Hilaire**. Reliable verification of digital implemented filters against frequency specifications. In *24th IEEE Symposium on Computer Arithmetic (ARITH 24)*, London, United Kingdom, July 2017.
- [PEQUAN-C-3] **Pacôme Eberhart**, Julien Brajard, **Pierre Fortin**, and **Fabienne Jézéquel**. Estimation of Round-off Errors in OpenMP Codes. In *IWOMP 2016 - 12th International Workshop on OpenMP*, volume 9903 of *Lecture Notes in Computer Science*, pages 3–16, Nara, Japan, October 2016. Riken AICS, Springer International Publishing.
- [PEQUAN-C-4] **Guillaume Favelier**, **Charles Gueunet**, and **Julien Tierny**. Visualizing Ensembles of Viscous Fingers. In *IEEE Scientific Visualization Contest*, Baltimore, United States, October 2016.
- [PEQUAN-C-5] **Charles Gueunet**, **Pierre Fortin**, Julien Jomier, and **Julien Tierny**. Contour Forests: Fast Multi-threaded Augmented Contour Trees. In *IEEE Symposium on Large Data Analysis and Visualization*, Baltimore, United States, October 2016.
- [PEQUAN-C-6] **Issam Said**, **Pierre Fortin**, **Jean-Luc Lamotte**, and Henri Calandra. Efficient Reverse Time Migration on APU clusters. In *2016 Rice Oil & Gas HPC Conference*, Houston, United States, March 2016.
- [PEQUAN-C-7] Nicolas Brunie, Florent de Dinechin, **Olga Kupriianova**, and **Christoph Lauter**. Code generators for mathematical functions. In *22d IEEE Symposium on Computer Arithmetic*, Lyon, France, June 2015. Best paper award.
- [PEQUAN-C-8] **Stef Graillat**, **Fabienne Jézéquel**, and **Romain Picot**. Numerical Validation of Compensated Summation Algorithms with Stochastic Arithmetic. In *8th International Workshop on Numerical Software Verification, NSV 2015*, volume 317 of *Electronic Notes in Theoretical Computer Science*, pages 55–69, Seattle, United States, April 2015. Elsevier.
- [PEQUAN-C-9] **Christoph Lauter**. Easing development of precision-sensitive applications with a beyond-quad-precision library. In *2015 49th Asilomar Conference on Signals, Systems and Computers*, pages 742 – 746, Pacific Grove, United States, November 2015.
- [PEQUAN-C-10] **Christoph Lauter** and **Marc Mezzarobba**. Semi-Automatic Floating-Point Implementation of Special Functions. In *IEEE 22nd Symposium on Computer Arithmetic, ARITH 22*, pages 58–65, Lyon, France, June 2015. IEEE.
- [PEQUAN-C-11] Yann Lepoittevin, Isabelle Herlin, and **Dominique Béréziat**. An Image-Based Ensemble Kalman Filter for Motion Estimation. In *VISAPP 2015 - 10th International Conference on Computer Vision Theory and Applications*, volume 3, pages 437–445, Berlin, Germany, March 2015.
- [PEQUAN-C-12] **Anastasia Volkova**, **Thibault Hilaire**, and **Christoph Q. Lauter**. Reliable evaluation of the Worst-Case Peak Gain matrix in multiple precision. In *ARITH 22 - 22nd IEEE Symposium on Computer Arithmetic*, pages 96–103, Lyon, France, June 2015. IEEE.
- [PEQUAN-C-13] **Dominique Béréziat** and Isabelle Herlin. Image-based modelling of ocean surface circulation from satellite acquisitions. In *VISAPP - International Conference on Computer Vision Theory and Applications*, pages 288–295, Lisbon, Portugal, January 2014. ScitePress.
- [PEQUAN-C-14] **Benoit Lange** and **Pierre Fortin**. Parallel dual tree traversal on multi-core and many-core architectures for astrophysical N-body simulations. In *20th International Conference Euro-Par 2014 Parallel Processing*, volume 8632 of *Lecture Notes in Computer Science*, pages 716–727, Porto, Portugal, August 2014. Springer.
- [PEQUAN-C-15] Nicolas Brisebarre, **Marc Mezzarobba**, Jean-Michel Muller, and **Christoph Lauter**. Comparison between binary64 and decimal64 floating-point numbers. In Alberto Nannarelli, Peter-Michael Seidel, and Ping Tak Peter Tang, editors, *21st IEEE Symposium on Computer Arithmetic*, pages 145–152, Austin, TX, United States, April 2013. IEEE Computer Society.

- [PEQUAN-C-16] **Pierre Fortin, Jean-Luc Lamotte, Issam Said**, Romain Dolbeau, and Henri Calandra. Evaluation of Successive CPUs/APUs/GPUs Based on an OpenCL Finite Difference Stencil. In *21st Euro-micro International Conference Parallel, Distributed and Network-Based Processing, PDP 2013*, pages 405–409, Belfast, United Kingdom, February 2013. IEEE.
- [PEQUAN-C-17] Hao Jiang, **Stef Graillat**, and Roberto Barrio. Accurate and Fast Evaluation of Elementary Symmetric Functions. In *21st IEEE Symposium on Computer Arithmetic, ARITH 2013*, pages 183–190, Austin, TX, United States, April 2013. IEEE.
- [PEQUAN-C-18] **Dominique Béréziat** and Isabelle Herlin. Non Linear Observation Equation For Motion Estimation. In *ICIP - IEEE International Conference on Image Processing*, pages 1521–1524, Orlando, United States, September 2012.
- [PEQUAN-C-19] **Séverine Dubuisson** and Christophe Gonzales. An Optimized DBN-Based Mode-Focussing Particle Filter. In *International Conference on Computer Vision and Pattern Recognition (CVPR'12)*, pages 1934–1939, Providence, United States, June 2012.
- [PEQUAN-C-20] **Pierre Fortin, Mourad Gouicem, and Stef Graillat**. Towards solving the Table Maker's Dilemma on GPU. In Rainer Stotzka, Michael Schiffers, and Yiannis Cotronis, editors, *20th Euro-micro International Conference on Parallel, Distributed and Network-Based Processing*, pages 407 – 415, Garching, Germany, February 2012. IEEE Computer Society.
- [PEQUAN-C-21] Luigi Nardi, Fouad Badran, **Pierre Fortin**, and Sylvie Thiria. YAO: a generator of parallel code for variational data assimilation applications. In IEEE, editor, *14th IEEE International Conference on High Performance Computing and Communications (HPCC-2012)*, pages 224–232, Liverpool, United Kingdom, June 2012. 9 pages.

Autres produits présentés dans des colloques / congrès et des séminaires de recherche

Néant

4. Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs

Néant

Plateformes et observatoires

Néant

...

Néant

5. Produits et outils informatiques

Logiciels

- CADNA (Control of Accuracy and Debugging for Numerical Applications)
The CADNA library estimates round-off errors in a scientific code thanks to stochastic arithmetic: several executions are performed synchronously with a random rounding mode. In a sequential, vectorized or parallel code, CADNA enables one to control the numerical quality of results and detect numerical instabilities.
<http://cadna.lip6.fr/>
- PROMISE (PRecision OptiMISE): precision auto-tuning in simulation codes
The PROMISE software makes it possible to optimise the numerical types in a program by taking into account the requested accuracy on the computed results. In a parallel code, such an optimisation causes a reduction of the data volume that is possibly transferred. With PROMISE the numerical quality of

results is verified using stochastic arithmetic.

<http://promise.lip6.fr/>

— SAM (Stochastic Arithmetic in Multiprecision)

The SAM library implements all the features of stochastic arithmetic in arbitrary precision. It enables one to estimate round-off errors in a code that requires arbitrary precision, such as chaotic phenomena simulations.

<http://www-pequan.lip6.fr/~jezequel/SAM>

— SOLLYA: automatized implementation of mathematical floating-point libraries (libm)

Sollya is both a tool environment and a library for safe floating-point code development. It is particularly targeted to the automatized implementation of mathematical floating-point libraries (libm).

Sollya provides the user amongst others with:

- a certified infinity (supremum) norm for computing safe approximation error bounds,
- an automatized implementer for approximation polynomials in CRlibm-style C-code with the corresponding Gappa proof,
- a fast implementation of Remez algorithm for computing minimax polynomials,
- a full-featured programming language adapted to analysis of numerical programs like in a Computer-Algebra-System,
- a faithful-rounding, multi-precision evaluator of composed functional expressions extending MPFR,
- a highly accurate and fast floating-point infinity (supremum) norm,
- support for floating-point rounding operators and expansions in common precisions,
- a special floating-point minimax procedure,
- basic MathML input and output support,
- interfaces for extending Sollya with your own code.

The latest version of Sollya is 6.0 and has been released in October 2016. It is available as an interactive tool as well as a library with a C interface. We have recently succeeded at getting Sollya supported as a package inside Debian.

<http://sollya.gforge.inria.fr>

— Metalibm: code generator for floating-point mathematical libraries

MetaLibm is a tool that aims at open-ended code generation. This generator inputs a high-level specification (a mathematical expression, some day a differential equation) of a function to implement on an interval. The generated code is potentially more efficient than a naive composition of standard functions. It works for the set of functions on which it works (and this set is expanding).

<http://www.metalibm.org/>

— FiPoGen (Fixed-Point Code Generator): toolbox for the reliable fixed-point implementation of linear systems (filters, FFT, etc.)

This tools allows to automatically generate fixed-point algorithm/code of linear systems under accuracy constraint. It generates algorithm, C code or VHDL (using 3rd party toolbox), and aims to provide a fully reliable flow from the mathematical definition of the filter (frequency specification, data-flow graph or transfer function) to the final code.

— *pfalcon*: a parallel version of the *falcon* code for astrophysical N-body simulations.

This offers a recursive implementation of the original fast multipole algorithm (*falcon*), a parallel implementation of the Dual Tree Traversal (specific to this fast multipole method) with OpenMP or TBB tasks, and SIMD code for P2P kernels (particle-to-particle computation, or direct computation) with ISPC (Intel SPMD Program Compiler).

<https://pfalcon.lip6.fr/>

— ExBLAS: accurate and reproducible BLAS

ExBLAS aims at providing new algorithms and implementations for fundamental linear algebra operations – like those included in the BLAS library – that deliver reproducible and accurate results with small or without losses to their performance on modern parallel architectures such as Intel Xeon Phi many-core processors and GPU accelerators. We construct our approach in such a way that it is independent from data partitioning, order of computations, thread scheduling, or reduction tree schemes.

<https://exblas.lip6.fr/>

— Topology ToolKit:

The Topology ToolKit (TTK) is an open-source library (C++, >75k lines) and software collection for topological data analysis in scientific visualization. TTK can handle scalar data defined either on regular grids or triangulations, either in 2D or in 3D. It provides a substantial collection of generic, efficient and robust implementations of key algorithms in topological data analysis. TTK also makes topological data analysis accessible to end users thanks to easy-to-use plugins for the visualization front end ParaView. TTK is written in C++ but comes with a variety of bindings (VTK/C++, Python). <https://topology-tool-kit.github.io/>

- `ore_algebra.analytic`: SageMath package for symbolic-numeric computations with differentially finite functions. Development resumed in 2015 after a first prototype in 2013. A version is now distributed as part of the `ore_algebra` package by M. Kauers et al. http://marc.mezzarobba.net/ore_algebra-analytic/
- NumGfun: predecessor of `ore_algebra.analytic`, based on Maple. Still maintained but no longer actively developed. <http://perso.ens-lyon.fr/bruno.salvy/software/the-gfun-package/>
- Contributions to SageMath: general-purpose mathematical software. 350+ patches accepted, 150+ tickets reviewed or co-reviewed since Oct. 2013. <http://sagemath.org>
- `pythonsollya`: Python interface for Sollya, developed with Nicolas Brunie (Kalray) for the MetaLibm project. <https://gforge.inria.fr/projects/metallibm/>
- Inrimage: Software for image processing (contribution and maintenance). <https://inrimage.gforge.inria.fr>
- Heimdali: Software for satellite image processing based on ITK and HDF5, in collaboration with Inria Team-projet Clime. <http://heimdali.readthedocs.io/en/latest/>
- `libwidefloat`: a mid-precision multiple precision Floating-Point support library
The IEEE754 Standard offers essentially two binary floating-point formats, binary32 and binary64, natively supported by current hardware. Whenever these precisions do not suffice, developers are restricted to arbitrary precision libraries, such as MPFR.
These libraries however leave a gap in the mid-precision range (64 to 512 bits). Their very nature –as object code to be linked in– prevents modern compilers from inlining the code or optimizing it e.g. with loop unrolling.
We propose the `libwidefloat` software meant to fill this gap. It offers precisions from 64 thru 512 bits. It supports all basic operations (+, −, ×, /, √, comparisons etc.) It is fully implemented in header files for automatic optimization.
<http://www.christoph-lauter.org/>
A C++ interface for `libwidefloat` has been implemented. It has not been released yet, though.

Bases de données / cohortes

Néant

Outils présentés dans le cadre de compétitions de solveurs

Néant

Outils d'aide à la décision

Néant

6. Brevets, licences et déclarations d'invention

Néant

7. Rapports d'expertises techniques, produits des instances de normalisation

Néant

8. Produits des activités didactiques**Ouvrages**

Néant

E-learning, moocs, cours multimedia, etc.

Néant

9. Produits destinés au grand public**Émissions radio, TV, presse écrite**

Néant

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

Néant

Produits de médiation scientifique

Néant

Débats science et société

Néant

10. Autres produits propres à une discipline**Créations artistiques théorisées**

Non applicable

Mises en scènes

Non applicable

Films

Non applicable

...

Non applicable

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE**1. Activités éditoriales****Participation à des comités éditoriaux (revues, collections)**

Members of the team are in the editorial board of
— *Reliable Computing*,
— *Numerical Algorithms*,

— *Mathematics and Computers in Simulation.*

Direction de collections et de séries

Néant

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

Néant

Évaluation d'articles et d'ouvrages scientifiques

- Referees for IEEE Transactions on Computers, BIT Numerical Mathematics, Journal of Symbolic Computation, Numerical Algorithms, Applied Mathematics and Computation, Applied Numerical Mathematics, Reliable Computing, Linear Algebra and Applications, Applied Mathematics Letters, Mathematics of Computation, Biomath, Abstract and Applied Analysis, ACM Transactions on Mathematical Software, Calcolo, Alexandria Engineering Journal, SpringerPlus, International Journal of Engineering and Technology Innovation, Theoretical Computer Science, ACM Communications in Computer Algebra, Revista de la Unión Matemática Argentina, IEEE Transactions on Image Processing, IEEE Transactions on Geosciences and Remote Sensing, Mathematics in the Applied Sciences, Mathematics and Computers in Simulation, Digital Signal Processing, ESAIM : Proceedings and Surveys, IEEE Transactions on Visualization and Computer Graphics, Computer Graphics Forum, Journal of Automated Reasoning, IEEE Trans. on Signal Processing, IEEE Trans. on Circuits and Systems I, IEEE Trans. on Computer-Aided Design of Integrated Circuits and Systems, IEEE Trans. on Industrial Electronics
- Participation in the Program Committee Symbolic Computation track of SYNASC 2016
- Participation in the ISSAC 2014 Poster Committee
- Participation in the CSE 2012 (IEEE International Conference on Computational Science and Engineering) Program Committee
- Participation in the PDSEC 2014-2017 (IEEE International Workshop on Parallel and Distributed Scientific and Engineering Computing) Program Committees
- Participation in the IEEE VIS program committee (2017)
- Participation in the EuroVis program committee (2015-2017)
- Participation in the TopoInVis program committee (2015, 2017)
- Participation in the Eurographics Symposium on Parallel Graphics and Visualization program committee (2017)
- Participation in the SuperComputing committee (tutorials, 2017)
- Participation in the IEEE Shape Modeling International program committee (2015)
- Referees for ISSAC 2012, ISSAC 2014, SNC 2014, DASIP 2014, MACIS 2014, ISSAC 2015, EuroPar 2015-2014 et 2011, MACIS 2015, CASC 2016, NEWCAS 2016 ISSAC 2017, PACT 2013, SuperComputing 2011 IEE VIS (2014-2017), EuroVis (2014-2017), ACM SIGGRAPH (2015, 2017), ACM SIGGRAPH ASIA (2015), EuroGraphics (2015-2017), IEEE Shape Modeling International (2015), ARITH2013, ARITH2015, ARITH2016
- Participation in the jury awarding the 2016 Gilles Kahn prize

Évaluation de laboratoires (type Hceres)

Néant

Évaluation de projets de recherche

- Evaluation of a project for IDEX of Université de Strasbourg, 2015
- Referees for project calls: Digiteo-DigiCosme (2014), ANRT (2014), ANR MN (Numerical models, 2011-2013).

3. Activités d'expertise scientifique

Activités de consultant

- Huawei (2017)

Participation à des instances d'expertises (type Anses) ou de normalisation

- Expert for the GENCI (*Grand Equipement National de Calcul Intensif*) HPC-PME project (2012)

Expertise juridique

Non applicable

4. Organisation de colloques / congrès

- FJWNC 2015, The First French-Japanese Workshop on Numerical Computations, UPMC, Paris, France, March 22-25, 2015
<http://www.math.twcu.ac.jp/~conf/FJWNC2015/>
- RAIM 2013, Rencontres Arithmétique de l'Informatique Mathématique, IHP Paris, November 18-20, 2013
<http://raim2013.lip6.fr/>
- Co-organized the 2017 Journées nationales de calcul formel (75 participants), co-organizing the 2018 edition.
- Participation in the scientific committee of CNRS *écoles thématiques* on Numerical reproducibility and accuracy in 2013 and 2017.
<http://calcul.math.cnrs.fr/spip.php?rubrique98>
<https://precis.sciencesconf.org/>
- Participation in the organizing committee of the SIAM Conference on Parallel Processing for Scientific Computing (<http://www.siam.org/meetings/pp16/>, 450 participants)

5. Post-doctorants et chercheurs accueillis

Postdocs:

- Roman Iakymchuk (2013-2015): Reproducibility and accuracy for Exascale computing
The aim was to provide a reproducible, accurate and fast library for classic operations (summation, dot product) on new parallel architectures that are GPU and Intel MIC (Xeon Phi). This has led to 1 publication in a journal and 5 in international conferences
- Mounira Bachir (2011-2012): Automatic generation of parallel codes for data assimilation, "Emergence" UPMC project with LOCEAN laboratory
- Yi-Shuai Niu (2013): Optimisation of chemical simulations performance, ICSD (Institut des Sciences du Calcul et des Données) project with LCT (Laboratoire de Chimie Théorique)
- Benoit Lange (2012-2013) : Astrophysical N-body simulations on multi-core and many-core architectures, ICSD (Institut des Sciences du Calcul et des Données) project, 1 publication in a A-ranked conference
- Christophe Avenel (2012-2013) : Selective cell nuclei detection from histopathological images and deployment on many-core architectures, ANR MICO TecSan project, 1 publication in a A-ranked conference
- Daisuke Sakurai (2016-2017): Uncertain data analysis and visualization with optimal transport (1 submission in a A-ranked conference).

Visiting professors:

- Siegfried M. Rump (Hamburg University of Technology)
- Peter Tang (Intel)
- Joshua Levine (University of Arizona)
- Manuel Kauers (Johannes Kepler Universität Linz)

— Brian Summa (Tulane University)

Visiting PhD student:

— Olena Chubach (I.I. Mechnikov University in Odessa, Ukraine) during 6 months in LIP6
F. Jézéquel, J.-L. Lamotte, O. Chubach, Parallelization of Discrete Stochastic Arithmetic on multicore architectures, 10th International Conference on Information Technology: New Generations (ITNG), Las Vegas, Nevada (USA), 7 pages, April 2013.

6. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

— EDF (2014-2015): study of the combination of stochastic arithmetic and compensated algorithms for accurate summation.
— TOTAL-AMD-CAPS collaboration on "Contributions of hybrid architectures to depth imaging : a CPU, APU and GPU comparative study" (Ph.D. thesis of I. Said).

Bourses Cifre

— Weather Measure (Aniss Zébiri): Estimation of dynamics from multi scale image assimilation. Application to Rain nowcasting from ground radar images.
— EDF (Romain Picot): Numerical verification of industrial scientific software
Algorithms have been proposed to optimise the numerical types in scientific codes and verify that the numerical quality of results is satisfactory. It has also been shown that the accuracy of compensated algorithms for summation, dot product and polynomial evaluation can be controlled using stochastic arithmetic.
— EDF (Séthy Montan): Round-off error propagation in high performance sparse linear system solving
An efficient and validated version of the BLAS routine xGEMM for matrix multiplication with stochastic arithmetic has been proposed. New extensions for CADNA which allow one to use stochastic arithmetic in programs using the communication standard routines MPI or BLACS have also been developed.
— Safran Electronic & Defense (Clothilde Jeangoudoux): Automatic generation of tests for the certification of codes in aeronautics. The project is to provide some automatic test generators for nonlinear systems using floating-point arithmetic in the industrial context of aeronautics certification.
— Kitware (Charles Gueunet): Topological data analysis in a HPC context.
— Total (Maxime Soler): Topological data reduction for post-process exploration.

Créations de laboratoires communs avec une / des entreprise(s)

Néant

Création de réseaux ou d'unités mixtes technologiques

Néant

Créations d'entreprises, de start-up

Néant

7. Contrats de recherche financés par des institutions publiques ou caritatives

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

— **EoCoE**, Energy oriented Centre of Excellence for computer applications. October 2015 – October 2018, coordinated by CEA. The main goal of EoCoE is to create a new and long lasting community on computational energy science. Our team is involved in the development of a nowcasting system that requires HPC optimization.

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

- **FastRelax ANR Project.** The aim of project led by Bruno Salvy is to develop computer-aided proofs of numerical values, with certified and reasonably tight error bounds, without sacrificing efficiency. Applications to zero-finding, numerical quadrature or global optimization can all benefit from using our results as building blocks. We expect our work to initiate a "fast and reliable" trend in the symbolic-numeric community. This will be achieved by developing interactions between our fields, designing and implementing prototype libraries and applying our results to concrete problems originating in optimal control theory. It started on October 2014 and will finish in October 2018. The teams involved in the project are the MARELLE team-project of INRIA Sophia Antipolis, the PEQUAN team of LIP6 the AriC team-project at LIP/ENS Lyon, Inria Saclay, and LAAS/CNRS.
- **Metalibm ANR Project** This project first addresses the implementation of elementary functions such as exponential or trigonometric. The standard mathematical library (libm) offers a small set of such functions in a small set of precisions. Performance of libm functions is of critical importance, in particular in scientific and financial computing. Therefore, they have always received special attention. For instance, processor manufacturers have teams of engineers who implement an optimized libm for each new processor, a time-consuming and error-prone task. A first objective of this project is therefore to automate libm development, up to the point where libm s generated in a fraction of the time match in performance hand-coded ones for a wide range of targets: general-purpose processors, embedded processors, graphical processing units, and even FPGA and digital circuits.
Applications often require functions not present in the libm . In such case, a composition of libm functions may be very inefficient, or simply not possible (function defined by a differential equation or by interpolation of a set of data points for instance). Even the libm functions are offered in a limited choice of implementations which will most of the time poorly match the actual needs of an application in terms of range, accuracy, performance and resource consumption. The second objective of this project is therefore to open the set of functions and contexts available to programmers. This qualitative progress will be enabled by automation: we aim at designing and distributing tools that implement mathematical functions on-demand for a given context. Such implementations can not be tested a priori, their accuracy needs to be proven by construction: this will be a pervasive concern in this project.
The process of implementing a mathematical function into code is composed of several steps, typically range reduction, approximation, evaluation. In the signal processing and control communities, a very similar process, based on similar steps, consists in implementing a digital filter out of its mathematical specification. In both cases, the final code or circuit consists of the same primitives (additions, multiplications, and pre-computed constant values). A third objective of this project is therefore to unify the understanding of function and filter development, sharing common mathematical, methodological, and implementation tools. In particular this will lead to on-demand generation of filters for the same breadth of targets and with the same guarantees on numerical quality.
- **CrABEx ANR Project** The CrABEx project deals with the optimization of the production and editing chain of 3D content, in digital entertainment contexts. The challenge addressed by this project is to facilitate the creation and editing of this 3D content, with the help of a database of pre-existing 3D models. A core scientific issue this project focuses on is that of the efficient and robust computation of bijections between triangulated surfaces. This project involves four academic research labs (Cristal, LIRIS, TPT/LIP6 and Gamagora) and one industrial partner (3Dduo). It will end in November 2017.
- **DEFIS ANR Project.** The Defis project (Design of fixed-point embedded systems) was funded by the ANR (INSE call) and headed by Olivier Sentieys. It started in sept. 2011 and ended in 2014. Many embedded systems contain applications integrating mathematical processing. So, to satisfy the constraint (area, energy consumption, execution time) inherent to embedded systems, fixed-point arithmetic is widely used and preferred. But the applications are designed and simulated using floating-point arithmetic and then implemented into fixed-point architectures. The manual fixed-point conversion is a tedious, time-consuming and error prone task that requires high-level development tools to automate fixed-point conversion. The main objective of DEFIS project is to propose new approaches to improve the efficiency of the fixed-point conversion process and to provide a complete design flow for fixed-point refinement of complex applications. complex applications. This project involved the INRIA/IRISA, LIRMM, CEA, Pequan team of the LIP6, and two industrials InPixal (Rennes) and Thales.

- **TaMaDi ANR Project.** The TaMaDi project (Table Maker’s Dilemma, 2010-2013) was funded by the ANR and headed by Jean-Michel Muller. It started in October 2010 and finished in October 2013. The French teams involved in the project were the AriC team-project at LIP/ENS Lyon, the MARELLE team-project of INRIA Sophia Antipolis and the PEQUAN team of LIP6. The aim of the project was to find "hardest to round" (HR) cases for the most common functions and floating-point formats.
- **QUARENUM CNRS-PEPS project:** QUALity and REproducibility in NUMerical simulations (LIP, LIP6, LIRMM, LRI, ONERA), 2013. The QUARENUM project aims at designing and implementing efficient algorithms for numerical validation and reproducibility in high-performance computing (HPC) applications. This project focuses on various methods to analyze the sensitivity of HPC applications to errors (e.g., simulation of rounding error propagation using stochastic or interval arithmetics, estimation of condition number and backward errors). These aspects and the objective of reproducibility are studied in the framework of massively parallel heterogeneous architectures.
- **MICO ANR Project.** The cognitive microscope (MICO) aims to propose a new cognitive medical imaging environment able to improve reliability of decision making in histopathology. The goal is to realize a generic, open-ended, semantic digital histology platform including a cognitive dimension. Pequan team was implied to optimize a segmentation process of cancer cells from very large histopathological data.
- **Geo-FLUIDS ANR Project.** The project Geo-FLUIDS focuses on the potential to extract quantitative fluid flow information from image sequences and to design adapted tools for analyzing these flows. Geo-FLUIDS aims at providing image-based methods using physically consistent models to extract meaningful features describing the observed flow and to unveil the dynamical properties of this flow. Pequan had contributed to several methods determining sea surface circulation using image assimilation techniques.
- **ExaPol CNRS InFiniti 2017 Project.** The ExaPol project aims at improving the performance of the Tinker-HP molecular dynamics software on pre-exascale and exascale architectures.

Contrats avec les collectivités territoriales

Néant

Contrats financés dans le cadre du PIA

- **AVIDO Project** The AVIDO project brings together a consortium of academics (UPMC, INRIA) and companies (EDF, Total, Kitware) to address the problem of data analysis and visualization in large-scale numerical simulations, especially for simulations where the size of the considered data prevents any persistent storage. AVIDO aims at defining in-situ methodologies to address this challenge, in particular for visual data analysis, statistical analysis of ensemble runs and post-hoc exploration and analysis (through in-situ data reduction).

Contrats financés par des associations caritatives et des fondations (ARC, FMR, FRM, etc.)

Néant

8. Indices de reconnaissance

Prix

- GPU Research Center Award, NVIDIA, USA (2015)

Distinctions

- Honorable Mention Award at the international IEEE Scientific Visualization Contest 2016
- Best paper award at IEEE VIS 2016
- Best paper runner-up award at the 24th High Performance Computing Symposium (HPC 2016)
- Best paper award at ARITH 2015
- Best paper award at VISAPP 2014

Responsabilités dans des sociétés savantes

Néant

Contrats financés dans le cadre du PIA

- **AVIDO Project** The AVIDO project brings together a consortium of academics (UPMC, INRIA) and companies (EDF, Total, Kitware) to address the problem of data analysis and visualization in large-scale numerical simulations.

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

- Invitation QUB (Queen's University of Belfast), 30 June - 3 July 2013 (P. Fortin & F. Jézéquel)
- Keynote speaker at IEEE Shape Modeling International 2015 (J. Tierny)
- Invitation, TU Graz and Materials Center Leoben Forschung GMBH, 27-31 January 2017 (T. Hilaire)
- Keynote speaker at Conference on Physical Modeling for Virtual Manufacturing Systems and Processes 2017 (J. Tierny)
- Invitation, New York University, 22-26 May 2017 (J. Tierny)
- Invitation, INVA 2017, The International Workshop on Numerical Verification and its Applications 2017, Miyako-jima, Okinawa, Japan, 15-18 March 2017 (S. Graillat).

Annexe 4 EQUIPE POLSYS

Nom de l'équipe : Polynomial Systems

Acronyme : PolSys

Nom du responsable pour le contrat en cours : Jean-Charles Faugère

Nom du responsable pour le contrat à venir : Jean-Charles Faugère

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

- [POLSYS-J-1] **Aurélien Greuet**, Feng Guo, **Mohab Safey El Din**, and Lihong Zhi. Global optimization of polynomials restricted to a smooth variety using sums of squares. *Journal of Symbolic Computation*, 47(5) :503–518, 2012.
- [POLSYS-J-2] Hoon Hong and **Mohab Safey El Din**. Variant Quantifier Elimination. *Journal of Symbolic Computation*, 47(7) :883–901, 2012.
- [POLSYS-J-3] Ioannis Emiris, **Elias Tsigaridas**, and George Tzoumas. Exact Voronoi diagram of smooth convex pseudo-circles : General predicates, and implementation for ellipses. *Computer Aided Geometric Design*, 2013.
- [POLSYS-J-4] **Jean-Charles Faugère**, **Mohab Safey El Din**, and Pierre-Jean Spaenlehauer. On the Complexity of the Generalized MinRank Problem. *Journal of Symbolic Computation*, 55 :30–58, March 2013.
- [POLSYS-J-5] **Luk Bettale**, **Jean-Charles Faugère**, and **Ludovic Perret**. Cryptanalysis of HFE, Multi-HFE and Variants for Odd and Even Characteristic. *Designs, Codes and Cryptography*, 69(1) :1 – 52, 2013.
- [POLSYS-J-6] **Jean-Charles Faugère**, Pierrick Gaudry, **Louise Huot**, and **Guénaél Renault**. Using Symmetries in the Index Calculus for Elliptic Curves Discrete Logarithm. *Journal of Cryptology*, pages 1–40, May 2013. 40 pages.
- [POLSYS-J-7] **Jean-Charles Faugère**, Valérie Gauthier-Umana, Ayoub Otmani, **Ludovic Perret**, and Jean-Pierre Tillich. A Distinguisher for High Rate McEliece Cryptosystems. *IEEE Transactions on Information Theory*, 59(10) :6830–6844, June 2013.
- [POLSYS-J-8] Magali Bardet, **Jean-Charles Faugère**, Bruno Salvy, and Pierre-Jean Spaenlehauer. On the Complexity of Solving Quadratic Boolean Systems. *Journal of Complexity*, 29(1) :53–75, February 2013.
- [POLSYS-J-9] Gabriella Jeronimo, Daniel Perrucci, and **Elias Tsigaridas**. On the minimum of a polynomial function on a basic closed semialgebraic set and applications. *SIAM Journal on Optimization*, 23(1) :241–255, 2013.
- [POLSYS-J-10] **Aurélien Greuet** and **Mohab Safey El Din**. Probabilistic Algorithm for Polynomial Optimization over a Real Algebraic Set. *SIAM Journal on Optimization*, 24(3) :1313–1343, August 2014.
- [POLSYS-J-11] **Jérémy Berthomieu**, **Jean-Charles Faugère**, and **Ludovic Perret**. Polynomial-Time Algorithms for Quadratic Isomorphism of Polynomials : The Regular Case. *Journal of Complexity*, 31(4) :590–616, August 2015.
- [POLSYS-J-12] Victor Y. Pan and **Elias Tsigaridas**. Nearly Optimal Refinement of Real Roots of a Univariate Polynomial. *Journal of Symbolic Computation*, 74 :181–204, 2015.

- [POLSYS-J-13] **Elias Tsigaridas**. SLV : a software for real root isolation. *ACM Communications in Computer Algebra*, 50(3) :117 – 120, November 2016.
- [POLSYS-J-14] **Jean-Charles Faugère**, Ayoub Otmani, **Ludovic Perret**, Frédéric De Portzamparc, and Jean-Pierre Tillich. Folding Alternant and Goppa Codes with Non-Trivial Automorphism Groups. *IEEE Transactions on Information Theory*, 62(1) :184 – 198, 2016.
- [POLSYS-J-15] **Jean-Charles Faugère**, **Mohab Safey El Din**, and **Thibaut Verron**. On the complexity of computing Gröbner bases for weighted homogeneous systems. *Journal of Symbolic Computation*, 76 :107–141, 2016.
- [1POLSYS-J-16] Didier Henrion, Simone Naldi, and **Mohab Safey El Din**. Exact algorithms for linear matrix inequalities. *SIAM Journal on Optimization*, 26(4) :2512–2539, September 2016.
- [POLSYS-J-17] **Mohab Safey El Din** and Eric Schost. A nearly optimal algorithm for deciding connectivity queries in smooth and bounded real algebraic sets. *Journal of the ACM (JACM)*, 63(6) :48 :1–48 :37, 2017.
- [POLSYS-J-18] **Jean-Charles Faugère** and Chenqi Mou. Sparse FGLM algorithms. *Journal of Symbolic Computation*, 80(3) :538 – 569, May 2017.
- [POLSYS-J-19] **Dongming Wang**. On the Connection Between Ritt Characteristic Sets and Buchberger–Gröbner Bases. *Mathematics in Computer Science*, 10(4) :479–492, 2016.
- [POLSYS-J-20] Didier Henrion, Simone Naldi, and **Mohab Safey El Din**. SPECTRA -a Maple library for solving linear matrix inequalities in exact arithmetic. *Optimization, Methods and Software*, 2017. Significantly extended version.

Thèses publiées / éditées

- [POLSYS-T-1] Pierre-Jean Spaenlehauer. *Solving multi-homogeneous and determinantal systems : algorithms, complexity, applications*. Theses, Université Pierre et Marie Curie (Univ. Paris 6), October 2012.
- [POLSYS-T-2] Chenqi Mou. *Solving Polynomial Systems over Finite Fields : Algorithms, Implementation and Applications*. Theses, Université Pierre et Marie Curie, May 2013.
- [POLSYS-T-3] Aurélien Greuet. *Polynomial Optimization and Polar Varieties : theory, algorithms and implementations*. Theses, Université de Versailles-Saint Quentin en Yvelines, December 2013.
- [POLSYS-T-4] Louise Huot. *Polynomial systems solving and elliptic curve cryptography*. Theses, Université Pierre et Marie Curie - Paris VI, December 2013.
- [POLSYS-T-5] Jules Svartz. *Solving zero-dimensional structured polynomial systems*. Theses, Université Pierre et Marie Curie - Paris VI, October 2014.
- [POLSYS-T-6] Rina Zeitoun. *Algebraic methods for security analysis of cryptographic algorithms implementations*. Theses, Université Pierre et Marie Curie - Paris VI, July 2015.
- [POLSYS-T-7] Simone Naldi. *Exact algorithms for determinantal varieties and semidefinite programming*. Theses, University of Toulouse, September 2015.
- [POLSYS-T-8] Thibaut Verron. *Regularisation of Gröbner basis computations for weighted and determinantal systems, and application to medical imagery*. Theses, Université Pierre et Marie Curie - Paris VI, September 2016.
- [POLSYS-H-1] Ludovic Perret. *Gröbner bases techniques in Quantum-Safe Cryptography*. Habilitation à diriger des recherches, UPMC - Paris 6 Sorbonne Universités, December 2016.
- [POLSYS-H-2] Guénaël Renault. *Contribution à la Résolution Algébrique et Applications en Cryptologie*. Habilitation à diriger des recherches, UPMC - Paris 6 Sorbonne Universités, December 2016.

3. Colloques / congrès, séminaires de recherche

Éditions d'actes de colloques / congrès

- [POLSYS-C-1] Adam Strzebonski and **Elias Tsigaridas**. Univariate Real Root Isolation in Multiple Extension Fields. In *ISSAC 2012 - 37th ACM International Symposium on Symbolic and Algebraic Computation*, pages 343–350, Grenoble, France, July 2012. ACM.
- [POLSYS-C-2] **Jean-Charles Faugère** and **Jules Svartz**. Solving Polynomial Systems Globally Invariant Under an Action of the Symmetric Group and Application to the Equilibria of N vortices in the Plane. In *ISSAC '12 - International Symposium on Symbolic and Algebraic Computation*, pages 170–178, Grenoble, France, July 2012. ACM, ACM.
- [POLSYS-C-3] **Luk Bettale**, **Jean-Charles Faugère**, and **Ludovic Perret**. Solving Polynomial Systems over Finite Fields : Improved Analysis of the Hybrid Approach. In *ISSAC 2012 - 37th International Symposium on Symbolic and Algebraic Computation*, pages 67–74, Grenoble, France, July 2012. ACM.
- [POLSYS-C-4] **Jean-Charles Faugère**, **Ludovic Perret**, Christophe Petit, and **Guénaël Renault**. Improving the Complexity of Index Calculus Algorithms in Elliptic Curves over Binary Fields. In *Eurocrypt 2012 - 31st Annual International Conference on the Theory and Applications of Cryptographic Techniques*, volume 7237 of *Lecture Notes in Computer Science*, pages 27–44, Cambridge, United Kingdom, April 2012. Springer.
- [POLSYS-C-5] **Jean-Charles Faugère**, **Pierre-Jean Spaenlehauer**, and **Jules Svartz**. Sparse Gröbner Bases : the Unmixed Case. In *ISSAC 2014*, Kobe, Japan, July 2014. 20 pages.
- [POLSYS-C-6] **Jean-Charles Faugère**, **Ludovic Perret**, and **Frédéric De Portzamparc**. Algebraic Attack against Variants of McEliece with Goppa Polynomial of a Special Form. In *Advances in Cryptology Asiacrypt 2014*, volume 8873 of *Lecture Notes in Computer Science*, pages 21–41, Kaohsiung, Taiwan, December 2014. Springer.
- [POLSYS-C-7] **Jean-Charles Faugère**, **Louise Huot**, Antoine Joux, **Guénaël Renault**, and Vanessa Vitse. Symmetrized summation polynomials : using small order torsion points to speed up elliptic curve index calculus. In *EUROCRYPT 2014 - 33rd Annual International Conference on the Theory and Applications of Cryptographic Techniques*, volume 8441 of *Lecture Notes in Computer Science*, pages 40–57, Copenhagen, Denmark, May 2014. Springer.
- [POLSYS-C-8] **Brice Boyer**, Christian Eder, **Jean-Charles Faugère**, Sylvian Lachartre, and Fayssal Martani. GBLA – Gröbner Basis Linear Algebra Package. In *41st International Symposium on Symbolic and Algebraic Computation*, pages 135–142, Waterloo, ON, Canada, July 2016.
- [POLSYS-C-9] Sonia Belaid, Fabrice Benhamouda, Alain Passelègue, **Emmanuel Prouff**, Adrian Thillard, and Damien Vergnaud. Randomness Complexity of Private Circuits for Multiplication. In *EUROCRYPT 2016*, pages 616–648, Vienna, Austria, May 2016.
- [POLSYS-C-10] Bernard Bonnard, **Jean-Charles Faugère**, **Alain Jacquemard**, **Mohab Safey El Din**, and **Thibaut Verron**. Determinantal sets, singularities and application to optimal control in medical imagery. In *International symposium on symbolic and algebraic computations*, pages 103–110, Waterloo, Canada, July 2016. ACM.
- [POLSYS-C-11] **Jérémy Berthomieu**, **Brice Boyer**, and **Jean-Charles Faugère**. Linear Algebra for Computing Gröbner Bases of Linear Recursive Multidimensional Sequences. In *40th International Symposium on Symbolic and Algebraic Computation*, Proceedings of the 40th International Symposium on Symbolic and Algebraic Computation, pages 61–68, Bath, United Kingdom, July 2015.
- [POLSYS-C-12] **Jérémy Berthomieu** and **Jean-Charles Faugère**. Guessing Linear Recurrence Relations of Sequence Tuples and P-recursive Sequences with Linear Algebra. In *41st International Symposium on Symbolic and Algebraic Computation*, pages 95–102, Waterloo, ON, Canada, July 2016.

4. Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs

POLSYS-P-1 HFEBOOST. Public-key cryptography system enabling an authentication of dematerialized data, 2015.

5. Produits et outils informatiques

Logiciels

POLSYS-S-1 FGB. <http://www-polsys.lip6.fr/~jcf/FGb/index.html>
POLSYS-S-2 GBLA. <http://www-polsys.lip6.fr/~jcf/GBLA/index.html>
POLSYS-S-3 SLV. <http://www-polsys.lip6.fr/~elias/soft.html>
POLSYS-S-4 RAGLIB. <http://www-polsys.lip6.fr/~safey/RAGLib>
POLSYS-S-5 SPECTRA <http://homepages.laas.fr/henrion/software/spectra/>

6. Brevets, licences et déclarations d'invention

[POLSYS-B-1] **Jean-Charles Faugère, Ludovic Perret.** MISE EN OEUVRE OPTIMISÉE DU HFE. Numéro 15 56225, Juillet 2015. INPI.

7. Rapports d'expertises techniques, produits des instances de normalisation

[POLSYS-E-1] Bruno Huttner, Jane Melia, Jane Carter, **Ludovic Perret**, and Lee Wilson. Quantum-safe Security Working Group Glossary. CSA White Paper.

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

[POLSYS-V-1] **Jean-Charles Faugère and Ludovic Perret.** Le Grand Défi du Post-Quantique. MISC, Diamond Editor.

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

Members of the team are in the editorial board of *Mathematics in Computer Science*, *SCIENCE CHINA Information Sciences*, *Journal of Symbolic Computation*, *Frontiers of Computer Science in China*, *Designs, Codes and Cryptography*, *Cryptography and Communications - Discrete Structures, Boolean Functions and Sequences*, *Journal of Cryptographic Engineering*.

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

Guénaël Renault took part in the *Selection Jury of CR2 (Junior Researcher) in Inria Saclay* in 2015 and in the *panel for research proposals selection in the field of theoretical computer science, Finland Academy* in 2015.

Évaluation d'articles et d'ouvrages scientifiques

Évaluation de laboratoires (type Hceres)

Jean-Charles Faugère was a member of the Hceres evaluation of the *Laboratoire Jean Kuntzmann* in Grenoble in 2016.

3. Activités d'expertise scientifique

Activités de consultant

Participation à des instances d'expertises (type Anses) ou de normalisation

4. Organisation de colloques / congrès

Members of the team were organised or were members of the program committee or advisory board of *Effective Methods in Algebraic Geometry (MEGA 2012)*, *Ecrypt II Summer School on Tools, Symbolic Computation and Cryptography (SCC 2012)*, *Yet Another Conference in Cryptography (YACC 2012)*, *Computer Algebra in Scientific Computing (CASC 2012)*, *Inscrypt 2013*, *International Conference on Practice and Theory in Public-Key Cryptography (PKC 2013)*, *Symbolic Computations and Post-Quantum Cryptography Online Seminar*, *Journées Nationales de Calcul Formel (JNCF 2013)*, *Minisymposium on Exact Certificates in Nonlinear Global Optimization and Minisymposium Algorithms in Real Algebraic Geometry and its Applications in the SIAM Conference on Applied Algebraic Geometry 2013*, *Workshop on Geometric Computing 2013*, *Third International Seminar on Program Verification, Automated Debugging and Symbolic Computation (PAS 2014)*, *Software for Geometry at the 4th International Congress on Mathematical Software (ICMS 2014)*, *Journées Nationales de Calcul Formel (JNCF 2014)*, *Eurocrypt 2014*, *International Symposium on Symbolic and Algebraic Computation (ISSAC 2014)*, *ACM Symbolic-Numeric Computation Conference (SNC 2014)*, *Effective Methods in Algebraic Geometry (MEGA 2014)*, *International Symposium on Symbolic Computation in Software Science (SCSS 2014)*, *International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC 2014)*, *International Conference on Artificial Intelligence and Symbolic Computation (AISC 2014)*, *International Workshop on Automated Deduction in Geometry (ADG 2014)*, *Workshop on Cryptographic Hardware and Embedded Systems (CHES 2015)*, *International Seminar on Program Verification, Automated Debugging and Symbolic Computation (PAS 2015)*, *Dagstuhl Seminar 15471 : Symbolic Computation and Satisfiability Checking ((SC)² 2015)*, *International Seminar on Geometric Computation (GC 2015)*, *IACR International Conference on Practice and Theory of Public-Key Cryptography (PKC 2015)*, *International Workshop on Parallel Symbolic Computation (PASCO 2015)*, *Smart Card Research and Advanced Application Conference (CARDIS 2015)*, *International Workshop on Constructive Side-Channel Analysis and Secure Design (COSADE)*, *Indocrypt 2015*, *International Symposium on Symbolic and Algebraic Computation (ISSAC 2015)*, *International Conference on Mathematical Aspects of Computer and Information Sciences (MACIS) 2015*, *International Symposium on Symbolic Computation in Software Science (SCSS)*, *Special Session on Software of Polynomial Systems at the 5th International Congress on Mathematical Software (ICMS 2016)*, *Conference on Cryptographic Hardware and Embedded Systems 2016 (CHES 2016)*, *Smart Card Research and Advanced Application Conference (CARDIS 2016)*, *International Workshop on Constructive Side-Channel Analysis and Secure Design (COSADE 2016)*, *ACM Conference on Computer and Communications Security (ACM CCS 2016)*, *International Workshop on Automated Deduction in Geometry (ADG 2016)*, *International Symposium on Symbolic Computation in Software Science (SCSS 2016)*, *Computer Algebra in Scientific Computing (CASC 2016)*, *Eurocrypt 2016*, *International Symposium on Symbolic and Algebraic Computation (ISSAC 2016)*, *PASCO 2017*, *International Workshop on Parallel Symbolic Computation (PASCO 2017)*, *International Symposium on Symbolic and Algebraic Computation (ISSAC 2017)*.

5. Post-doctorants et chercheurs accueillis

Postdocs :

- Christian Eder, Feb. 2013 – Jan. 2014, ANR & NSFC EXACTA grant, 5 publications including [POLSYS-C-8].
- Brice Boyer, Sept. 2014 – Aug. 2015, ANR HPC grant, 3 publications including [POLSYS-C-8, POLSYS-C-11].

Invited Teachers

- Chee Yap, Courant Institute, June – July 2013, INRIA.
- Nitin Saxena, Indian Institute of Technology Kanpur, Dec. 2014, UPMC.
- Éric Schost, University of Western Ontario, Nov. 2014, UPMC.
- Igor Shparlinski, University of New South Wales, Sept. 2015, UPMC.

Visiting Researchers

- Marta Conde Pena, Instituto de Tecnologías Físicas y de la Información, Apr. – July 2014 and May – Oct. 2015.
- Danilo Gligoroski, Norges Teknisk-Naturvitenskapelige Universitet, Sept. – Nov. 2014.
- Carlos Améndola Cerón, Technische Universität Berlin, Sept. 2015.
- Kaie Kubjas, Aalto-yliopisto, Oct. 2015.
- Cordian Riener, Aalto-yliopisto, May 2015.
- Rheka Thomas, University of Washington, Feb. 2015.
- Delaram Kahrobaei, City University of New York, 2017.

6. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

- **Dassault Systemes**
Participants. J.-C. Faugère

Bourses Cifre

- **C. Goyet.** with Thales. -2012]
Advisors : J.-C. Faugère, G. Renault
- **R. Zeitoun.** with Oberthur Technologies. [2012-2014]
Advisors : J.-C. Faugère, G. Renault
- **F. de Portzamparc** with Gemalto. [2012-2014]
Advisors : J.-C. Faugère, L. Perret

Créations d'entreprises, de start-up

2015 – Project of technological maturation “HFEB_{00st}” funded by SATT LUTECH.

7. Contrats de recherche financés par des institutions publiques ou caritatives

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

- **Marie Curie grant.** Career Integration Grant [2013-2017]
Participant. E. Tsigaridas
- **ECRYPT II - European Network of Excellence for Cryptology II** [2012-2013]
- **Royal Society Joint Project Grant Programme** [-2012]
- **COST ACTION CRYPTO** [2014-2017]
- **COST CRYPTACUS** [2014-2017]

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

- **ANR EXACTA. (International Program)** Exact Algorithms. [2012-2013]
- **ANR CAC.** Cryptography and Algebraic Computation. [2012-2013]
- **ANR GeoLMI.** Geometry of Linear Matrix Inequalities. [2012-2015]
- **ANR HPAC.** High-Performance Algebraic Computing. [2012-2017]
- **Associate Team CNRS/Inria ECCA.** jointly with the Chinese Academy of Sciences [2012-2013]
- **Associate Team Inria QOLAPS.** jointly with North Carolina State University [2012-2014]
- **Associate Team Inria GOAL.** jointly with the University of Berkeley [2016-2017]
- **Institut Universitaire de France (IUF) grant.** [2012-2017]

Contrats financés dans le cadre du PIA

2017 - 2020 RISQ Project (*Regroupement de l'Industrie Française pour la Sécurité Post-Quantique*).
POLSYS is leader of the work-package on Selecting and Analysis of Post-Quantum Schemes.

8. Indices de reconnaissance

Prix

- Louise Huot, Jean-Charles Faugère and Guénaél Renault received the Best Poster Award of the International Symposium on Symbolic and Algebraic Computation (ISSAC 2012) for their poster on *Fast Change of Ordering with Exponent Omega* with Pierrick Gaudry.
- Qingdong Guo received the Distinguished Student Author Awards of the International Symposium on Symbolic and Algebraic Computation (ISSAC 2013) for his paper on *Computing Rational Solutions of Linear Matrix Inequalities* with Mohab Safey El Din and Lihong Zhi.
- Matías Bender received the Distinguished Student Author Awards of the International Symposium on Symbolic and Algebraic Computation (ISSAC 2016) for his paper on *A Superfast Randomized Algorithm to Decompose Binary Forms* with Jean-Charles Faugère, Ludovic Perret and Elias Tsigaridas.

Contrats financés dans le cadre du PIA

- RISQ Project (*Regroupement de l'Industrie Française pour la Sécurité Post-Quantique*).

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

Jean-Charles Faugère was invited speaker in

- the international workshop on efficient linear algebra for Gröbner basis computation in Kaiserslautern in 2012.
- the Computer algebra and polynomials International Workshop at Linz, Austria (Dec 2013).
- the Multivariate Polynomial Workshop at Fukuoka, Japan (Feb 2013).
- Gröbner bases, resultants and linear algebra Workshop in Linz, Austria (Sep 2013).
- Workshop on Polynomials over Finite Fields - Barcelona - Centre de Recerca MatemÀtica (CRM) - Spain in 2014.
- Computational Nonlinear Algebra - Computational Nonlinear Algebra (ICERM) - Providence - USA in 2014.
- Workshop on Gröbner bases techniques for post-quantum cryptography, March 27, 2015 Washington (USA)
- Workshop on Algebra, Geometry and Proofs in Symbolic Computation Thematic Program on Computer Algebra, Fields Inst. Toronto, Dec. 2015.
- Sixth International Conference on Mathematical Aspects of Computer and Information Sciences (MA-CIS) Nov 11-13, 2015 Zuse Institute Berlin (ZIB), Germany.
- Journées Nationales de Calcul Formel Oct 2015, Cluny France
- SIAM CONFERENCE ON APPLIED ALGEBRAIC GEOMETRY, Atlanta, USA.

Daniel Lazard was special invited talk at Effective Methods in Algebraic Geometry 2015 - Università di Trento, Trento, June 2015.

Ludovic Perret was invited speaker in

- workshop Computer algebra and polynomials in 2013.
- 17th World Conference on Information Security Applications (WISA 2016, August, Korea)

Emmanuel Prouff was invite speaker in

- Workshop on Constructive Side-Channel Analysis and Secure Design 2015, Mövenpick Hotel, Berlin, Apr. 2015.
- EUROCRYPT 2016 (invited tutorial), Vienna, Austria, on Securing Cryptography Implementations in Embedded Systems.
- SPACE 2016, Hyderabad, India on Breaking Cryptographic Implementations Using Deep Learning Techniques.

Guénaél Renault was invited speaker in

- the Minisymposium On Coppersmith's Heuristic Algorithm for Finding Roots of Multivariate Polynomials in the SIAM Conference on Applied Algebraic Geometry at Colorado State University, USA (August 1–4, 2013).
- Espaces de modules effectifs et application à la cryptographie (June 10-13, 2014, Rennes, France)

- 18th Workshop On Elliptic Curve Cryptography (October 8-10, 2014, Chennai, India)
- Mohab Safey El Din was invited speaker in
 - the International Symposium on Symbolic and Algebraic Computation (ISSAC 2013).
 - the Polynomial Optimisation Program at Newton Institute in Cambridge in 2013.
 - the conference Numerical Methods and Efficient Computations in honor of J.-P. Dedieu, CIRM, France, 2013.
 - Workshop Solving Polynomial Equations as part of the Algorithms and Complexity in Algebraic Geometry program, Simons Institute, Berkeley, Oct. 2014.
 - Special track on Algebraic techniques in polynomial optimization, IFORS, Barcelona, Spain, July, 2014.
 - Real Algebraic Geometry With A View Toward Systems Control and Free Positivity, Oberwolfach, Germany, April, 2014.
 - Workshop on Algebra, Geometry and Proofs in Symbolic Computation Thematic Program on Computer Algebra, Fields Inst. Toronto, Dec. 2015.
 - Workshop on Linear Computer Algebra and Symbolic-Numeric Computation, Thematic Program on Computer Algebra, Fields Inst. Toronto, Oct. 2015.
 - Workshop Algebraic Vision, TU Berlin, October 2015.
 - Dagstuhl seminar on Complexity of Symbolic and Numeric Procedures, Dagstuhl, Germany, June 2015.
 - Czech workshop on applied mathematics in engineering Prague, Czech, February, 2015.
 - Minisymposium on Maximum Likelihood Degrees and Critical Points, SIAM Conference on Applied Algebraic Geometry, Daejeon, Aug. 2015, South-Korea.
 - Minisymposium on Real algebraic geometry and Optimization, SIAM Conference on Applied Algebraic Geometry, Daejeon, Aug. 2015, South-Korea.
 - Minisymposium on Polynomial Optimization and Moments, SIAM Conference on Applied Algebraic Geometry, Daejeon, Aug. 2015, South-Korea.
 - the SMAI-MODE session on semi-algebraic optimization, Toulouse, March 2016, France.
 - the AIM Workshop on Algebraic Vision which was held at the American Institute of Mathematics, San Jose, May 2016, USA.
 - the NCSU seminar on Symbolic Computation, Raleigh, May 2016, USA.
 - the PGM0 session on Semi-Definite Programming, Palaiseau, October 2016, France.
- Elias Tsigaridas was invited speaker in
 - the workshop Computational Geometry of the Asian Symposium on Computer Mathematics (ASCM) in 2012.
 - Gröbner Bases, Resultants and Linear Algebra held on 3-6 September 3-6, 2013 at the Research Institute for Symbolic Computation, Hagenberg, Austria.
 - Workshop on Algebra, Geometry and Proofs in Symbolic Computation Thematic Program on Computer Algebra, Fields Inst. Toronto, Dec. 2015.
 - Structured Matrices Days 2015 June 4-5, 2015 XLIM-DMI, Université de Limoges, France.
 - Computer Algebra in Scientific Computing (CASC) September 14-18, 2015 RWTH Aachen University, Aachen, Germany.
 - the Department Seminar Series, of the Computer Science Department of the University of Liverpool, Apr 2016, UK.
 - the Seminar of RICAM, University of Linz, Austria (Dec. 2016)

Annexe 4 DEPARTEMENT DAPA

Annexe 4 EQUIPE ACASA

Nom de l'équipe : Agents Cognitifs et Apprentissage Symbolique Automatique

Acronyme : ACASA

Nom du responsable pour le contrat en cours : Jean-Gabriel Ganascia

Nom du responsable pour le contrat à venir : Jean-Gabriel Ganascia

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

- [Bazin and Ganascia, 2016] Bazin, A. and Ganascia, J. (2016). Computing the duquenne-guigues basis : an algorithm for choosing the order. *Int. J. General Systems*, 45(2) :57–85.
- [Bourgne and Maudet, 2014] Bourgne, G. and Maudet, N. (2014). Designing protocols for abductive hypothesis refinement in dynamic multiagent environments. *Computational Intelligence*, 30(2) :362–401.
- [Brando et al., 2016] Brando, C., Frontini, F., and Ganascia, J.-G. (2016). REDEN : Named Entity Linking in Digital Literary Editions Using Linked Data Sets. *Complex Systems Informatics and Modeling Quarterly*, (7) :60 – 80.
- [Frontini et al., 2017] Frontini, F., Boukhaled, M. A., and Ganascia, J. G. (2017). Mining for characterising patterns in literature using correspondence analysis : an experiment on French novels. *Digital Humanities Quarterly*, 11(2).
- [Ganascia et al., 2014] Ganascia, J., Glaudes, P., and Lungo, A. D. (2014). Automatic detection of reuses and citations in literary texts. *LLC*, 29(3) :412–421.
- [Sansone et al., 2012] Sansone, S.-A., Rocca-Serra, P., Field, D., Maguire, E., Taylor, C., Hofmann, O., Fang, H., Neumann, S., Tong, W., Amaral-Zettler, L., Begley, K., Booth, T., Bougueleret, L., Burns, G., Chapman, B., Clark, T., Coleman, L.-A., Copeland, J., Das, S., De Daruvar, A., De Matos, P., Dix, I., Edmunds, S., Evelo, C. T., Forster, M. J., Gaudet, P., Gilbert, J., Goble, C., Griffin, J. L., Jacob, D., Kleinjans, J., Harland, L., Haug, K., Hermjakob, H., Ho Sui, S. J., Laederach, A., Liang, S., Marshall, S., Mcgrath, A., Merrill, E., Reilly, D., Roux, M., Shamu, C. E., Shang, C. A., Steinbeck, C., Trefethen, A., Williams-Jones, B., Wolstencroft, K., Xenarios, I., and Hide, W. (2012). Toward interoperable bioscience data. *Nature Genetics*, 44(2) :121–126.
- [Yang and Ganascia, 2017] Yang, B. and Ganascia, J. (2017). Creating knowledge maps using memory island. *Int. J. on Digital Libraries*, 18(1) :41–57.

Articles de synthèse / revues bibliographiques

- [Ganascia, 2015] Ganascia, J.-G. (2015). Les big data dans les humanités. *Revue Critique*, (819-820) :627–636.

Autres articles (articles publiés dans des revues professionnelles ou techniques, etc.)

- [Ganascia, 2017a] Ganascia, J. (2017a). Des humanités numériques à la singularité technologique que reste-t-il de l'humanisme ? *Archives de philosophie du droit*, (59) :223–234.
- [Ganascia, 2017b] Ganascia, J. (2017b). Le temps de l'intelligence artificielle est-il venu ? *Défis*.
- [Ganascia, 2017c] Ganascia, J. (2017c). Le travail à l'ère numérique. *Finance et gestion*.

2. Ouvrages

Monographies et ouvrages scientifiques, éditions critiques, traductions

- [Ganascia, 2017a] Ganascia, J.-G. (2017a). *Le mythe de la Singularité : faut-il craindre l'intelligence artificielle ?*, volume Collection sciences ouvertes. Éditions du Seuil.
- [Ganascia, 2017b] Ganascia, J.-G. (2017b). *L'intelligence artificielle : vers une domination programmée ?* collection idées reçues. Le cavalier bleu.

Direction / édition scientifique

- [Faucher, 2017] Faucher, C. (2017). *Advances in Culturally-Aware Intelligent Systems and in Cross-Cultural Psychological Studies*. Springer-Verlag.
- [Jouis et al., 2012a] Jouis, C., Biskri, I., Ganascia, J.-G., and Roux, M. (2012a). *Next Generation Search Engines : Advanced Models for Information Retrieval*. IGI-GLOBAL.

Chapitres d'ouvrage

- [Abi Haidar et al., 2015a] Abi Haidar, A., Tufis, M., and Ganascia, J. G. (2015a). From Inter-Annotation to Intra-Publication Inconsistency. In *Inconsistency Robustness*, volume 52 of *Studies in Logic*, page 614. College Publications.
- [Ganascia, 2014a] Ganascia, J. (2014a). De la surveillance à la sousveillance. In Chardel, P., editor, *Politiques sécuritaires et surveillance numérique*, Les essentiels d'Hermès, pages 119–138. CNRS éditions.
- [Ganascia, 2014c] Ganascia, J. (2014c). Science, réseaux et cognition après le déluge. In Schafer, V., editor, *La science à l'ère des réseaux numériques*, Les essentiels d'Hermès. CNRS éditions.
- [Ganascia, 2014] Ganascia, J.-G. (2014). Views and Examples on Hyperconnectivity. In *The Onlife Manifesto - Being Human in a Hyperconnected Era*, pages 65–85. Springer.
- [Riguet, 2017] Riguet, M. (2017). Pour une histoire naturelle de la littérature. In Garnier, C., editor, *La littérature et la vie*.
- [Roux, 2012] Roux, M. (2012). Metadata for search engines : what can be learned from e-sciences. In *Next Generation Search Engines : Advanced Models for Information Retrieval*, pages 47–77. IGI Global.
- [Tufis and Ganascia, 2015] Tufis, M. and Ganascia, J.-G. (2015). Grafting norms onto the BDI agent model. In Trappl, R., editor, *A Construction Manual For Robots' Ethical Systems*, Cognitive Technologies, pages 119–133. Springer. This is an author-created version, to serve the purpose of HAL archiving. The copyright holder of the original contribution is Springer (URL specified in this deposit).

Thèses

- [Tufis, 2017] Tufis, M. (2017). *A characterisation of comics and sequential art for supporting the evolution of digital formats for comics - A crowdsourcing approach*. Theses, Pierre et Marie Curie, Paris VI.
- [Boukhaled, 2016] Boukhaled, M. A. (2016). *On Computational Stylistics : Mining Literary Texts for the Extraction of Characterizing Stylistic Patterns*. Theses, Pierre et Marie Curie, Paris VI.
- [MPouli, 2016] MPouli Njanga Seh, S. (2016). *Automatic Annotation of Similes in Literary Texts*. Theses, Pierre et Marie Curie, Paris VI.

- [Yang, 2015] Yang B. (2015). *A Memory Island : Visualizing Hierarchical Knowledge as Insightful Islands*. Theses, Pierre et Marie Curie, Paris VI.
- [Bazin, 2014] Bazin, A. (2014). *On the Enumeration of Pseudo-Intents : Choosing the Order and Extending to Partial Implications*. Theses, Pierre et Marie Curie, Paris VI.
- [Fouladi, 2013] Fouladi, K. (2013). *Multidimensional television programs Recommendation by Machine Learning, an EPG Intelligent visualization interface for digital television*. Theses, Pierre et Marie Curie, Paris VI.
- [Ugon, 2013] Ugon, A. (2013). *Fusion symbolique et données polysomnographiques*. Theses, Pierre et Marie Curie, Paris VI.

3. Colloques / congrès, séminaires de recherche

Éditions d'actes de colloques / congrès

- [Ganascia et al., 2012] Ganascia, J.-G., Lenca, P., and Petit, J.-M. (2012). *DS 2012 : Discovery Science*, volume 7569 of *Lecture Notes in Computer Science/Lecture Notes in Artificial Intelligence*. Springer-Verlag.

Articles publiés dans des actes de colloques / congrès (sélection)

- [Berreby et al., 2015] Berreby, F., Bourgne, G., and Ganascia, J.-G. (2015). Modelling Moral Reasoning and Ethical Responsibility with Logic Programming. In *20th International Conference, Logic for Programming, Artificial Intelligence, and Reasoning*, volume 9450 of *Lecture Notes in Computer Science*, pages 532–548, Suva, Fiji. Springer.
- [Berreby et al., 2017] Berreby, F., Bourgne, G., and Ganascia, J. (2017). A declarative modular framework for representing and applying ethical principles. In *AAMAS 2017 proceedings*, pages 96–104.
- [Boukhaled and Ganascia, 2014a] Boukhaled, M. A. and Ganascia, J.-G. (2014a). Probabilistic Anomaly Detection Method for Authorship Verification. In Publishing, S. I., editor, *2nd International Conference on Statistical Language and Speech Processing, SLSP 2014*, volume 8791 of *Lecture Notes in Computer Science*, pages 211–219, Grenoble, France.
- [Bourgne et al., 2012] Bourgne, G., Inoue, K., and Maudet, N. (2012). Finding new consequences of an observation in a system of agents. In *AAMAS 2012 proceedings*, pages 1223–1224.
- [Chen et al., 2016d] Chen, C., Ugon, A., Zhang, X., Amara, A., Garda, P., Ganascia, J.-G., Philippe, C., and Pinna, A. (2016d). Personalized sleep staging system using evolutionary algorithm and symbolic fusion. In *38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'16)*, pages 2266 – 2269, Orlando, FL, United States.
- [Frontini et al., 2016b] Frontini, F., Brando Escobar, C., and Ganascia, J.-G. (2016b). REDEN ONLINE : Disambiguation, Linking and Visualisation of References in TEI Digital Editions. In University, J. U. . P., editor, *Digital Humanities 2016, Digital Humanities 2016 : Conference Abstracts*, page <http://dh2016.adho.org/>, Kraków, Poland. Jagiellonian University & Pedagogical University.
- [Ganascia and Mainardi, 2016] Ganascia, J.-G. and Mainardi, C. (2016). Crossed Semantic Analysis of Literary Texts with DeSeRT. In *Digital Humanities*, Krakow, Poland.
- [Riguet and Mpouli, 2016] Riguet, M. and Mpouli, S. (2016). À la croisée des discours littéraire et scientifique : La comparaison comme haute figure dialogique. In *Digital Humanities 2016*, pages 330–333, Cracovie, Poland. ADHO.
- [Rodrigues et al., 2014b] Rodrigues, C., Soldano, H., Bourgne, G., and Rouveïrol, C. (2014b). Multi agent learning of relational action models. In *ECAI 2014 Proceedings*, pages 1087–1088.
- [Rougny et al., 2015] Rougny, A., Yamamoto, Y., Nabeshima, H., Bourgne, G., Poupon, A., Inoue, K., and Froidevaux, C. (2015). Completing signaling networks by abductive reasoning with perturbation experiments. In *ILP 2015 proceedings*, pages 95–100.
- [Rucar and Ganascia, 2017] Rucar, Y. and Ganascia, J.-G. (2017). Une ontologie pour archiver et donner accès aux oeuvres numériques littéraires. In *Digital Humanities 2017*, Montréal, Canada.

- [Schwind et al., 2015] Schwind, N., Inoue, K., Bourgne, G., Konieczny, S., and Marquis, P. (2015). Belief revision games. In *AAAI 2015 proceedings*, pages 1590–1596.
- [Schwind et al., 2016] Schwind, N., Inoue, K., Bourgne, G., Konieczny, S., and Marquis, P. (2016). Is promoting beliefs useful to make them accepted in networks of agents? In *IJCAI 2016 proceedings*, pages 1237–1243.

Autres produits présentés dans des colloques / congrès et des séminaires de recherche (sélection)

- [Abi Haidar et al., 2014] Abi Haidar, A., Tufis, M., and Ganascia, J.-G. (2014). From Inter-Annotation to Intra-Publication Inconsistency. In *Inconsistency Robustness 2014*, Stanford, United States. Carl Hewitt.
- [Brando et al., 2015] Brando, C., Frontini, F., and Ganascia, J.-G. (2015b). Linked data for toponym linking in French literary texts. In Purves, R. S. and (Eds.), C. B. J., editors, *9th Workshop on Geographic Information Retrieval*, pages Article 3, 2 pages, Paris, France. ACM New York.
- [Chen et al., 2016b] Chen, C., Ugon, A., Zhang, X., Amara, A., Garda, P., Ganascia, J.-G., Kotti, A., Philippe, C., and Pinna, A. (2016b). Cross Entropy-based Automatic Thresholds Setting-Up Method for Sleep Staging System. In *IEEE BioCAS 2016*, Shanghai, China.
- [Frontini et al., 2015c] Frontini, F., Brando, C., and Ganascia, J.-G. (2015c). Domain-adapted named-entity linker using Linked Data. In *Workshop on NLP Applications : Completing the Puzzle co-located with the 20th International Conference on Applications of Natural Language to Information Systems (NLDB 2015)*, Passau, Germany.
- [Mpouli and Ganascia, 2015a] Mpouli, S. and Ganascia, J.-G. (2015a). “Pale as death” or “Pâle comme la mort” : Frozen similes used as literary clichés. In *EUROPHRAS2015 : Computerized and corpus-based approaches to phraseology : monolingual and multilingual perspectives*, Malaga, Spain.
- [Yang and Ganascia, 2014b] Yang, B. and Ganascia, J.-G. (2014b). Creating knowledge maps using Memory Islands. In CEUR-WS.org, editor, *KMIR 2014 - First Workshop on Knowledge Maps and Information Retrieval*, volume 1311 of *CEUR Workshop Proceedings*, pages 15–22, London, United Kingdom.

4. Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs

- Comics++ : a crowdsourcing platform for the annotation of Comics (<http://comicsplus.lip6.fr>)
- Dissimilitudes : a crowdsourcing platform dedicated to the annotation of simile and comparison figures (<http://dissimilitudes.lip6.fr:8181/#/> for the French and <http://dissimilitudes.lip6.fr:8180/#/> for the English)
- Ontology visualization with Memory Islands : we have developed for many years now an ontology visualization tools that is intended to allow facilitate the access to big corpora and their appropriation by anchoring our mind on spatial territories. Today, it is possible to automatically generate these map from an OWL (Ontology Web Language) file that contains the skeleton of the considered ontology. Here are a few examples of these visualization :
 - * InPhO (Indiana Philosophical Ontology) : http://www-poleia.lip6.fr/~polyle/version2/v20120424_v4/result.html
 - * Table of content : a memory island was used to index a book on table of content : <http://www-poleia.lip6.fr/~polyle/v2012/TdM%20v1/result.html>
 - * A virtual exhibition for digital literature : <http://litterature.numerique.iles-de-memoire.net/>

5. Produits et outils informatiques

Logiciels

We have developed a few software that are freely available on the web of the digital humanity community :

- MEDITE : comparison of versions of texts (<http://obvil.lip6.fr/medite/>)
- Phœbus : detection of reuses and citations (<http://obvil.lip6.fr/phoebus>)
- DeSeRT : semantic engine (<http://obvil.lip6.fr/desert>)
- EReMoS : extraction of recurrent syntactical patterns (<http://eremos.lip6.fr>)
- ReDEN (*Reconnaissance et Désambiguation d'Entités Nommées*)

Bases de données / cohortes

An agreement between the OBVIL Labex and the BNF give us the usufruct of a data base of 130,000 books digitized by the BNF for the needs of research. We are now building and exploiting this data bases with the different tools we are developing. Our long term goal would be to maintain a center of resources for researchers with these data and the different tools that allow to analyze them.

Plateformes et observatoires

sans objet

Outils présentés dans le cadre de compétitions de solveurs

sans objet

Outils d'aide à la décision

sans objet

6. Brevets, licences et déclarations d'invention

[Pergament et al., 2013] Pergament, D., Aghasaryan, A., and Ganascia, J. (2013). Procédé de paramétrage de règles de diffusion de données personnelles. Technical report, patented by Alcatel Lucent.

[Pergament et al., 2016] Pergament, D., Aghasaryan, A., and Ganascia, J. (2016). Method for configuring personal data distribution rules. Technical Report JP5864720, patented by Alcatel Lucent.

7. Rapports d'expertises techniques, produits des instances de normalisation

sans objet

8. Produits des activités didactiques

Ouvrages

sans objet

E-learning, moocs, cours multimedia, etc.

sans objet

9. Produits destinés au grand public

Emissions radio, TV, presse écrite

Jean-Gabriel Ganascia has participated to a great number of radio (France Culture, France Inter, etc.) and TV emissions (ARTE, FR3, BFM, etc.) in different occasions. He was interviewed by many journalists, for instance by the journal Le Monde, Libération, l'Humanité, l'Express, Science et avenir etc. From September 2017, he will be in charge of a regular chronic about the Ethics of Sciences in the journal La recherche.

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc. (sélection)

- [Ganascia, 2016] Ganascia, J. (2016). De la surveillance totale à la sousveillance généralisée. *l'archicube*, (20).
- [Ganascia, 2016a] Ganascia, J.-G. (2016a). Des jeux de l'imitation, exercices de style. In Lévy-Leblond, J.-M., editor, *Lettres à Turing*. éditions Thierry Marchaisse.
- [Ganascia, 2016b] Ganascia, J.-G. (2016b). Marvin Minsky : un des cerveaux de l'intelligence artificielle.
- [Ganascia, 2014b] Ganascia, J. (2014b). *La science des sixties*, chapter 1969 : Minsky recadre l'intelligence artificielle. Belin.
- [Ganascia, 2013] Ganascia, J. (2013). Éthique et IA : de l'éthique appliquée à la méta-éthique. *bulletin de l'AFIA*, (79). *Interstices*.

Produits de médiation scientifique

Here are a few large audience books of which Jean-Gabriel Ganascia is one of the authors :

- [Chapoutier et al., 2012] Chapoutier, G., Ganascia, J., Naccache, L., and Picq, P. (2012). *Que reste-t-il du propre de l'homme ?* Les presses de l'ENSTA.
- [Darling et al., 2016] Darling, K., Ganascia, J., Constantinidès, Y., and Tesquet, O. (2016). *En compagnie des robots*. Premier Parallèle.
- [Eustache et al., 2014] Eustache, F., Amiéva, H., Ganascia, J., Jaffard, R., Pechanski, D., and Stiegler, B. (2014). *Mémoire et oubli*. Éditions du Pommier.
- [Eustache et al., 2015] Eustache, F., Amiéva, H., Ganascia, J., Jaffard, R., Pechanski, D., Thomas-Anterion, C., and Stiegler, B. (2015). *Soigner les troubles de la mémoire*. Éditions du Pommier.
- [Eustache et al., 2016] Eustache, F., Amiéva, H., Ganascia, J., Jaffard, R., Pechanski, D., Thomas-Anterion, C., and Stiegler, B. (2016). *Mémoire et émotions*. Éditions du Pommier.
- [Eustache et al., 2017] Eustache, F., Amiéva, H., Ganascia, J., Jaffard, R., Pechanski, D., Thomas-Anterion, C., and Stiegler, B. (2017). *Ma mémoire et les autres*. Éditions du Pommier.

Débats science et société

- Jean-Gabriel Ganascia has been the chairman of the working group “Renouveau de l'intelligence artificielle et défense” of the CSD (“Conseil scientifique de la défense”). He wrote in 2013 a confidential report on Artificial Intelligence and Defense.
- Jean-Gabriel Ganascia has been member of the Onlife initiative of the European Commission (cf. <https://ec.europa.eu/digital-agenda/en/onlife-initiative>)
- Jean-Gabriel Ganascia has participate to the *FranceIA initiative* in the first trimester of 2017
- Jean-Gabriel Ganascia has been interviewed by the OPECST (“Office Parlementaire d'Etude des Choix Scientifiques et Techniques”) and he has been invited to give a talk to the French parliament during the public restitution of the report on Artificial Intelligence.
- Jean-Gabriel Ganascia has participated to numbers of debate through different interviews. He has also written many papers for a broad audience, for instance, last few years he has answered more than 58 interviews to the Atlantico.fr journal (cf. [http://www.atlantico.fr/search/site/ganascia?f\[0\]=im_field_auteur](http://www.atlantico.fr/search/site/ganascia?f[0]=im_field_auteur))

Créations artistiques théorisées

sans objet

Mises en scènes

sans objet

Films

sans objet

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

Jean-Gabriel Ganascia is editor for the Digital Literary Study track of the journal *Frontiers in Digital Humanities*.

Direction de collections et de séries

sans objet

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

- Jean-Gabriel Ganascia has been member of the CNU section until 2014
- Jean-Gabriel Ganascia has been member of the evaluation committee (called the “commission d'évaluation des appellations”) of *Télécom Sud-Paris* in 2013 and 2014.

Évaluation d'articles et d'ouvrages scientifiques

Jean-Gabriel Ganascia and Gauvain Bourgne have been reviewers for IJCAI, ECAI and numerous other conferences and journals.

Évaluation de laboratoires (type Hceres)

Jean-Gabriel Ganascia has been member of the HCERES evaluation committee of the IRIT (Institut de Recherche en Informatique de Toulouse) in 2014.

Évaluation de projets de recherche

Jean-Gabriel Ganascia has been involved in the evaluation process of the Cognitive System and Robotics of the FP7 program in 2013 and 2015. He has been reviewer for the following European projects : XPERO, Socia-IST (2013), PD-NET (2011 and 2013) and SINTELNET (2012, 2013 and 2015).

3. Activités d'expertise scientifique

Activités de consultant

sans objet

Participation à des instances d'expertises (type Anses) ou de normalisation

sans objet

Expertise juridique

sans objet

4. Organisation de colloques / congrès

- Jean-Gabriel Ganascia has organized the conferences *CEPE* (“*Computer Ethics and Philosophical Enquiry*”) and *Ethicomp* in Paris during the end of June 2014
- Gauvain Bourgne launched a series of *workshop between LRI and NII* (also involving JFLI and University of Yamanashi) that took place yearly from 2009 to 2014 (3 meetings during the 2012-2014 period)
 - * 2009.9.28 - 29 Franco-Japanese Workshop on Hypotheses Finding and its Applications
 - * 2010.10.12-13 JFLI Workshop in Paris
 - * 2011.10.31-11.2 The 3rd LRI-NII Collaborative Meeting on Distributed Reasoning and Problem Decomposition (LRI, Orsay, France)
 - * 2012.11.19-20. The 4th JFLI-LRI-NII Workshop on Consequence Finding and Propositional Satisfiability in Distributed Environments and Systems Biology (LRI, Université Paris-Sud, Orsay, France)
 - * 2013.10.9-10 The 5th JFLI-NII-LRI Workshop on Formal Approaches for Modeling and Analyzing Biological Networks (LRI, Université Paris-Sud, Orsay, France)
 - * 2014.10.06-08 The 6th LRI-NII-Yamanashi Workshop on Formal Approaches for Modeling and Analyzing Biological Networks (LRI, Université Paris-Sud, Orsay, France)
- Gauvain Bourgne has organized a series of workshop between NII and LIP6 from 2009 to 2014 (3 meetings in the 2012-2014 period)
 - * 2009.9.30 - 10.1 Franco-Japanese Workshop on Knowledge Discovery, Machine Learning and their Distribution in Multi Agent Systems
 - * 2011.11.3 The 2011 JFLI-LIP6-NII Meeting on Models of Symbolic Reasoning and Distributed Inference (LIP6, UPMC, Paris, France)
 - * 2012.11.15-16. The 2012 JFLI-LIP6-NII Meeting on Efficient Methods for Reasoning and Problem Solving (LIP6, Université Pierre et Marie Curie, Paris, France)
 - * 2013.10.11-14 The 4th JFLI-LIP6-NII Meeting on Efficient Methods for Reasoning and Problem Solving (LIP6, Université Pierre et Marie Curie, Paris, France)
 - * 2014.10.09 The 2014 LIP6-NII Meeting on Inference and Learning (LIP6, Université Pierre et Marie Curie, Paris, France)

5. Post-doctorants et chercheurs accueillis

- Thomas Powers : professor at University of Delaware spent 4 month between September 2015 and January 2016
- Glenn Roe : professor in Australia spent two years, from September 2016 till June 2018.
- Marc Douguet : post-doctoral student
- Chiara Mainardi : post-doctoral student
- Hussam Hamdam : post-doctoral student
- Elodie Bénard : post-doctoral student
- Sied Selami : post-doctoral student
- Alaa Abi-Haidar : post-doctoral student
- Clémence Jacquot : post-doctoral student
- Yan Rucar : post-doctoral student

6. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

sans objet

Bourses Cifre

sans objet

Créations de laboratoires communs avec une / des entreprise(s)

sans objet

Création de réseaux ou d'unités mixtes technologiques

sans objet

Créations d'entreprises, de start-up

sans objet

7. Contrats de recherche financés par des institutions publiques ou caritatives**Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)**

- “*Use and Reuse*” : project in collaboration with the ARTFL project of the University of Chicago funded by the Mellon foundation and by the FMSH (“Fondation Maison des Sciences de l’Homme”)
- *EMOSPACE* : ITEA3 project

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

- ANR EthicAA (Ethics of Autonomous Agents)
- ANR *Phæbus* (Intertextuality in Balzac works)
- ANR *ECRICOL* (Usage of MEDITE for didactic purpose)

Contrats avec les collectivités territoriales

sans objet

Contrats financés dans le cadre du PIA

- LOCUPLETO : efficient publishing of e-book, with many publishers
- iiBD (1 and 2) : electronic publishing of comics

Contrats financés par des associations caritatives et des fondations (ARC, FMR, FRM, etc.)

sans objet

8. Indices de reconnaissance

- Labex OBVIL of which Jean-Gabriel Ganascia is the Deputy Director
- DIM Prada
- Nomination of Jean-Gabriel Ganascia as the Chairman of the COMETS (CNRS Ethical Committee) in September 2016
- Nomination of Jean-Gabriel Ganascia as member of the COMETS (CNRS Ethical Committee) in September 2012
- Nomination of Jean-Gabriel Ganascia as member of the CERNA (“Commission de réflexion sur l’éthique de la recherche dans les sciences du numérique d’Allistene”) in September 2012

Prix

- Best paper award at the Digital Humanities conference in August 2016 for a paper presented by Marine Riguet and Suzanne MPouli.

Distinctions

- Jean-Gabriel Ganascia is EurAI fellow
- Nomination of Jean-Gabriel Ganascia as senior member of the IUF
- Jean-Gabriel Ganascia is member of the scientific committee of the ISH (Institut des Sciences Humaines) of Lyon (France)
- Jean-Gabriel Ganascia is member of the scientific committee of Berger-Levrault institute
- Jean-Gabriel Ganascia is member of the scientific committee of the B2V observatory of memory

Responsabilités dans des sociétés savantes

- Jean-Gabriel Ganascia was the Chairman of the AFIA (Association Française pour l'Intelligence Artificielle) award
- Jean-Gabriel Ganascia was member of the thesis EGC award

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

- 23 juillet- 21 août 2012 : Gauvain Bourgne has been invited by Pr Kastumi Inoue, NII (MOU-grant) and has participate to meetings at the University of Yamanashi (Hidetemo Nabeshima) and University of Kobe (Pr Katsutoshi Hirayama).
- 14 Décembre 2013 - 6 Janvier 2014 : Gauvain Bourgne has been invited invited by Pr Katsumi Inoue, NII (MOU-grant) and has participate to meetings at University of Wakayama (Pr Chiaki Sakama)
- Août-Septembre 2015 : Gauvain Bourgne has visited NII after a presentation at ILP2015.
- June 2013 (2 days), June 2015 (one week), February February 2016 (ten days) : Jean-Gabriel Ganascia has visited the ARTFL project at University of Chicago
- Jean-Gabriel Ganascia has been invited by the French Embassy in Japan to participate to a Franco-Japanese colloquium on Artificial Intelligence and Ethics. It has offered the opportunity to participate to public panels, to answer to the questions of journalists and to visit
 - * M. Kiyoshi Murata, Professor of MIS Director of Centre for Business Information Ethics, School of Commerce, Meiji University,
 - * Mss. Harayama at CSTI (AI and Society program),
 - * Mss. Arisa Ema from University of Tokyo,
 - * M. Nakagawa at RIKEN AIP Center,
 - * M. Nishii and Sugimura at AIST
- Jean-Gabriel Ganascia has been invited in January 2016 to participate to the Future of Artificial Intelligence conference that took place in New-York University (New-York USA)
- Jean-Gabriel Ganascia has been an Invited Speaker to the IEEE IASTA symposium, June 2013, Toronto, Canada.
- Jean-Gabriel Ganascia has been invited to give a talk on the theme : “The Philosophy of Information : Its Theory and Practice in a Globalised World”, that was part of the XXIII World Congress of Philosophy, that took place in Athens, August 4-10, 2013.
- Jean-Gabriel Ganascia has been invited to participate on a plenary panel session that has been part of the AISB/IACAP World Congress, in Birmingham (UK), July 2012

Bases de Données

Nom de l'équipe : Bases de Données

Acronyme : BD

Nom du responsable pour le contrat en cours : Bernd AMANN

Nom du responsable pour le contrat à venir : Bernd AMANN

I. PRODUITS DE LA RECHERCHE

A complete list of publications can be found on the team's web site.

1. Journaux/revues

Articles scientifiques (sélection)

- [BD-J-1] **Constantin, C.**, Mouza, C., Litwin, W., Rigaux, P., Schwarz, T., “AS-Index : A Structure For String Search Using n-grams and Algebraic Signatures”. In : *Journal of Computer Science and Technology* 31.1 (jan. 2016), p. 147–166.
- [BD-J-2] Dupret, G., **Piwowski, B.**, “Model Based Comparison of Discounted Cumulative Gain and Average Precision”. In : *Journal of Discrete Algorithms* 18 (jan. 2013), p. 49–62.
- [BD-J-3] Ben Saad, M., **Gançarski, S.**, “Archiving theWeb using Changes Patterns : a Case Study”. In : *International Journal on Digital Libraries* 13.1 (déc. 2012), p. 33–49.
- [BD-J-4] **Piwowski, B.**, Amini, M.-R., Lalmas, M., “On using a quantum physics formalism for multidocument summarization”. In : *Journal of the American Society for Information Science and Technology* 63.5 (mai 2012), p. 865–888.

- [BD-MLIA-J-1] Horincar, R., **Amann, B.**, Artières, T., “Online refresh strategies for content based feed aggregation”. In : *World Wide Web* 18.4 (juil. 2015), p. 913–947.

Articles de synthèse / revues bibliographiques

sans objet

Autres articles (articles publiés dans des revues professionnelles ou techniques, etc.)

sans objet

2. Ouvrages

Monographies et ouvrages scientifiques, éditions critiques, traductions

sans objet

Direction / édition scientifique

- [BD-E-1] **Amann, B.**, Lamarre, P., *Transactions on Large-Scale Data- and Knowledge-Centered Systems - Special Issue on Advanced Data Stream Management and Continuous Query Processing*. T. 8290. Lecture Notes in Computer Science. Springer, 2013.

Chapitres d'ouvrage

- [BD-O-1] Gueye, M., Abdessalem, T., **Naacke, H.**, “Dynamic Recommender System : Using Cluster-Based Biases to Improve the Accuracy of the Predictions”. In : *Advances in Knowledge Discovery and Management Volume 5*. T. 615. Studies in Computational Intelligence. Springer, 2015, p. 79–104.
- [BD-O-2] Sarr, I., **Naacke, H.**, Bame, N., Gueye, I., Ndiaye, S., “Green and Distributed Architecture for Managing Big Data of Biodiversity”. In : *Computing in Research and Development in Africa. Benefits, Trends, Challenges and Solutions*. Sous la dir. d'Abdoulaye GAMATIE. Springer, 2015, p. 21–39.
- [BD-O-3] **Amann, B.** “XSLT”. In : *Encyclopedia of Social Network Analysis and Mining*. Springer, 2014, p. 2432–2435.

Thèses soutenues

- [BD-T-1] Bame, N. “Gestion de données complexes pour la modélisation de niche écologique”. Thèse de doct. Université Pierre et Marie Curie (UPMC) et Université Cheikh Anta Diop de Dakar (UCAD), juin 2015.
- [BD-T-2] Caron, C. “Provenance et Qualité dans les Workflows Orientés Données : Application à la Plateforme WebLab”. Thèse de doct. Université Pierre et Marie Curie (UPMC), nov. 2015.
- [BD-T-3] Law, M. T. “Distance metric learning for image and webpage comparison”. Thèse de doct. Université Pierre et Marie Curie (UPMC), jan. 2015.
- [BD-T-4] Sanoja, A. “Segmentation des Pages Web, Évaluation et Applications”. Thèse de doct. Université Pierre et Marie Curie (UPMC), jan. 2015.
- [BD-T-5] Vouzoukidou, N. “Continuous top-k queries over real-time web streams”. Thèse de doct. Université Pierre et Marie Curie (UPMC), oct. 2015.
- [BD-T-6] Pehlivan, Z. “Access to web archives : Querying, Navigating and Optimizing”. Thèse de doct. Université Pierre et Marie Curie (UPMC), oct. 2013.
- [BD-T-7] Creus, J. “ROSES : Un moteur de requêtes continues pour l'agrégation de flux RSS à large échelle”. Thèse de doct. Université Pierre et Marie Curie (UPMC), déc. 2012.
- [BD-T-8] Horincar, R. “Refresh Strategies and Online Change Estimation for Highly Dynamic Web Content”. Thèse de doct. Université Pierre et Marie Curie (UPMC), sept. 2012.

3. Colloques / congrès, séminaires de recherche

Editions d'actes de colloques / congrès

sans objet

Articles publiés dans des actes de colloques / congrès (sélection)

- [BD-C-1] **Baazizi, M.-A.**, Ben Lahmar, H., Colazzo, D., Ghelli, G., Sartiani, C., “Schema Inference for Massive JSON Datasets”. In : *Extending Database Technology (EDBT)*. Venise, Italy, mar. 2017.
- [BD-C-2] Li, Y., **Constantin, C.**, Du Mouza, C., “SGVCut : A Vertex-Cut Partitioning Tool for RandomWalks-based Computations over Social Network graphs”. In : *International Conference on Scientific and Statistical Database Management, SSDBM*. Chicago, United States, juin 2017.
- [BD-C-3] **Naacke, H.**, **Amann, B.**, Curé, O., “SPARQL Graph Pattern Processing with Apache Spark”. In : *SIGMOD 2017. Graph Data-management Experiences & Systems (GRADES Workshop)*. Chicago, United States, mai 2017.

- [BD-C-4] **Constantin, C.**, Dahimene, R., Grossetti, Q., Du Mouza, C., “Finding Users of Interest in Micro-blogging Systems”. In : *International Conference on Extending Database Technology, EDBT*. Bordeaux, France, mar. 2016.
- [BD-C-5] Li, Y., **Constantin, C.**, Du Mouza, C., “A Block-Based Edge Partitioning for Random Walks Algorithms over Large Social Graphs”. In : *Web Information Systems Engineering – WISE 2016*. Shanghai, China, nov. 2016, p. 275–289.
- [BD-C-6] Gauthier, L.-A., Gallinari, P., **Piwowarski, B.**, “Leveraging Rating Behavior to Predict Negative Social Ties”. In : *IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*. Paris, France : ACM, août 2015, p. 623–628.
- [BD-C-7] Griesner, J.-B., Abdessalem, T., **Naacke, H.**, “POI Recommendation : Towards Fused Matrix Factorization with Geographical and Temporal Influences”. In : *9th ACM Conference on Recommender Systems, RecSys*. Vienne, Austria : ACM, sept. 2015, p. 301–304.
- [BD-C-8] Sanoja, A., **Gançarski, S.**, “Web page segmentation evaluation”. In : *30th Annual ACM Symposium on Applied Computing*. acm. Salamanca, Spain, avr. 2015.
- [BD-C-9] Gueye, M., Abdessalem, T., **Naacke, H.**, “A parameter-free algorithm for an optimized tag recommendation list size”. In : *RecSys '14*. RecSys '14 Proceedings of the 8th ACM Conference on Recommender systems. ACM. Foster City, United States : ACM, oct. 2014, p. 233–240.
- [BD-C-10] Gueye, M., Abdessalem, T., **Naacke, H.**, “A Social and Popularity-based Tag Recommender”. In : *SocialCom 2014 - The Seventh IEEE International Conference on Social Computing and Networking*. Sidney, Australia : IEEE, déc. 2014, p. 318–325.
- [BD-C-11] Sanoja, A., **Gançarski, S.**, “Block-o-Matic : A web page segmentation framework”. In : *2014 International Conference on Multimedia Computing and Systems (ICMCS)*. Marrakesh, Morocco : IEEE, avr. 2014, p. 595–600.
- [BD-C-12] Dupret, G., **Piwowarski, B.**, “Model Based Comparison of Discounted Cumulative Gain and Average Precision”. In : *Journal of Discrete Algorithms* 18 (jan. 2013), p. 49–62.
- [BD-C-13] Melucci, M., **Piwowarski, B.**, “Quantum Mechanics and Information Retrieval : From Theory to Application”. In : *4th International Conference on the Theory of Information Retrieval, ICTIR 2013*. Copenhagen, Denmark, oct. 2013.
- [BD-C-14] Gueye, I., Sarr, I., **Naacke, H.**, “TransElas : Elastic Transaction Monitoring for Web2.0 applications”. In : *5th International Conference on Data Management in Cloud, Grid and P2P Systems (GLOBE'12)*. T. 7450. Lecture Notes in Computer Science. Vienna, Austria : Springer, sept. 2012, p. 1–12.
- [BD-C-15] Vouzoukidou, N., **Amann, B.**, Christophides, V., “Processing continuous text queries featuring non-homogeneous scoring functions”. In : *21st ACM International Conference on Information and Knowledge Management*. Maui, Hawaii, United States, oct. 2012, p. 1065–1074.
- [BD-MLIA-C-1] Dos Santos, L., **Piwowarski, B.**, Gallinari, P., “Multilabel classification on heterogeneous graphs with gaussian embeddings”. In : *European Conference on Machine Learning and Principles and Practice of Knowledge Discovery (ECML-PKDD)*. Riva del garda, Italy, sept. 2016.
- [BD-MLIA-C-2] Horincar, R., **Amann, B.**, Artières, T., “Online Change Estimation Models for Dynamic Web Resources”. In : *12th International Conference on Web Engineering (ICWE)*. T. 7387. Lecture Notes in Computer Science. Berlin, Germany, juil. 2012, p. 395–410.
- [BD-MLIA-C-3] Law, M. T., Thome, N., **Gançarski, S.**, Cord, M., “Structural and Visual Comparisons for Web Page Archiving”. In : *12th edition of the ACM Symposium on Document Engineering, DocEng'12*. Paris, France : ACM, sept. 2012, p. 117–120.

Autres produits présentés dans des colloques / congrès et des séminaires de recherche

- O. Curé, H. Naacke, T. Randriamalala, M.-A. Baazizi, B. Amann, **RDF Big Data Management on top of Spark**, ParisBD 2016, March 2016.

4. Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs

- [BD-D-1] Castillo, S., **Naacke, H., Amann, B.**, Chavalarias, D., *Exploring the evolution of science through interactive phylomemetic topic maps*. 32ème Conférence sur la Gestion de Données - BDA2016. Poster. Nov. 2016.
- [BD-D-2] Li, Y., **Constantin, C.**, Du Mouza, C., “A Block-Based Edge Partitioning for Random Walks Algorithms over Large Social Graphs”. In : *32ème Conférence sur la Gestion de Données - BDA2016*. Poitiers, France, nov. 2016.
- [BD-D-3] Caron, C., **Amann, B., Constantin, C.**, Giroux, P., “WePIGE : The WebLab Provenance Information Generator and Explorer”. In : *17th International Conference on Extending Database Technology, EDBT 2014*. Athens, Greece, mar. 2014, p. 664–667.
- [BD-D-4] Dahimene, R., **Constantin, C.**, Mouza, C., “RecLand : A Recommender System for Social Networks”. In : *International Conference on Information and Knowledge Management*. Shanghai, China : ACM, nov. 2014, p. 2063–2065.
- [BD-D-5] Vouzoukidou, N., **Amann, B.**, Christophides, V., “MeowsReader : Real-Time Ranking and Filtering of News with Generalized Continuous Top-k Queries”. In : *ACM International Conference on Information and Knowledge Management (CIKM)*. Shanghai, China : ACM, nov. 2014, p. 2066–2068.
- [BD-D-6] MI, K., Zhang, B., **Naacke, H.**, Stern, D., **Gançarski, S.**, “DataTour : Location-based Datastore over a Community Cloud (prototype demonstration)”. In : *29ème Journées de Bases de Données avancées, BDA 2013*. Nantes, France, oct. 2013.
- [BD-D-7] **Constantin, C.**, Mouza, C., Rigaux, P., Thion, V., Travers, N., “A Desktop Interface over Distributed Document Repositories”. In : *International Conference on Extending Database Technology (EDBT’12)*. Demonstration. Berlin, Germany, mar. 2012, p. 104–107.
- [BD-D-8] **Constantin, C.**, Mouza, C., Rigaux, P., Thion, V., Travers, N., “Browse Your Content-Based Distributed Repository!” In : *BDA’12, Bases de Données Avancées*. Clermont-Ferrand, France, oct. 2012, p. 1–5.

Plateformes et observatoires

sans objet

5. Produits et outils informatiques

Logiciels

- SPARQL query processing with Apache Spark (web site)
- Experimaestro : Computer science experiment scheduler and manager (web site)

Bases de données / cohortes

sans objet

Outils présentés dans le cadre de compétitions de solveurs

sans objet

Outils d'aide à la décision

sans objet

6. Brevets, licences et déclarations d'invention

sans objet

7. Rapports d'expertises techniques, produits des instances de normalisation

sans objet

8. Produits des activités didactiques**Ouvrages**

sans objet

E-learning, moocs, cours multimedia, etc.

sans objet

9. Produits destinés au grand public**Emissions radio, TV, presse écrite**

sans objet

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

[BD-V-1] **Amann, B.**, Grigori, D., "L'intégration de données massives, hétérogènes et distribuées". In : *Les Big Data à découvert*. Sous la dir. de CNRS EDITIONS. 2017, p. 104–105.

[BD-V-2] Bidoit, N., **Doucet, A.**, "La diversité des données." In : *Les Big Data à découvert*. Sous la dir. de Mokrane BOUZEGHOUB et Rémy MOSSERI. CNRS EDITIONS, 2017, p. 24–25.

Produits de médiation scientifique

sans objet

Débats science et société

— Intervention au colloque des humanités (B. Piwowarski, Montpellier, Septembre 2016)

Créations artistiques théorisées

sans objet

Mises en scènes

sans objet

Films

sans objet

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

- LNCS Transactions on Large-Scale Data- and Knowledge-Centered Systems

Direction de collections et de séries

sans objet

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

- Membre de la commission d'évaluation d'INRIA de 2009 à 2015 (A. Doucet)

Evaluation d'articles et d'ouvrages scientifiques

Journals :

- IEEE Transactions on Knowledge and Data Engineering (TKDE, A)
- ACM Transactions on Database Systems (TODS, A*)
- World-Wide Web Journal (WWWJ, A)
- Information Retrieval Journal (IRJ, B)
- Data and Knowledge Engineering (DKE, B)
- Social Network Analysis and Mining (SNAM)
- International Journal on Digital Libraries (DL, B)

Program Committees :

- International Conference on Very Large Databases 2018 (VLDB, A*)
- Extending Database Technology 2010, 2011, 2014, 2016, 2017 (EDBT, A)
- ACM International Conference on Research and Development in Information Retrieval (SIGIR, A*)
- International World Wide Web conference (WWW, A*)
- International Conference on Data Engineering 2016 (ICDE, A*)
- Extended Semantic Web Conference 2015 (ESWC, A)
- ACM Conference on Digital Libraries (JCDL, A*)
- IEEE International Conference on Data Science and Advanced Analytics 2016 (DSAA)
- others : IDEAS, ECIR, ICTIR, ADBIS, DBKDA, DIACHRON, ICCS, ICEIS, ISMIS, ISWAG, SOF-SEM, AKDM, EScience, BDA, EGC.

Evaluation de laboratoires (type Hceres)

- Membre du comité d'évaluation HCERES iCube, Strasbourg, 2017 (B. Amann)
- Membre du comité d'évaluation HCERES laboratoire GAATI/OGT/Gepasud, Tahiti, 2015 (B. Amann)
- Membre du comité d'évaluation AERES laboratoire LIG, Grenoble 2014 (B. Amann)
- Membre du comité d'évaluation AERES laboratoire ESPACEDEV, Montpellier 2014 (B. Amann)

Evaluation de projets de recherche

- Comité expert ANR (A. Doucet)
- Evaluation de projets ANR (A. Doucet, B. Amann, B. Piwowarski)
- Evaluation de projets COFECUB (Coopération France-Brésil) (B. Amann)

3. Activités d'expertise scientifique

Activités de consultant

- SIGNALERT (2013-2015) : détection et validation d'événements naturelles (B. Amann)

Participation à des instances d'expertises (type Anses) ou de normalisation

sans objet

Expertise juridique

sans objet

4. Organisation de colloques / congrès

- Participation à l'Organisation de la conférence CORIA 2015
- Président du comité scientifique EARIA 2016 (Ecole d'Automne en Recherche d'Information et Applications)
- Membre du comité d'organisation de l'école d'été BDA MDD 2014 et 2016

5. Post-doctorants et chercheurs accueillis

- L.C. Gomes : GDRI, financement Brésil, 1 article accepté, 1 article en soumission
- A. Hassan : FUI A.B.C.D, 1 publication in preparation
- H. Mirisae, H. Lyiang : FUI PULSAR
- A. Sanoja (octobre 2016) : financement par reliquats des overheads Scape

6. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

- SIGNALERT, 2013-2014, 10k€ : expertise scientifique

Bourses Cifre

- K. Mi, Gestion de données dans un Cloud Communautaire, France Télécom, 2011-2014 (thèse abandonnée).
- C. Caron, Evaluation et recommandation de compositions de services, Cassidian/Airbus, 2011-2015.
- R. Liu, Services sémantiques pour l'aide à la découverte et la transformation de données dans un contexte de sources de données hétérogènes et réparties, SAP, 2016-2019.

Créations de laboratoires communs avec une / des entreprise(s)

sans objet

Création de réseaux ou d'unités mixtes technologiques

sans objet

Créations d'entreprises, de start-up

sans objet

7. Contrats de recherche financés par des institutions publiques ou caritatives

A complete list can be found on the team's web site.

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

FP7 SCAPE , 2011-2014, 196 k€ (shared with LIP6 MLIA team) : SCALable Preservation Environments ; SCAPE developed infrastructure and tools for scalable preservation actions, provided a framework for automated, quality-assured preservation workflows, and integrated these components with a policy-based preservation planning and watch system. These project results were validated within four large-scale Testbeds from diverse application areas.

Partners : AIT Austrian Institute of Technology GmbH ; The British Library ; Stichting European Archive ; Ex Libris LTD ; Fachinformationszentrum Karlsruhe Gesellschaft Fur Wissenschaftlich-Technische information GmbH ; Koninklijke Bibliotheek ; Keep Solutions LDA ; Microsoft Research Limited ; Oesterreichische National bibliothek ; Open Planets Foundation Statsbiblioteket ; Science and Technology Facilities Council ; Technische Universitat Berlin ; Technische Universitat Wien ; The University Of Manchester ; Université Pierre et Marie Curie - Paris 6 ;

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

ANR EPIQUE , coordination, 2017-2021, 199 k€ : Reconstruire l'évolution des sciences à grande échelle ; The EPIQUE project concerns the analysis of the dynamicity of evolutive corpora and the automatic construction of "phylogenetic" topic lattices (as an analogy with genealogic trees of natural species). The BD teams coordinates the project and is mainly interested in scalability problems.

Partners : LIP6, UMR 7606 ; Institut d'Histoire et de Philosophie des Sciences et Techniques (IHPST) ; Institut des Systèmes Complexes de Paris Ile de France (ISC-PIF) ; IRISA, UMR 6074 - Rennes.

CNRS MASTODONS ARESOS , 2012-2015 : Reconstruction, Analyse et Accès aux Données dans les Grands Réseaux Socio-Sémantiques ; The ARESOS project focuses on the analysis of large socio-semantic networks. It is animated by researchers in sociology, mathematics, linguistics and computer science. ARESOS laid the groundwork for the preparation of ANR EPIQUE project with ISC and IRISA.

Partners : CAMS UMR 9557 ; CSI - UMR 7185 ; Institut des Systèmes Complexes de Paris Ile-de-France, Paris ; IRISA, UMR 6074- Rennes ; IRIT, UMR 5505 ; LATTICE, UMR 8094 ; LIG, UMR 5217 ; LIP6, UMR 7606 ; Centre Marc Bloch (UMIFRE14 - USR3130, CNRS - MAE)

ANR-11-IDEX-0004-02 EBITA , 2015-2016, 600 k€ : Smart applications for the Internet of Things, franco-german collaborative two-year project (2015-2016) between Sorbonne Université UPMC and Fraunhofer Institute.

Partners : PRES Sorbonne-Université ; Fraunhofer Institut Allemagne.

DIM AAP 2015 Problématiques Transversales aux systèmes complexes , 2015 - 2018, 102 k€ Large scale phylogenetic reconstruction for inter-domain comparison of science evolution ; PhD S. Castillo.

Partners : Institut des Systèmes Complexes de Paris Ile de France (ISC-PIF) ; LIP6 - UMR7606.

FUI A.B.C.D. , 2015-2017, 252 k€ (shared with LIP6-MLIA team) : Advertising Big Collaborative Data ; The A.B.C.D. project aims at developing new methods for user profiling and online advertisement based on advanced machine learning techniques. The BD teams is contributed in designing and implementing a web portal which allows users to control the acquisition and usage of personal data collected and used by the industrial partners for web advertising.

Partners : TradeLab ; BrandMinistry ; LIP6, UMR 7606.

PEPS FaSciDo FAIT , 2015, 10 k€ : FAIT aims at studying and proposing search algorithms for micro-blogs where scores rely on user profile relevance and underlying social network links.

Partners : LIP6 - UMR7606 ; CEDRIC - EA4629.

GDRI Innovative Research Issues on Web Science (<https://www.irit.fr/GDRI-WEBSCIENCE/>, member of the steering committee, since 2014) : The objective of the GDRI-WebScience is to create a bilateral French-Brazilian network aiming at promoting a scientific cooperation and exchange between French and Brazilian researchers interested in the Web Science field. This GDRI allowed us to establish a collaboration with A. Sanatançhè from UNICAMP on provenance graphs and semantic graph modeling (1 year post-doc of L.C. Gomez).

Partners : Agorantic ; IRIT - UMR 5505 ; LIG - UMR 5217 ; LIP6 - UMR7606 ; LIMOS - UMR 6158 ; PRISM - UMR 8144.

Contrats avec les collectivités territoriales

sans objet

Contrats financés dans le cadre du PIA

FUI A.B.C.D. , 2015-2017, 252 k€ (shared with LIP6-MLIA team)

Contrats financés par des associations caritatives et des fondations (ARC, FMR, FRM, etc.)

sans objet

Prix

sans objet

Distinctions

sans objet

Responsabilités dans des sociétés savantes

— Membre du comité de direction du GDR MADICS (B. Amann)

Contrats financés dans le cadre du PIA

sans objet

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

- Invitation to Dagstuhl Seminar "Federated Semantic Data Management" (Schloss Dagstuhl, june 2017) (B. Amann)
- Keynote at the 11th International Conference on Web Information Systems and Technologies, WEBIST, (Lisbonne, april 2015) (B. Amann)
- Invited Conference at CORIA'17 (B. Piwowarski)
- Invited Conference at StatLearn'17, Lyon (B. Piwowarski)

EQUIPE LFI

Nom de l'équipe : Learning, Fuzzy and Intelligent systems

Acronyme : LFI

Nom du responsable pour le contrat en cours : Christophe Marsala

Nom du responsable pour le contrat à venir : Christophe Marsala

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

Bibliographie

- [1] B. Bouchon-Meunier, M.-J. Lesot, and C. Marsala. Modeling and management of subjective information in a fuzzy setting. *International Journal of General Systems*, 42(1) :3–19, 2013.
- [2] F. Dzogang, M.-J. Lesot, and M. Rifqi. Apprentissage de concepts émotionnels à partir de descripteurs bas niveau. *Revue des Sciences et Technologies de l'Information - Série RIA : Revue d'Intelligence Artificielle*, 28(1) :131–157, 2014.
- [3] C. Marsala and B. Bouchon-Meunier. Fuzzy data mining and management of interpretable and subjective information. *Fuzzy Sets and Systems*, 281 :252–259, 2015.
- [4] C. Marsala and D. Petturiti. Rank discrimination measures for enforcing monotonicity in decision tree induction. *Information Sciences*, 291 :143–171, 2015.
- [5] J. Aigrain, M. Spodenkiewicz, S. Dubuisson, M. Detyniecki, D. Cohen, and M. Chetouani. Multimodal stress detection from multiple assessments. *IEEE Transactions on Affective Computing*, 2016.
- [6] M.-J. Lesot, G. Moyse, and B. Bouchon-Meunier. Interpretability of fuzzy linguistic summaries. *Fuzzy Sets and Systems*, 292 :307–317, 2016.
- [7] G. Moyse and M.-J. Lesot. Linguistic summaries of locally periodic time series. *Fuzzy Sets and Systems*, 285 :94–117, 2016.
- [8] S. Lefort, M.-J. Lesot, E. Zibetti, C. Tijus, and M. Detyniecki. Interpretation of approximate numerical expressions : Computational model and empirical study. *International Journal of Approximate Reasoning*, 82 :193–209, 2017.
- [9] B. Legastelois, M.-J. Lesot, and A. Revault d'Allonnes. Typology of Axioms for a Weighted Modal Logic. *International Journal of Approximate Reasoning*, 2017.

Articles de synthèse / revues bibliographiques

Sans objet.

Autres articles (articles publiés dans des revues professionnelles ou techniques, etc.)

Sans objet.

2. Ouvrages

Monographies et ouvrages scientifiques, éditions critiques, traductions

Sans objet.

Direction / édition scientifique

Articles marquants

- [1] M. Detyniecki, A. García-Serrano, A. Nürnberger, and S. Stober, editors. *Adaptive Multimedia Retrieval : Large-Scale Multimedia Retrieval and Evaluation*, volume 7836 of *Lecture Notes in Computer Science*, Barcelona, Spain, 2013. Springer.
- [2] A. Laurent, O. Strauss, B. Bouchon-Meunier, and R. R. Yager, editors. *Information Processing and Management of Uncertainty in Knowledge-Based Systems*, volume 442 of *Communications in Computer and Information Science*, Montpellier, France, 2014. Springer.
- [3] A. Laurent, O. Strauss, B. Bouchon-Meunier, and R. R. Yager, editors. *Information Processing and Management of Uncertainty in Knowledge-Based Systems*, volume CCIS 444 of *Communications in Computer and Information Science*, Montpellier, France, July 2014. Springer.
- [4] A. Laurent, O. Strauss, B. Bouchon-Meunier, and R. R. Yager, editors. *Information Processing and Management of Uncertainty in Knowledge-Based Systems*, volume CCIS 443 of *Communications in Computer and Information Science*, Montpellier, France, June 2014. Springer.

Chapitres d'ouvrage

Articles marquants

- [1] B. Bouchon-Meunier. Lofti A. Zadeh, from information processing to computing with words. In *On Fuzziness*, volume 298 of *Studies in Fuzziness and Soft Computing*, pages 65–68. Springer, 2013.
- [2] M.-J. Lesot, F. Pichon, and T. Delavallade. Cotation quantitative de l'information : modélisation et évaluation expérimentale. In *Confiance et défiance envers l'information : concepts, besoins, méthodes et perspective*, pages 195–231. Hermès, 2013.
- [3] M.-J. Lesot, F. Pichon, and T. Delavallade. Quantitative Information Evaluation : Modeling and Experimental Evaluation. In *Information Evaluation*, pages 187–230. Wiley, 2014.
- [4] C. Borgelt, C. Braune, M.-J. Lesot, and R. Kruse. Handling noise and outliers in fuzzy clustering. In *Fifty Years of Fuzzy Logic and its Applications*, volume 326 of *Studies in Fuzziness and Soft Computing*, pages 315–336. Springer, 2015.
- [5] B. Bouchon-Meunier. Interpretability, a silver lining to a fuzzy cloud. In *Enric Trillas, a Passion for Fuzzy Sets*, volume 322 of *Studies in Fuzziness and Soft Computing*, pages 223–231. Springer, 2015.
- [6] B. Bouchon-Meunier and C. Marsala. Fuzzy modifiers at the core of interpretable fuzzy systems. In *Fifty Years of Fuzzy Logic and its Applications*, volume 326 of *Studies in Fuzziness and Soft Computing*, pages 51–63. Springer, 2015.
- [7] B. Bouchon-Meunier and C. Marsala. Entropy measures and views of information. In J. Kacprzyk, D. Filev, G. Beliakov, editors, *Granular, Soft and Fuzzy Approaches for Intelligent Systems*, volume 344 of *Studies in Fuzziness and Soft Computing*. Springer, 2016.
- [8] J. P. Carvalho, M.-J. Lesot, U. Kaymak, S. Vieira, B. Bouchon-Meunier, and R. R. Yager, editors. *Information Processing and Management of Uncertainty in Knowledge-Based Systems, 16th International Conference, IPMU'2016, Proceedings, Part I*, 2016. Springer.
- [9] J. P. Carvalho, M.-J. Lesot, U. Kaymak, S. Vieira, B. Bouchon-Meunier, and R. R. Yager, editors. *Information Processing and Management of Uncertainty in Knowledge-Based Systems, 16th International Conference, IPMU'2016, Proceedings, Part II*, 2016. Springer.

Thèses publiées / éditées

Sans objet.

3. Colloques / congrès, séminaires de recherche

Éditions d'actes de colloques / congrès

Sans objet.

Articles publiés dans des actes de colloques / congrès

Articles marquants

- [1] M.-J. Lesot, F. Nel, T. Delavallade, P. Capet, and B. Bouchon-Meunier. Two Methods for Internet Buzz Detection Exploiting the Citation Graph. In *IEEE International Conference on Fuzzy Systems, FUZZ-IEEE 2012*, pages 1–8, Brisbane, Australia, June 2012. IEEE.
- [2] F. Dzogang, C. Marsala, M.-J. Lesot, and M. Rifqi. An Ellipsoidal K-Means for Document Clustering. In *IEEE 12th International Conference on Data Mining (ICDM 2012)*, pages 221–230, Bruxelles, Belgium, Dec. 2012. IEEE.
- [3] C. A. Kuoman Mamani, S. Tollari, and M. Detyniecki. Diversité hiérarchique et utilisation d'arbres de concepts pour la recherche d'images. In *Conference en Recherche d'Information et Applications (CORIA 2013)*, Neuchâtel, Switzerland, Apr. 2013.
- [4] C. A. Kuoman Mamani, S. Tollari, and M. Detyniecki. Using Tree of Concepts and Hierarchical Reordering for Diversity in Image Retrieval. In *CBMI 2013 - 11th International Workshop on Content-Based Multimedia Indexing*, pages 251–256, Veszprém, Hungary, June 2013. IEEE.
- [5] R. J. Almeida, M.-J. Lesot, B. Bouchon-Meunier, U. Kaymak, and G. Moysse. Linguistic Summaries of Categorical Time Series for Septic Shock Patient Data. In *Fuzz-IEEE 2013 - IEEE International Conference on Fuzzy Systems*, pages 1–8, Hyderabad, India, July 2013. IEEE.
- [6] C. Marsala and D. Petturiti. Hierarchical Model for Rank Discrimination Measures. In *12th European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty, ECSQARU 2013*, volume 7958 of *Lecture Notes in Computer Science*, pages 412–423, Utrecht, Netherlands, July 2013. Springer.
- [7] C. Marsala and M. Rifqi. Summarizing Fuzzy Decision Forest by subclass discovery. In *IEEE International Conference on Fuzzy Systems, FUZZIEEE'2013*, pages 1–6, Hyderabad, India, July 2013. IEEE.
- [8] G. Moysse and M.-J. Lesot. Fast and Incremental Erosion Score Computation. In *IPMU 2014 - International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems*, volume 442 of *Communications in Computer and Information Science*, pages 376–385, Montpellier, France, July 2014. Springer.
- [9] A. Oudni, M.-J. Lesot, and M. Rifqi. Accelerating Effect of Attribute Variations : Accelerated Gradual Itemsets Extraction. In *International conference on Information Processing and Management of Uncertainty in knowledge-based systems, IPMU 2014*, volume 443 of *Communications in Computer and Information Science*, pages 395–404, Montpellier, France, July 2014. Springer.
- [10] G. Smits, O. Pivert, and M.-J. Lesot. A vocabulary revision method based on modality splitting. In *15th International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems (IPMU'14)*, volume 444 of *Communications in Computer and Information Science*, pages 140–149, Montpellier, France, July 2014. Springer.
- [11] A. Laurent, M.-J. Lesot, and M. Rifqi. Mining Emerging Gradual Patterns. In *IFSA-EUSFLAT 2015 - Joint 16th World Congress of the International Fuzzy Systems Association and 9th Conference of the European Society for Fuzzy Logic and Technology*, Gijon, Spain, June 2015.
- [12] B. Legastelois, M.-J. Lesot, and A. Revault d'Allonnes. Typology of axioms for a weighted modal logic. In *Workshop on Weighted Logics for Artificial Intelligence, WLA AI, IJCAI*, pages 40–47, Buenos Aires, Argentina, July 2015.

- [13] G. Moysse, M.-J. Lesot, and B. Bouchon-Meunier. Oppositions in Fuzzy Linguistic Summaries. In *FUZZ-IEEE'15 - IEEE International Conference on Fuzzy Systems*, pages 1–8, Istanbul, Turkey, Aug. 2015. IEEE. Best Student Paper.
- [14] A. Revault d'Allonnes and M.-J. Lesot. Dynamics of trust building : models of information cross-checking in a multivalued logic framework. In *IEEE International Conference on Fuzzy Systems (FuzzIEEE'15)*, Istanbul, Turkey, Aug. 2015.
- [15] P.-X. Loeffel, C. Marsala, and M. Detyniecki. Classification with a reject option under concept drift : the Droplets Algorithm. In *IEEE International Conference on Data Science and Advanced Analytics (DSAA'2015)*, Paris, France, Oct. 2015.
- [16] A. Guillon, M.-J. Lesot, C. Marsala, and N. R. Pal. Proximal Optimization for Fuzzy Subspace Clustering. In *16th International Conference on Information processing and Management of Uncertainty (IPMU 2016)*, volume 610 of *Communications in Computer and Information Science*, pages 675–686, Eindhoven, Netherlands, June 2016.
- [17] W. Xu and C. Marsala. Personalized Search in Smart Indoor Environments : Combining a Formal Location Model, User Preferences and Semantic Similarity. In *IEEE World Congress on Computational Intelligence (WCCI'2016)*, pages 1768–1775, Vancouver, Canada, July 2016.
- [18] S. Tollari. UPMC at MediaEval 2016 Retrieving Diverse Social Images Task. In *MediaEval 2016 Workshop*, Hilversum, Netherlands, Oct. 2016.
- [19] M. Canu, M.-J. Lesot, and A. Revault d'Allonnes. Overlapping Community Detection by Local Decentralised Vertex-centred Process. In *2016 IEEE 16th International Conference on Data Mining Workshops (ICDMW'16)*, pages 77–84, Barcelone, Spain, Dec. 2016. IEEE.

Autres produits présentés dans des colloques / congrès et des séminaires de recherche

Sans objet.

4. Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs

Sans objet.

Plateformes et observatoires

Sans objet.

5. Produits et outils informatiques

Logiciels

Sans objet.

Bases de données / cohortes

Sans objet.

Outils présentés dans le cadre de compétitions de solveurs

Sans objet.

Outils d'aide à la décision

Sans objet.

6. Brevets, licences et déclarations d'invention

Sans objet.

7. Rapports d'expertises techniques, produits des instances de normalisation

Sans objet.

8. Produits des activités didactiques

Ouvrages

Sans objet.

E-learning, moocs, cours multimedia, etc.

Sans objet.

9. Produits destinés au grand public

Émissions radio, TV, presse écrite

Sans objet.

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

Sans objet.

Produits de médiation scientifique

Sans objet.

Débats science et société

Sans objet.

10. Autres produits propres à une discipline

Créations artistiques théorisées

Sans objet.

Mises en scènes

Sans objet.

Films

Sans objet.

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

- Membre du comité éditorial de l'International Journal of Approximate Reasoning – IJAR, (Elsevier). (B. Bouchon-Meunier)
- Editeur associé du Journal of Uncertain Systems (World Academic Press). (B. Bouchon-Meunier)

- Membre du comité éditorial de Fuzzy Sets and Systems – FSS (Elsevier). (B. Bouchon-Meunier)
- *Area editor* de l'International Journal of Uncertainty, Fuzziness and Knowledge-based Systems– IJUFKS (jusqu'en 2013) (World Scientific Publishing). (M. Rifqi)
- *Associate editor* de la revue internationale "IEEE Transactions on Fuzzy Systems" (2013-2014). (C. Marsala)
- Membre de l'*editorial board* de la revue internationale "Neural Computing and Applications" (since jan. 2012). (C. Marsala)

Direction de collections et de séries

- Directeur de la collection "Recherche d'information et web" éditée par Hermès, jusqu'en 2015. (B. Bouchon-Meunier)
- Editeur-en-chef de l'International Journal of Uncertainty, Fuzziness and Knowledge-based Systems, publié par World Scientific Publishing. (B. Bouchon-Meunier)

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

- Membre du comité scientifique de l'European Centre for Soft Computing (ECSC), Oviedo (Espagne), 2011-2013. (B. Bouchon-Meunier)
- Membre du Conseil Scientifique du laboratoire LUTIN (until 2013). (B. Bouchon-Meunier)
- Adjointe au Président de la Commission Thématique Connaissances du pôle de Compétitivité Cap Digital (jusqu'en 2016). (B. Bouchon-Meunier)
- Présidente du Comité IEEE pour la Frank Rosenblatt Award (depuis 2016). (B. Bouchon-Meunier)
- Membre de comité de sélection (section 27) : Paris 8, UPMC-Marseille, Montpellier, Orléans, Cergy, UPMC, ENSSAT. (M.-J. Lesot)
- Membre du comité de pilotage du Labex SMART. (M. Detyniecki (2012-2014), C. Marsala (since 2014))
- Membre du jury de sélection des contrats doctoraux (UPMC, EDITE) (C. Marsala, 2013).
- Président du jury de sélection des contrats doctoraux (UPMC, EDITE) (C. Marsala, 2016).

Évaluation d'articles et d'ouvrages scientifiques

- Membre de comité de programmes pour les conférences (Fuzz-IEEE, WCCI, IPMU, EUSFLAT, FQAS, MDAI, ISMIS, LFA, EGC...) et principaux journaux du domaine (FSS, IJAR, IJUFKS, TFS, Information Sciences,...). (tous les membres de l'équipe).

Évaluation de laboratoires (type Hceres)

Sans objet.

Évaluation de projets de recherche

- Evaluation de projets et publications pour le ministère italien de la recherche : MIUR - CINECA, PRIN - Progetti di Ricerca di Interesse Nazionale, jusqu'en 2017 (B. Bouchon-Meunier)

3. Activités d'expertise scientifique

Activités de consultant

Sans objet.

Participation à des instances d'expertises (type Anses) ou de normalisation

Sans objet.

Expertise juridique

Sans objet.

4. Organisation de colloques / congrès

- Co-directeur exécutif de la conférence internationale IPMU en 2012, 2014, 2016.
- Présidence de la conférence FUZZ-IEEE 2012.
- *Technical co-chair* de la conférence internationale Fuzz-IEEE'2012.
- Co-organisation de WACI 2013 (Workshop on Affective Computational Intelligence à SSCI13)
- Présidence du comité de programme de la conférence FUZZ-IEEE 2013.
- Membre du comité d'organisation de FUZZ-IEEE 2015, FUZZ-IEEE 2016, IEEE DSAA 2016.
- Program co-chair de la conférence internationale IPMU 2016
- Co-présidence thématique de la conférence internationale IEEE on Fuzzy Systems FUZZ-IEEE 2017.
- Présidence d'honneur des conférences IEEE SSCI 2014, IEEE CIVEMSA 2017.
- Co-organisation d'une session spéciale à la conférence internationale IEEE on Fuzzy Systems, FUZZ-IEEE 2017.

5. Post-doctorants et chercheurs accueillis

Professeurs invités (financement UPMC)

- Nikhil Pal (Pr, Indian Statistical Institute, Calcutta), 1 month, 2015. This stay resulted in the publication of a paper at the 16th International Conference on Information processing and Management of Uncertainty (IPMU 2016) by A. Guillon, M.-J. Lesot, C. Marsala, and N. R. Pal, Proximal Optimization for Fuzzy Subspace Clustering.
- Mika Sato-Ilic (Pr. University of Tsukuba, Japan), 1 month in 2012 and 1 month in 2014. These stays enabled the preparation of joint works and the proposal of a PHC Sakura in 2012.

6. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

- Thales, 2010-2014. (24 k€). "Renforcement d'une base de règles réactives par exploitation des erreurs de détection"
- Alcatel Lucent Bell Labs. 2011-2014. (30 k€). "Modélisation et exploitation de base de connaissances dans le cadre du web des objets"
- Xilopix. 2012-2015. (30 k€). "Utilisation conjointe du visuel et d'une hiérarchie de concepts pour une recherche adaptative d'images sur le Web"
- ITOP Education. 11-12/2014. (12 k€). "Conception et tests d'une plateforme de documentation, d'édition et de diffusion de nouveaux formats de ressources pédagogiques numériques".
- Arcelor Mittal. 6-12/2014. (30 k€). "Profile Datamining pour l'amélioration des modèles de prédiction"
- Arcelor Mittal. 2014-2017. (90 k€). "Extraction dynamique de connaissances par la fouille de données temporelles complexes"
- Total. 2015-2018. (288 k€). "Mise au point d'un système de recommandation d'information pour l'aide à la décision lors des prises de permis d'exploitation pétrolière".

Bourses Cifre

- Jean-René Coffi, CIFRE Thalès, 2010-2013. Defense Jul. 2013.
- Wenyi Xu, CIFRE Alcatel Lucent Bell Labs, 2010-2015. Defense Jan. 2015.
- Christian Kuoman Mamani, CIFRE Xilopix, 2012-2015. Defense Aug. 2015.
- Xavier Renard, CIFRE Arcelor Mittal. 2014-2017. Defense Sept. 2017.
- Marcin Lenart, CIFRE Thales Poland, Thales TRT France, and cotutelle CampusFrance, 2016-2019.
- Iwo Doboszewski, CIFRE Thales Poland, Thales TRT, and cotutelle CampusFrance, 2017-2020.
- Simon Guillot, CIFRE SevenHugs. 2017-2020.

Créations de laboratoires communs avec une / des entreprise(s)

- Laboratoire Clear with Thales. LIP6 participants : teams ComplexNetworks, LFI, and MLIA.

Création de réseaux ou d'unités mixtes technologiques

Sans objet.

Créations d'entreprises, de start-up

Sans objet.

7. Contrats de recherche financés par des institutions publiques ou caritatives

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

Sans objet.

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

(amounts indicated in this section are those allocated to LFI for the project)

- Projet “e-Fraud”. 12/2010-2/2013. (105 k€). ANR. “Détection et investigation de la fraude à la carte bancaire sur internet E-FRAUD BOX”.
- Projet “Cahors”. 2/2009-10/2012. (150 k€). ANR. “Cotation, analyse, hiérarchisation et ontologies pour le renseignement et la sécurité”.
- Projet “Skippi”. 12/2010-3/2014. (207 k€). ANR. “SKIPPI, système d'ingénierie kansei - conception intégrée produit / process image de marque”.
- Projet “Homo textilus”. 2/2012-9/2016. (120 k€). ANR. “HOMO TEXTILUS : le vêtement interactif et ses accessoires. Prospection de l'habillement intelligent du corps.”.
- Projet “Action 3DS”. 4/2012-30/2015. (142 k€). Fond national (CDC). “Systèmes miniatures de prises de vues 3DS pour la télévision et le cinéma "ACTION 3DS””.
- Projet “LUXIDX”. 8/2014-12/2016. (101 k€). DGA Rapid. “Outils et processus pour tirer parti de la création semi-automatique et incrémentale de ressources de connaissances”.
- Projet “Hyperstars”. 15/3/2017-15/3/2018. (20 k€ au total). Défi interdisciplinaire MASTODONS. “Extraire le squelette de la formation des étoiles de données hyperspectrales massives”.

Contrats avec les collectivités territoriales

(amounts indicated in this section are those allocated to LFI for the project)

- Projet “SOLENE”. 10/2010-8/2013. (95 k€). Région Ile de France. Systèmes interOpérables de lecture Electronique Nomade.
- Projet “WasteForecaster”. 3/2014-9/2017. (158 k€). Région Ile de France.

Contrats financés dans le cadre du PIA

(amounts indicated in this section are those allocated to LFI for the project)

- Financement de la thèse de Sébastien Lefort. 10/2014-9/2017. LABEX SMART, Investissement d'avenir.
- Projet “SENSE”. 10/2014-9/2017. (127.5 k€). Labex SMART, Investissement d'avenir. En particulier, financement de la thèse de Wenlu Yang. 11/2014-12/2017.
- Projet “REQUEST”. 1/2015-9/2017. (200 k€). Investissement d'avenir.

Contrats financés par des associations caritatives et des fondations (ARC, FMR, FRM, etc.)

- Fondation AXA Research Funds, Joint Research Initiative. 3/2017-2/2020. (200 k€). “Interpretability for human-friendly machine learning models”

8. Indices de reconnaissance

Prix

- IEEE Computational Intelligence Society Meritorious Service Award (2012) (B. Bouchon-Meunier)
- Best Student Paper Award at FuzzIEEE’2015 (G. Moyse, with M.-J. Lesot, B. Bouchon-Meunier)
- Première place sur 6 équipes internationales participantes, à la tâche diversité du challenge MediaEval en 2016 à Amsterdam. (S. Tollari).
- Best Student Paper Award at LFA’2016 (A. Guillon, with M.-J. Lesot, C. Marsala)

Distinctions

- Distinguished Lecturer de l’IEEE Computational Intelligence Society (2014-2016) (B. Bouchon-Meunier)
- Life Fellow de l’IEEE (2016) (B. Bouchon-Meunier)

Responsabilités dans des sociétés savantes

- Membre élu du Bureau Administratif de l’IEEE Computational Intelligence Society CIS (2012-2014) (B. Bouchon-Meunier)
- Membre nommé de l’IEEE Women in Engineering committee (2012 à 2014) (B. Bouchon-Meunier)
- Membre du bureau de la société européenne pour la logique floue EUSFLAT (depuis 2013) (M.-J. Lesot)
- Vice-présidente pour les Conférences de l’IEEE CIS, (2014-2019) (B. Bouchon-Meunier)
- Vice-présidente pour les Chapitres de l’IEEE France Section, (2014-2019) (B. Bouchon-Meunier)
- Membre de la IEEE CIS Task Force on Affective Computing (depuis 2015) (M.-J. Lesot)
- Membre du IEEE CIS Fuzzy Systems Technical Committee (depuis 2017) (M.-J. Lesot)

Contrats financés dans le cadre du PIA

(amounts indicated in this section are those allocated to LFI for the project)

- Financement de la thèse de Sébastien Lefort. 10/2014-9/2017. LABEX SMART, Investissement d’avenir.
- Projet “SENSE”. 10/2014-9/2017. (127.5 k€). Labex SMART, Investissement d’avenir. En particulier, financement de la thèse de Wenlu Yang. 11/2014-12/2017.
- Projet “REQUEST”. 1/2015-9/2017. (200 k€). Investissement d’avenir.

Invitations à des colloques / congrès à l’étranger, séjours dans des laboratoires étrangers

- B. Bouchon-Meunier a été invitée à donner des conférences plénières ou des conférences invitées à Trabzon (Turquie), 2012, Baku (Azerbaïdjan), 2012, Hefei (China), 2013, Milan (Italy), 2013, Rabat (Morocco), 2014, Columbia (USA), 2014, University of Rhode Island (USA), 2014, New Delhi (India), 2014, Ghaziabad (India), 2014, Perugia (Italy), 2015, La Grande Motte (France), 2015, Berkeley (USA), 2016, Bucarest (Romania), 2016, Timișoara (Romania), 2016, Arad (Romania), 2016, Porto (Portugal), 2016, Tunis (Tunisia), 2016, Paris (France), 2016, Santiago (Chili), 2017, La Serena (Chili), 2017, Buenos Aires (Argentina), 2017.
- M.J. Lesot a été invitée à donner des conférences plénières ou des conférences invitées à SITA 2012 (Mohammadia, Maroc), FuzzIEEE 2015 (Istanbul, Turquie), FCTA 2014 (Rome, Italy).
- C. Marsala a été invité à donner des conférences plénières ou des conférences invitées à IPMU 2012 (Catane, Italie), l’Université de Tsukuba (Japon, 2012), LFA 2013 (Reims, France).

Annexe 4 EQUIPE MLIA

Nom de l'équipe : Machine Learning and Information Access

Acronyme : MLIA

Nom du responsable pour le contrat en cours : Patrick Gallinari

Nom du responsable pour le contrat à venir :

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

- [MLIA-J-1] Jianfei Zhang, Shengrui Wang, Lifei Chen, and Patrick Gallinari. Multiple Bayesian discriminant functions for high-dimensional massive data classification. *Data Min. Knowl. Discov.*, 31(2) :465–501, 2017.
- [MLIA-J-2] Laure Soulier, Lynda Tamine, and Chirag Shah. MineRank : Leveraging users' latent roles for unsupervised collaborative information retrieval. *Information Processing and Management*, 52(6) :1122–1141, 2016.
- [MLIA-J-3] Sylvain Lamprier, Simon Bourigault, and Patrick Gallinari. Influence learning for cascade diffusion models : focus on partial orders of infections. *Social Network Analysis and Mining*, 6(1) :93, 2016.
- [MLIA-J-4] Marc T. Law, Nicolas Thome, and Matthieu Cord. Learning a Distance Metric from Relative Comparisons between Quadruplets of Images. *International Journal of Computer Vision*, pages 1–30, 2016.
- [MLIA-J-5] Rossella Cancelliere, Mario Gai, Patrick Gallinari, and Luca Rubini. OCR_eP : An Optimally Conditioned Regularization for pseudoinversion based neural training. *Neural Networks*, 71 :76–87, 2015.
- [MLIA-J-6] Yu Zhao, Sheng Gao, Patrick Gallinari, and Jun Guo. Knowledge base completion by learning pairwise-interaction differentiated embeddings. *Data Min. Knowl. Discov.*, 29(5) :1486–1504, 2015.
- [MLIA-J-7] Hanlin Goh, Nicolas Thome, Matthieu Cord, and Joo-Hwee Lim. Learning Deep Hierarchical Visual Feature Coding. *IEEE Transactions on Neural Networks and Learning Systems*, 25(12) :2212–2225, December 2014.
- [MLIA-J-8] Rodrigo Minetto, Nicolas Thome, Matthieu Cord, Neucimar J. Leite, and Jorge Stolfi. Snooper-Text : A Text Detection System for Automatic Indexing of Urban Scenes. *Computer Vision and Image Understanding*, 122 :92–104, May 2014.
- [MLIA-J-9] Clément Calauzènes, Nicolas Usunier, and Patrick Gallinari. Calibration and regret bounds for order-preserving surrogate losses in learning to rank. *Machine Learning*, 93(2-3) :227–260, November 2013.
- [MLIA-J-10] David Picard, Nicolas Thome, and Matthieu Cord. JKernelMachines : A Simple Framework for Kernel Machines. *Journal of Machine Learning Research*, 14 :1417–1421, May 2013.
- [MLIA-J-11] Rodrigo Minetto, Nicolas Thome, Matthieu Cord, Neucimar J. Leite, and Jorge Stolfi. T-HOG : an Effective Gradient-Based Descriptor for Single Line Text Regions. *Pattern Recognition*, 46(3) :1078–1090, March 2013.
- [MLIA-J-12] Christian Theriault, Nicolas Thome, and Matthieu Cord. Extended Coding and Pooling in the HMAX Model. *IEEE Transactions on Image Processing*, 22(2) :764–777, February 2013.

[MLIA-J-13] Gabriel Dulac-Arnold, Ludovic Denoyer, Philippe Preux, and Patrick Gallinari. Sequential approaches for learning datum-wise sparse representations. *Machine Learning*, 89(1-2) :87–122, October 2012.

2. Ouvrages

Thèses soutenues

Except for some specific cases, MLIA thesis are all co-supervised between at least 2 researchers. All the permanent researchers in MLIA are then engaged in thesis supervision.

- GISSELBRECHT Thibault : "Diffusion d'informations dans les réseaux sociaux", defense 24/03/2017.
- CHEVALIER Marion : "Détection et reconnaissance de cibles en imagerie optronique", defense 02/12/2016.
- BOURIGAULT Simon : "Apprentissage de la dynamique de propagation d'info dans les réseaux sociaux", defense 10/11/2016.
- PUGET Raphaël : "Etude de la classification dans un très grand nombre de catégories", defense 04/07/2016.
- GAUTHIER Luc-Aurélien : "Inférence de liens signés dans les réseaux sociaux, par apprentissage à partir d'interactions utilisateur", defense 02/12/2015.
- LE BARZ Cédric : "Navigation visuelle pour les missions autonomes des petits drones", defense 30/06/2015.
- MAAG Maria : "Apprentissage automatique de fonctions d'anonymisation pour les graphes et les graphes dynamiques", defense 08/04/2015.
- POUSSEVIN Mickaël : "Apprentissage de représentations pour des données générés par les utilisateurs", defense 21/01/2015.
- LAW Marc : "Apprentissage de distance pour la comparaison d'images et de pages Web", defense 20/01/2015.
- RADENEN Mathieu : "Modèles Markoviens Contextuels", defense 30/09/2014.
- CISSE Mouhamadou Moustapha : "Extreme Classification", defense 25/07/2014.
- DULAC-ARNOLD Gabriel : "Modèles Sequentiels pour la Classification Multiclasse, Sparse et Budgetée", defense 07/02/2014.
- RAFRAFI Abdelhalim : "Classification de sentiments sur le Web 2.0", defense 20/12/2013.
- VINEL Antoine : "Champs Markoviens Conditionnels pour l'étiquetage de séquences", defense 02/12/2013.
- PRADEL Bruno : "Évaluation des systèmes de recommandation à partir d'historiques de données", defense 02/10/2013.
- PITZALIS Denis : "3D et Sémantique : nouveaux outils pour la documentation et l'exploration du patrimoine culturel", defense 30/09/2013.
- FAKERI TABRIZI Ali : "Apprentissage Semi-supervisé Multi-vues : Une Application pour L'annotation d'Image et la Classification de Documents Multilingues", defense 30/09/2013.
- JACOB Yann : "Classification dans les graphes hétérogènes et multi-relationnels : application aux réseaux sociaux", defense 20/09/2013.
- CALAUZENES Clément : "De la Consistance des Formulations de Substitution Convexes pour l'Ordonnement", defense 19/07/2013.
- GOH Hanlin : "Apprentissage De Représentations Visuelles Profondes", defense 12/07/2013.
- SOULLARD Yann : "Classification et détection de figures chartistes par apprentissage statistique", defense 09/07/2013.
- AVILA Sandra : "Extension du Modèle par Sac de Mots Visuels pour la Classification d'Images", defense 14/06/2013.
- BUFFONI David : "Fonctions de pertes auxiliaires consistantes pour l'ordonnement dans des tâches de Recherche d'Information", defense 04/10/2012.

3. Colloques / congrès, séminaires de recherche

Éditions d'actes de colloques / congrès

- Jenny Benois-Pineau, Fredric Precioso, Matthieu Cord, Visual Indexing and Retrieval, SpringerBriefs in Computer Science, 2012
- Ludovic Denoyer, Marc Sebban, Proceedings of 16ème Conférence d'Apprentissage CAp'2014

Articles publiés dans des actes de colloques / congrès

- [MLIA-C-1] Laure Soulier, Lynda Tamine, and Gia-Hung Nguyen. Answering Twitter Questions : a Model for Recommending Answerers through Social Collaboration. In *CIKM 2016 - 25th ACM International Conference on Information and Knowledge Management*, pages 267–276, Indianapolis, United States, October 2016.
- [MLIA-C-2] Michael Blot, Matthieu Cord, and Nicolas Thome. Max-min convolutional neural networks for image classification. In *ICIP 2016 - IEEE International Conference on Image Processing*, pages 3678–3682, Phoenix, United States, September 2016. IEEE.
- [MLIA-C-3] Micael Carvalho, Matthieu Cord, Sandra Avila, Nicolas Thome, and Eduardo Valle. Deep Neural Networks Under Stress. In *IEEE International Conference on Image Processing (ICIP 2016)*, Phoenix, AZ, United States, September 2016.
- [MLIA-C-4] Simon Bourigault, Sylvain Lamprier, and Patrick Gallinari. Learning Distributed Representations of Users for Source Detection in Online Social Networks. In *ECML PKDD 2016 - European Conference on Machine Learning and Knowledge Discovery in Databases*, volume 9852 of *Lecture Notes in Computer Science*, pages 265–281, Riva del Garda, Italy, September 2016. Springer.
- [MLIA-C-5] Ludovic DOS SANTOS, Benjamin Piwowarski, and Patrick Gallinari. Multilabel classification on heterogeneous graphs with gaussian embeddings. In *European Conference on Machine Learning and Principles and Practice of Knowledge Discovery*, Riva del garda, Italy, September 2016.
- [MLIA-C-6] Gia-Hung Nguyen, Laure Soulier, Lynda Tamine, and Nathalie Bricon-Souf. DSRIM : A Deep Neural Information Retrieval Model Enhanced by a Knowledge Resource Driven Representation of Documents. In *3rd ACM International Conference on the Theory of Information Retrieval (ICTIR 2017)*, Amsterdam, Neitherlands, October 2017.
- [MLIA-C-7] Thibaut Durand, Nicolas Thome, and Matthieu Cord. WELDON : Weakly Supervised Learning of Deep Convolutional Neural Networks. In *29th IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2016)*, Las Vegas, NV, United States, June 2016.
- [MLIA-C-8] Thibault Gisselbrecht, Sylvain Lamprier, and Patrick Gallinari. Dynamic Data Capture from Social Media Streams : A Contextual Bandit Approach. In *Tenth International Conference on Web and Social Media, ICWSM 2016*, pages 130–139, Cologne, Germany, May 2016.
- [MLIA-C-9] Olivier Schwander, Stéphane Marchand-Maillet, and Frank Nielsen. Comix : Joint Estimation and Lightspeed Comparison of Mixture Models. In *ICASSP 2016*, Shanghai, China, 2016.
- [MLIA-C-10] Thibaut Durand, Nicolas Thome, and Matthieu Cord. MANTRA : Minimum Maximum Latent Structural SVM for Image Classification and Ranking. In *IEEE International Conference on Computer Vision (ICCV15)*, Santiago, Chile, December 2015.
- [MLIA-C-11] Thibault Gisselbrecht, Patrick Gallinari, Sylvain Lamprier, and Ludovic Denoyer. WhichStreams : A Dynamic Approach for Focused Data Capture from Large Social Media. In *Ninth International Conference on Web and Social Media, ICWSM 2015*, pages 130–139, Oxford, United Kingdom, May 2015.
- [MLIA-C-12] Elie Guardia-Sebaoun, Vincent Guigue, and Patrick Gallinari. Latent Trajectory Modeling : a Light and Efficient Way to Introduce Time in Recommender Systems. In *RecSys*, Vienne, Austria, 2015. ACM.
- [MLIA-C-13] Thibaut Durand, David Picard, Nicolas Thome, and Matthieu Cord. SEMANTIC POOLING FOR IMAGE CATEGORIZATION USING MULTIPLE KERNEL LEARNING. In *IEEE International Conference on Image Processing*, pages –, Paris, France, October 2014.
- [MLIA-C-14] Marc T Law, Nicolas Thome, and Matthieu Cord. Fantope Regularization in Metric Learning. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 1051 – 1058, Columbus, Ohio, United States, June 2014.
- [MLIA-C-15] Gabriel Dulac-Arnold, Ludovic Denoyer, Nicolas Thome, Matthieu Cord, and Patrick Gallinari. Sequentially Generated Instance-Dependent Image Representations for Classification. In *International Conference on Learning Representations, ICLR 2014*, Banff, Canada, April 2014.

- [MLIA-C-16] Yann Jacob, Ludovic Denoyer, and Patrick Gallinari. Learning latent representations of nodes for classifying in heterogeneous social networks. In *The 7th ACM international conference on Web search and data mining*, pages 373–382, New York City, United States, February 2014.
- [MLIA-C-17] Simon Bourigault, Cédric Lagnier, Sylvain Lamprier, Ludovic Denoyer, and Patrick Gallinari. Learning social network embeddings for predicting information diffusion. In *The 7th ACM international conference on Web search and data mining*, pages 393–402, New York, United States, February 2014. ACM.
- [MLIA-C-18] Moustapha Cisse, Nicolas Usunier, Thierry Artières, and Patrick Gallinari. Robust Bloom Filters for Large MultiLabel Classification Tasks. In *Advances in Neural Information Processing Systems 26*, pages 1851–1859, Lake Tahoe, United States, December 2013.
- [MLIA-C-19] Hanlin Goh, Nicolas Thome, Matthieu Cord, and Joo-Hwee Lim. Top-Down Regularization of Deep Belief Networks. In C.J.C. Burges, L. Bottou, M. Welling, Z. Ghahramani, and K.Q. Weinberger, editors, *Advances in Neural Information Processing Systems 26*, pages 1878–1886, Lake Tahoe, United States, December 2013.
- [MLIA-C-20] Marc T Law, Nicolas Thome, and Matthieu Cord. Quadruplet-Wise Image Similarity Learning. In *IEEE International Conference on Computer Vision (ICCV)*, pages 249 – 256, Sydney, Australia, December 2013.
- [MLIA-C-21] Thibaut Durand, Nicolas Thome, Matthieu Cord, and Sandra Avila. Image classification using object detectors. In *IEEE International Conference on Image Processing*, pages 4340 – 4344, Melbourne, Australia, September 2013.
- [MLIA-C-22] Christian Theriault, Nicolas Thome, and Matthieu Cord. Dynamic Scene Classification : Learning Motion Descriptors with Slow Features Analysis. In *IEEE Conference on Computer Vision and Pattern Recognition*, pages 2603–2610, Portland, OR, United States, June 2013. IEEE.
- [MLIA-C-23] Cédric Lagnier, Ludovic Denoyer, Eric Gaussier, and Patrick Gallinari. Predicting Information Diffusion in Social Networks using Content and User’s Profiles. In *35th European Conference on IR Research, ECIR 2013*, volume 7814 of *Lecture Notes in Computer Science*, pages 74–85, Moscou, Russia, March 2013.
- [MLIA-C-24] Sheng Gao, Ludovic Denoyer, Patrick Gallinari, and Jun Guo. Latent factor blockmodel for modelling relational data. In *35th European Conference on IR Research, ECIR 2013*, volume 7814 of *Lecture Notes in Computer Science*, pages 447–458, Moscou, Russia, March 2013. Springer.
- [MLIA-C-25] Gabriel Dulac-Arnold, Ludovic Denoyer, Philippe Preux, and Patrick Gallinari. Fast Reinforcement Learning with Large Action Sets Using Error-Correcting Output Codes for MDP Factorization. In *European Conference on Machine Learning*, volume 7524 of *Lecture Notes in Computer Science*, pages 180–194, Bristol, United Kingdom, September 2012. Springer.

Autres produits présentés dans des colloques / congrès et des séminaires de recherche

- Tutorial Deep Learning, Data Science Spring School, Tianjin, China, 2017 (P. Gallinari)
- Deep Learning, Roundtable, Conference CESA 2016 (L. Denoyer)
- Machine Learning for Brain Signal Analysis, in : SMART Summer School on Computational Social and Behavior Sciences, 2016 (V. Guigue)
- 2 Tutorials on Collaborative Information Retrieval, ECIR 2016 and ICTIR 2016 (L. Soulier)
- From neural Networks to Deep learning, in Workshop Stochastic Algorithms for Big Data, Paris, 2016 (P. Gallinari)
- Big Data What else ? , 11e Rencontres de Neurologie Comportementale, 2016, Paris (P. Gallinari)
- Learning representations for dynamic relational data, invited speaker, 5th International Conference on Network Infrastructure and Digital Content, 2016 (P. Gallinari)
- Tutorial on Similarity and Distance Metric learning with Applications to Computer Vision and Multimedia Mining, ECML/PKDD 2015 (M. Cord)
- Big Data, Data Science, Enseignement et Recherche, Séminaire DEP 2014 (L. Denoyer)
- Tutorial on Opinion Mining, in : EINS Summer School, Annecy 2013, (V. Guigue)
- Détection de sentiments, in : EARIA, école d’automne de l’ARIA, Lyon, 2012, (V. Guigue)

5. Produits et outils informatiques

Logiciels

- 2017-RL PyTorch : A RL¹ simple package for PyTorch and OpenAI Gym (\approx 150 stars on GitHub).
- 2016-2017-Participation to the development of the PyTorch Platform (Deep Learning) developed by Facebook AI Research.
- 2016-RLTorch : A RL² simple package for Torch and OpenAI Gym (\approx 50 stars on GitHub).
- 2015-BIOASQ challenge platform. BIOASQ was a EU project (2012-2014) - MLIA was in charge of developing the evaluation platform for the project. The platform is still active and challenges are organized every year from 2013 to 2017 (<http://www.bioasq.org/participate/challenges>).
- 2014-Learning Social Network Embeddings for Predicting Information Diffusion - (mode from WSDM 2014) (\approx 25 stars on Github).

9. Produits destinés au grand public

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

- Interview "Le Monde" 2017 – "Le data scientist, nouvelle coqueluche des recruteurs" (L. Denoyer)
- Conference TEDX La Rochelle 2016 : L'apprentissage machine (L. Denoyer)
- Data Analytics Post 2017. Interview : Formations en data science : l'embaras du choix ! (L. Denoyer)
- Interview "La Recherche" 2016 : La machine : le champion de go peut-il encore battre l'ordinateur ? (L. Denoyer)

Produits de médiation scientifique

- Deep Learning Meetup #10, 7 June 2017 : Multimodal Tucker Fusion for Visual Question Answering (Hedi BenYounes (PhD)).
- Deep Learning Meetup #5, 25 févr. 2016 : Deep CNN and weak supervision for visual recognition (Matthieu Cord).
- Deep Learning Meetup #7, 3 Nov. 2016 : Efficient networks to classify medium and small datasets (Remi Cadène (PhD)). - Presentation AI challenges, cabinet ministériel with Thierry Mandon (secrétaire d'état enseignement supérieur et recherche), 6 March 2016 (Matthieu Cord).
- Reinforcement Learning for Data Processing, Machine Learning Meetup, Paris 2015 (L. Denoyer).
- Deep Reinforcement Learning, Deep Learning Meetup #6, Paris 2015 (L. Denoyer).
- Paris Machine Learning Meetup #3, Tutorial Opinion Mining, November 2014 (V. Guigue)

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

- Associate editor CVIU 2016– (M. cord)

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

- Member of the France Artificial Intelligence thinking group reporting to the French Research ministry 2017 (M. Cord, L. Denoyer)
- Co-chair of action IRIM (Indexation et Recherche d'Information Multimédia) from GdR ISIS (2012-2017) (M. Cord)
- Chargé de mission at CNRS INS2I, 2015 – (M. Cord)

1. <https://github.com/ludc/rl>

2. <https://github.com/ludc/rltorch>

- Member of INRA MBIA scientific commission for the evaluation of INRA researchers (2012-2020) (P. Gallinari).
- In charge of Open Research/Open Data/Open Education prospective for UPMC, reporting to the president of the university concerning Open Research/Open Data/Open Education, 2017 (L. Denoyer)
- Member of the ANR Comité d'évaluation scientifique CE23 (Data and HPC) 2016 (L. Denoyer)
- HCERES evaluation of doctoral school "Sciences Technologie Santé" (ED 585, Université de Picardie - Jules Verne UPJV), « Sciences pour l'ingénieur » (ED 71, Université de Technologie de Compiègne UTC), « Sciences et ingénierie des systèmes, mathématiques, informatique » (ED 551, Université confédérale Léonard de Vinci ComUE) et « Sciences et ingénierie des matériaux, mécanique, énergétique » (ED 552, Université confédérale Léonard de Vinci ComUE). (L. Soulier)
- ANR committee CES38 2015, Contint 2011, 2013 (M. Cord)
- PEPS jury CNRS 2011 et 2012 (M. Cord)

Évaluation d'articles et d'ouvrages scientifiques

MLIA members participate to about 30 Program Committees of international conferences each year, among which the following top A conferences in AI, machine learning, vision and Information retrieval : AAAI, AISTAT, CIKM, ECAI, ECIR, ECML, EUSIPCO, ICIP, ICLR, ICML, IJCAI, NIPS, PAKDD, SIGIR.

Évaluation de laboratoires (type Hceres)

- Evaluation HCERES 2016 laboratory HEUDIASYC and laboratory I3S (M. Cord, representing CNRS)

Évaluation de projets de recherche

International projects evaluation

MLIA members have participated to the following international evaluations during the period :

FNRS (Belgium 2013, 2016), Natural Sciences and Engineering Research Council of Canada 2010, 2016, Bi-national Science foundation US-Israel 2011, Belgian Science Policy Office (BELSPO) 2012, Netherlands Organization for Scientific Research (NWO) (2013), ERC 2013, IOF Council KU Leuven University 2013-2014, Fond de recherche du Quebec (2014, 2015), University of Liege (2017) for reviewing professor candidates.

4. Organisation de colloques / congrès

- Co-organizer workshop on Collaborative Information Retrieval (ECol), CHIIR 2016
- Organization of 2 workshops on Deep Learning, GdR ISIS, 2015, 2016
- Co-organizer of the Machine learning and information retrieval *Hackdays* (4 events) (CORIA 2014, CORIA 2016, CAP 2014 and CAP 2016)³
- Co-president of the scientific committee of the French machine learning conference CAP 2015
- Organisation Chair CORIA 2015 (Conférence en Recherche d'apprentissage et Application)
- Research chair DSAA 2015 (International Conference on Data Science and Advanced Analytics)
- Industry chair DSAA 2015 (International Conference on Data Science and Advanced Analytics)
- Co-organisation of the international challenge « Large Scale Hierarchical Text classification (3 editions 2012-2015)
- Co-organizer Extreme classification workshop, ICML 2015
- Workshop chair ECML 2014 (European Conference on Machine Learning)
- Co-organizer workshop Learning with Multiple Views, ECML 2014
- Workshop organizer ICML 2013 "Prediction with Sequential Models"

MLIA is also co-organizing the premier conference in information retrieval (ACM SIGIR conference on research and development in Information Retrieval) for 2019 which will be held in Paris (B. Piwowarski BD team organization chair).

3. <http://hackday.lip6.fr>

5. Post-doctorants et chercheurs accueillis

Post-Doctorates

- Huizhi Liang, 1 year, Jan 2017, Jan 2018 (co supervised BD team)
- Alejandro LOPEZ RINCON, 1 year, Apr 2016, Apr 2017.
- Djalel Benbouzid, 1 year, March 2015, March 2016
- Charanpal Dhanjal, 1 year, December 2011, December 2012

Invited Professors

- Mei Li (Pr, University of Geosciences, Beijing), 3 months 2017
- Eduardo Valle (Pr State University of Campinas ,Br), 2 weeks 2015, 2 weeks 2016, 1 month 2017
- Marco Gori (Pr, U. Sienne, It), 1 month 2016
- Rossella Cancelliere (Researcher U. Torino, It), 1 month 2014, 1 month 2015, 1 month 2016
- Sylvio Guimaraes (Pr Pontifícia Universidade Católica de Minas Gerais - Institute d'Informatique, Br), 1 month 2015
- Arnaldo De Albuquerque Araújo (Pr Universidade Federal de Minas Gerais , Br), 3 months 2014
- Shengrui Wang (Pr U. Sherbrooke, Ca), 1 month 2014

6. Interactions avec les acteurs socio-économiques

The team is engaged in several industrial collaborations resulting in cooperative projects (see the list below), Cifre or other industrial thesis (list below), and the creation of the joint CLEAR lab. with Thales (also referenced below).

Contrats de R&D avec des industriels

- STIF "Valorisation des données de validation billettique par les techniques de « machine learning »", 2016-2019
- CLEAR joint lab. with Thales.

Bourses Cifre

4 industrial thesis have been defended in the evaluation period and 10 Cifre or industrial students are currently in the team.

Past Cifre

- Chevalier M. - Thales
- Le Barz C. - Thales
- Maag M.- Alcatel
- Poussevin M. - Thales
- Mehr E. - Dassault System

Current Cifre and industrial thesis

- Brooks D. - Thales - 2017 –
- Cribier-Delande P. - Renault - 2017 –
- Engilberge M. - Technicolor - 2017 –
- Lample G. - Facebook - 2017 –
- Monzani C. - Tradelab - 2017 –
- Ben Younes H. - Heuritech - 2016 –
- Lamrayah M. - Thales - 2016 –
- Mehr E. - Dassault System - 2016 –
- Mordan T. - Thales - 2015 –
- Ziat A. - Vedecom - 2015 –

Créations de laboratoires communs avec une / des entreprise(s)

Laboratoire Clear with Thales, created in 2011 at the initiative of B. Bouchon and P. Gallinari on the LIP6 side. LIP6 participants : teams LFI, ComplexNetworks, MLIA.

7. Contrats de recherche financés par des institutions publiques ou caritatives

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

- Deep Vision (2016-2020) Franco-Canadian international ANR
- Extreme Classification (2016-2019) KAUST (King Abdullah University of Science & Technology)
- MUSTER MULTimodal processing of Spatial and TEmporal expReSSions (2015-2018) - EU CHIST-ERA
- PRESED Predictive maintenance of production lines for steel industry (2015-2017) - EU RFCS (Research Fund for Coal and Steel)
- Multimedia interactive data analysis for videos (2008-2014) - CAPES COFECUB - Brazil
- BIOASQ A challenge on large-scale biomédical semantic indexing and question answering (2012-2014) - EU FP7 ICT
- SCAPE - Scalable Preservation Environment (2011-2014) - EU FP7 Projects in Cultural Heritage, Digital Libraries and Preservation
- PASCAL Pattern Analysis, Statistical Modelling and Computational Learning - EU Network of Excellence (2008-2013)
- USIXML - User interface eXtensible Mark-up Language -(2009-2013) - EU ITEA

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

- APTITUDE Deep learning pour l'enseignement des gestes chirurgicaux (2015-2016) - UPMC - IUIS
- ARESOS : Analyse et Acces aux Données dans les Grands Réseaux Socio-Sémantiques (2012-2015) , program MASTODONS CNRS - **coordinator**
- Etude sur l'apprentissage de métrique pour des applications en vision par ordinateur (2014-2016) - DGA partner
- LUXIDX Outils et processus pour tirer parti de la création semi-automatique et incrémentale de ressources de connaissances (2014-2016) - DGA Rapid partner
- PAMELA Apprentissage décentralisé sous contraintes de privacy (2016-2021) - ANR partner
- DEEP IN FRANCE Apprentissage profond pour la classification d'images et de données complexes. (2016-2021) - ANR partner
- LIVES "Apprentissage multi-vues (2016-2021) - ANR partner
- LOCUST Apprentissage de représentations pour modéliser la dynamique des traces d'interactions complexes (2015-2020) - ANR **coordinator**
- VISIIR Recherche interactive d'image par commande visuelle - (2013-2017) ANR partner
- MLVIS : Apprentissage Automatique pour l'annotation visuelle dans les médias sociaux (2012-2016) - ANR partner
- Class-Y : Classification Dans un Très Nombre de Catégories, (2011-2015) ANR **coordinator**
- LAMPADA Modèles et algorithmes d'apprentissage pour les données structurées et complexes (2009-2014) - ANR partner
- ASAP Apprentissage Statistique par une Architecture Profonde "ASAP" (2009-2013) - ANR partner
- EX DEUS Exploitation de Données Exhibant Une Structure Sociale (2009-2013) - ANR partner
- E-FRAUD BOX Détection et Investigation de la Fraude à la carte bancaire sur internet (2010-2013) - ANR CSOSG (security) partner
- SAIMSI Suivi Adaptatif Interlingue et Multi-Sources des Individus (2010-2012) - ANR CSOSG (security) partner
- Fragrances Filtrage, Recherche et Annotations dans les GRAPhes d'iNteractions soCiales (2008-2012) - ANR partner
- AWACS Optimisation de trafic aéroportuaire (2015-2019) - FUI partner
- PULSAR Systeme de recommandation B2B.(2014-2018) - FUI partner
- ITER RH "Profiling et recommandation d'offres d'emploi (2015-2017) - FUI partner
- AMMICO "Assistant de visites de musées, mobile, intelligent et collaboratif. (2012-2016) - FUI partner

- DIFAC Automatisation d'un ensemble de fonctions du community management (2011-2014) - FUI partner
- CINE GIFT Recommandation de films pour Allociné (2011-2013) - Investissement d'Avenir partner
- CEDRES 2.0 Le Web 2.0 donne la parole aux internautes (2009-2012) - FUI partner
- AMAFI Analyse Massive de séries Financières "AMAFI" (2009-2012)- FUI partner
- DOXA Traitement automatique des Opinions et Sentiments" (2009-2012) - FUI partner
- Open Way III Fluidifier la mise en relation dans l'emploi sur Internet (2009-2012) - FUI partner

Contrats avec les collectivités territoriales

- REMI Machines d'annotation dans les bases d'images relationnelles (2011-2014) - Region IdF partner

8. Indices de reconnaissance

Prix

Thesis prizes

- AFIA prize 2016 for a thesis in AI (national prize) for Marc Law.
- Best thesis prize (SIBGRAPI 2013) for Rodrigo Minetto cotutelle with university Campinas, Brazil

Best paper prizes

- Best paper CORIA 2017 (national), Bourigault S., Lamprier S, Gallinari P., Apprentissage de representation pour la detection de source de diffusion dans les reseaux, CORIA 2017
- Best student paper ICONIP 2016 (international), Contardo G., Denoyer L., Artières T., Recurrent Neural Networks for Adaptive Feature Acquisition
- Best paper CORIA 2014 (national), Poussevin M., Guàrdia-Sebaoun E., Guigue V., Gallinari P. : Recommendation par combinaison de filtrage collaboratif et d'analyse de sentiments. CORIA-CIFED 2014 : 27-42
- Honorable mention : RECSYS 2012 (international), Pradel B., Usunier N., Gallinari P. : Ranking with non-random missing ratings : influence of popularity and positivity on evaluation metrics. RecSys 2012 : 147-154
- Honorable mention : NIPS 2012 (international), Calauzènes C., Usunier N., and Gallinari P., On the (Non-)existence of Convex, Calibrated Surrogate Losses for Ranking, NIPS 2012

Distinctions

Mérite Agricole, (P. Gallinari)

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

- Invited professor Beijing University of Post and Telecommunication, 1 month 2015, 1 month 2016 (P. Gallinari)
- Invited Professor Univ. Torino, IT, 2 weeks 2014, 2 weeks 2016 (P. Gallinari)
- Deep Learning Chair, university UNICAMP, Sao Paulo state, 15 june - 15 august 2016 (M. Cord)
- Invited researcher at Yahoo Research (Spain) - Information Diffusion and Recommendation - 1 month (2013) (L. Denoyer)

Annexe 4 DEPARTEMENT DESIR

Annexe 4 EQUIPE DECISION

Nom de l'équipe : Equipe Décision

Acronyme : DECISION

Nom du responsable pour le contrat en cours : Patrice Perny

Nom du responsable pour le contrat à venir : idem

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

- [DEC-J-1] Nawal Benabbou, Patrice Perny and Paolo Viappiani (2017), "Incremental Elicitation of Choquet Capacities for Multicriteria Choice, Ranking and Sorting Problems", *Artificial Intelligence Journal*, 246, 152-180.
- [DEC-J-2] Patrick Brézillon and Anissa Aroua (2013), "Representation of real-time decision-making by contextual graphs based simulation", *Journal of Decision Systems*, 22(1) : 28-42.
- [DEC-J-3] Lucie Galand and Olivier Spanjaard (2012), "Exact algorithms for OWA-optimization in multiobjective spanning tree problems", *Computers & Operations Research* 39(7), 1540-1554.
- [DEC-J-4] Hugo Gilbert and Olivier Spanjaard (2017), "A double oracle approach to minmax regret optimization problems with interval data", *European Journal of Operational Research* 262, 929-943.
- [DEC-J-5] Christophe Gonzales and Séverine Dubuisson (2015), "Combinatorial Resampling Particle Filter : an Effective and Efficient Method for Articulated Object Tracking", *International Journal of Computer Vision*, 112 (3), 255-284.
- [DEC-J-6] Mamane Souley Ibrahim, Nelson Maculan and Hacene Ouzia (2016), "An efficient cutting plane algorithm for the minimum weighted elementary directed cycle problem in planar digraphs", *RAIRO - Operations Research*, 50 (3), pp.665-675.
- [DEC-J-7] Julien Lesca, Michel Minoux, Patrice Perny (2013), "Compact versus noncompact LP formulations for minimizing convex Choquet integrals", *Discrete Applied Mathematics* 161(1-2), 184-199.
- [DEC-J-8] Jean-Christophe Magnan and Pierre-Henri Wuillemin. "Efficient Incremental Planning and Learning with Multi-Valued Decision Diagrams". *Journal of Applied Logic*, Elsevier, 2016.
- [DEC-J-9] Sophie Martin, Isabelle Alvarez, Jean-Daniel Kant (2015), "Micro/macro viability analysis of individual-based models : Investigation into the viability of a stylized agricultural cooperative", *Complexity*, 21 (2), 276-296.
- [DEC-J-10] Michel Minoux and Riadh Zorgati (2016), "Convexity of gaussian chance constraints and of related probability maximization problems", *Computational Statistics*, 31,1 :387-408.
- [DEC-J-11] Michel Minoux (2017) "A class of efficiently solvable multistage optimization problems under uncertainty and applications", *IMA Journal of Management Mathematics*, 28(1) :87-107.
- [DEC-J-12] Viet Hung Nguyen, Michel Minoux and Dang Phuong Nguyen (2017), "Reduced-size formulations for metric and cut polyhedra in sparse graphs", *Networks*, 69(1) :142-150.
- [DEC-J-13] Dang Phuong Nguyen, Michel Minoux, Viet Hung Nguyen, Thanh Hai Nguyen and Renaud Sirdéy (2016), "Stochastic graph partitioning : quadratic versus SOCP formulations", *Optimization Letters* 10(7), 1505-1018.

[DEC-J-14] Lionel Torti, Christophe Gonzales, Pierre-Henri Wuillemin (2013) “Speeding-up Structured Probabilistic Inference using Pattern Mining”, *International Journal of Approximate Reasoning*, 54 (7), 900-918.

Articles de synthèse / revues bibliographiques

[DEC-S-1] Patrick Brézillon (2017), “Elaboration of the Contextual Graphs representation : From a conceptual framework to an operational software”. Revue MUC (Modélisation et Utilisation du Contexte), Vol. 17-1, DOI : 10.21494/ISTE.OP.2017.0132.

[DEC-S-2] Gabriella Pigozzi, Alexis Tsoukiàs and Paolo Viappiani (2016), “Preferences in Artificial Intelligence”, *Annals of Mathematics and Artificial Intelligence*, 77, 3-4, 361-401.

2. Ouvrages

Monographies et ouvrages scientifiques, éditions critiques, traductions

— co-editor of the Book “Context in Computing : a cross-disciplinary approach for modeling the real world through contextual reasoning, Springer, 2014”.

Chapitres d’ouvrage

[DEC-Ch-1] D. Ferraioli, L. Gourvès, S. Moretti, F. Pascual et O. Spanjaard (2014) “Combinatorial Optimization with Competing Agents”, dans V. Th. Paschos, ed., *Paradigms of Combinatorial Optimization : Problems and New Approaches*, 2nd Ed, chap. 21, ISTE - Wiley, pp. 675-706.

[DEC-Ch-2] Ch. Gonzales, P. Perny (2014), Chapitre 13 : “Décision multicritère”, in *Panorama de l’intelligence artificielle*, Pierre Marquis, Odile Papini and Henri Prade (Eds), Cepadues Edition, France.

[DEC-Ch-3] Ch. Gonzales, P. Perny (2014), Chapitre 14 : “Décision dans l’incertain”, in *Panorama de l’intelligence artificielle*, Pierre Marquis, Odile Papini and Henri Prade (Eds), Cepadues Edition, France.

Thèses publiées / éditées

HABILITATION À DIRIGER LES RECHERCHES

— Ngyen Viet Hung, HDR “Contributions à des formulations naturelles et étendues en Optimisation Combinatoire”, 07/12/2016

THÈSES SOUTENUES

1. Aroua Anissa, Thèse, “Design of a Context-Oriented Virtual Consultant. Application in Breast Cancer Diagnosis”, June 2014.
2. Benabbou Nawal, Thèse, “Recherche de solutions potentiellement optimales en décision multicritère, décision multi-agents et décision dans l’incertain”, may 2017.
3. Chen Yang, Thèse, “Contributions to Student Modeling for Individualized Learning”, co-supervision with the MOCAH team, 2013.
4. Hegarty John, Thèse, “Decision making in strategic infrastructure projects. Choice and use of Key Performance Indicators, procurement and regulation of public transportation infrastructure in Ireland and France”, june 2013.
5. Ismaili Anisse, Thèse “Algorithms for Nash-Equilibria in Agent Networks and for Pareto-Efficiency in State Space Search : Generalizations to Pareto-Nash in Multiple Objective Games”.
6. Lesca Julien, Thèse “Exploitation de fonctions d’agrégation dépendant du rang pour la décision multi-objectifs”, April 2013.
7. Maesano Ariele-Paolo, “Bayesian dynamic scheduling for service composition testing” January 2015.
8. Magnan Jean-Christophe “Graphical Representations of Functions and Factored Markovian Decision Processes”, February 2016. ”, February 2016.
9. Mabrouk Ahmed, Thèse “Developpements d’outils d’aide au diagnostic en contexte incertain”, September 2016.

10. Nguyen Dang Phuong, Thèse “Contributions à des problèmes de partitionnement de graphe sous contraintes de ressources”, 06/12/2016.
11. Nguyen Xuan Son, Thèse “Exploitation of particle filter and dynamics bayesians networks for articulated object tracking”, June 2013
12. Seddik Yasmina, Thèse “Odonancement avec dates de libraisons et gains cumulatifs”, December 2012 (co-supervised with the RO team)
13. Tahir Assene, Thèse “Support to contextualization of the administration of database”, November 2013.

3. Colloques / congrès, séminaires de recherche

Éditions d'actes de colloques / congrès

- co-editor of the proceedings of the 3rd international conference on Algorithmic Decision Theory (ADT'13), Springer, LNAI 8176, November 2013.
- co-editor of the proceedings of the Scandinavian Conference on Artificial Intelligence (SCAI 2013).
- Editor of the proceedings of Decision Support Systems 2.0 (2014, IOS Press)
- Editor of CONTEXT-17 (2017, Springer Verlag).

Articles publiés dans des actes de colloques / congrès

- [DEC-C-1] Isabelle Alvarez, Riccardo de Aldama, Sophie Martin, Romain Reuillon (2013), “Assessing the Resilience of Socio-Ecosystems : Coupling Viability Theory and Active Learning with kd-Trees. Application to Bilingual Societies”, proceedings of International Joint Conference on Artificial Intelligence (IJCAI'13), Beijing, China, 2776-2782.
- [DEC-C-2] Nawal Benabbou, Patrice Perny and Paolo Viappiani (2014), “Incremental Elicitation of Choquet Capacities for Multicriteria Decision Making”, Proceedings of the 21st European Conference on Artificial Intelligence (ECAI'14, best student paper), 263, 87-92.
- [DEC-C-3] Nawal Benabbou and Patrice Perny (2015), “Combining Preference Elicitation and Search in Multiobjective State-Space”, Proceedings of the 24th International Joint Conference on Artificial Intelligence (IJCAI'15), 297-303.
- [DEC-C-4] Nawal Benabbou and Patrice Perny (2017), “Adaptive Elicitation of Preferences under Uncertainty in Sequential Decision Making Problems”, proceedings of International Joint Conference on Artificial Intelligence (IJCAI'17), to appear.
- [DEC-C-5] Raoul Berger, Séverine Dubuisson, Christophe Gonzales (2012) “Fast multiple histogram computation using Kruskal’s algorithm”, proceedings of International Conference on Image Processing (ICIP'12), pp. 2373-2376 (best student paper).
- [DEC-C-6] Patrick Brézillon, “Contextual Modeling of Group Activity”, CONTEXT 2017, 113-126.
- [DEC-C-7] Denis Cornaz, Lucie Galand and Olivier Spanjaard (2012), “Bounded Single-Peaked Width and Proportional Representation”, proceedings of European Conference on Artificial Intelligence (ECAI'12), 270-275.
- [DEC-C-8] Denis Cornaz and Lucie Galand and Olivier Spanjaard (2013), “Kemeny elections with bounded single-peaked or single-crossing width”, proceedings of the 23rd International Joint Conference on Artificial Intelligence (IJCAI'13), 76-82.
- [DEC-C-9] Santiago Cortijo, Christophe Gonzales (2016) “Bayesian Networks with Conditional Truncated Densities”, proceedings of Florida Artificial Intelligence Research Society Conference (FLAIRS'16), 656-661.
- [DEC-C-10] Séverine Dubuisson, Christophe Gonzales (2012) “An Optimized DBN-Based Mode-Focussing Particle Filter”, proceedings of International Conference on Computer Vision and Pattern Recognition (CVPR'12), 1934-1939.
- [DEC-C-11] Séverine Dubuisson, Christophe Gonzales, Xuan Son Nguyen (2012) “DBN-Based Combinatorial Resampling for Articulated Object Tracking”, proceedings of Conference on Uncertainty in Artificial Intelligence (UAI'12), 237-246.

- [DEC-C-12] Lucie Galand, Julien Lesca and Patrice Perny (2013), “Dominance Rules for the Choquet Integral in Multiobjective Dynamic Programming”, proceedings of the 23rd International Joint Conference on Artificial Intelligence (IJCAI’13), 538-544.
- [DEC-C-13] Hugo Gilbert and Olivier Spanjaard and Paolo Viappiani and Paul Weng (2015), “Solving MDPs with Skew Symmetric Bilinear Utility Functions”, proceedings of the 24th International Joint Conference on Artificial Intelligence (IJCAI’15), 1989-1995.
- [DEC-C-14] Hugo Gilbert, Bruno Zanuttini, Paul Weng, Paolo Viappiani, Esther Nicart. “Model-Free Reinforcement Learning with Skew-Symmetric Bilinear Utilities”, Proceedings of the Thirty-Second Conference on Uncertainty in Artificial Intelligence (UAI’16), 252-261.
- [DEC-C-15] Hugo Gilbert, Nawal Benabbou, Patrice Perny, Olivier Spanjaard and Paolo Viappiani, “Incremental Decision Making under Risk with the Weighted Expected Utility Model”, International Joint Conference on Artificial Intelligence (IJCAI’17), to appear.
- [DEC-C-16] Matthieu Hourbracq, Pierre-Henri Wuillemin, Christophe Gonzales, Philippe Baumard (2017) “Learning and selection of dynamic Bayesian Networks for non-stationary processes in real time”, proceedings of International Florida Artificial Intelligence Research Society Conference (FLAIRS’17).
- [DEC-C-17] Matthieu Hourbracq, Cédric Baudrit, Pierre-Henri Wuillemin, Sebastien Destercke. “Dynamic Credal Networks : introduction and use in robustness analysis”. F. Cozman, T. Denoeux, S. Destercke, T. Seidenfeld. Eighth International Symposium on Imprecise Probability : Theories and Applications (ISIPTA 2013), Jul 2013, Compiègne, France. pp.159-169, 2013.
- [DEC-C-18] Julien Lesca, Patrice Perny and Makoto Yokoo (2017), “Coalition Structure Generation and CS-core : Results on the Tractability Frontier for Games Represented by MC-nets”, proceedings of the 16th International Conference on Autonomous Agents and Multiagent Systems (AAMAS’17), 308-316.
- [DEC-C-19] Ahmed Mabrouk, Christophe Gonzales, Karine Jabet-Chevalier, Eric Chojnaki (2014) “An Efficient Bayesian Network Structure Learning Algorithm in the Presence of Deterministic Relations”, proceedings of European Conference on Artificial Intelligence (ECAI’14), 567-572.
- [DEC-C-20] Patrice Perny, Paolo Viappiani and Abdelah Boukhatem (2016), “Incremental Preference Elicitation for Decision Making Under Risk with the Rank-Dependent Utility Model”, proceedings of the Thirty-Second Conference on Uncertainty in Artificial Intelligence (UAI’16), 597-606.
- [DEC-C-21] Olivier Spanjaard and Paul Weng : “Markov Decision Processes with Functional Rewards”, 7th Multi-Disciplinary International Workshop on Artificial Intelligence, MIWAI 2013 (best paper), vol. 8271, Lecture Notes in Computer Science, 269-280.
- [DEC-C-22] Stefano Teso, Andrea Passerini, Paolo Viappiani : “Constructive Preference Elicitation by Set-wise Max-Margin Learning”, Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI’16), 2067-2073.
- [DEC-C-23] Paolo Viappiani (2016), “Characterization of Scoring Rules with Distances : Application to the Clustering of Rankings”, Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI’15), 104-110.
- [DEC-C-24] Jean-Christophe Magnan, Pierre-Henri Wuillemin. “On-line Learning of Multi-valued Decision Diagrams”, proceedings of the Twenty-Eighth International Florida Artificial Intelligence Research Society Conference (FLAIRS’15), 576-580 (best student paper award).

4. Développements instrumentaux et méthodologiques

Sans objet.

5. Produits et outils informatiques

Logiciels

- **aGrUM/pyAgrum**. Freeware opensource C++ library called aGrUM for handling, learning and making inferences with graphical models for decision making (more than 250k lines of code). This library can

be installed/run on Linux, Windows 10 and Mac OS. It is shipped with a python2/python3 wrapper called pyAgrum, which can be easily installed using pip, pip3 or conda. From the statistics of the conda forge (<https://anaconda.org/conda-forge/pyagrum/badges>), with more than 7000 downloads since the beginning of 2017.

Outils d'aide à la décision

- **CxG**. A software for contextual Graphs (Contextual Modelling of Decision Making) (GNU licence), downloadable from www.cxg.fr.

6. Brevets, licences et déclarations d'invention

Sans objet.

7. Rapports d'expertises techniques, produits des instances de normalisation

Sans objet.

8. Produits des activités didactiques

Sans objet.

9. Produits destinés au grand public

Émissions radio, TV, presse écrite

Article published in "le Monde", Thursday 26th, January 2017 (Context Management, Master Management of Innovation).

10. Autres produits propres à une discipline

Sans objet.

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

- Member of the Editorial Board of the Journal of Artificial Intelligence Research (JAIR).
- Member of the Editorial board of the Euro Journal of Decision Processes (EJDP).
- Editor-in-Chief of the interdisciplinary e-review Modeling and Using Context.
- Member of the Editorial Board of Theory and Decision, until 2013.

Direction de collections et de séries

Editor of the journal "Modeling and using Context (ISTE)"

2. Activités d'évaluation

Évaluation d'articles et d'ouvrages scientifiques

We served as reviewers for the following journals :

Annals of Mathematics and Artificial Intelligence, Artificial Intelligence Journal, Annals of Operations Research, Computers and OR, Discrete Applied Mathematics, International Journal of Approximate Reasoning, Journal of Autonomous Agents and Multi-Agents Systems, European Journal of Operational Research, Journal of Mathematical Psychology, 4OR, Information Processing Letters, Journal of Aerospace Information Systems,

Journal of Artificial Intelligence Research, Journal of Global Optimization, Journal of Optimization Theory and Application, Journal of Multicriteria Decision Analysis, Optimization Letters, RAIRO-OR, Theory and Decision.

We served in the program committee of :

- IJCAI, the International Joint Conference on Artificial Intelligence, 2013, 2015, 2016, 2017.
- AAAI, the AAAI conference on Artificial Intelligence, 2012-2017.
- UAI, Uncertainty in Artificial Intelligence, 2012, 2013, 2016.
- AAMAS, the international conference on Autonomous Agents and MultiAgents Systems 2012-2017.
- ECAI, the European Conference on Artificial Intelligence 2012, 2014, 2016.
- ADT, the international conference on Algorithmic Decision Theory 2013, 2015.
- KR, the international conference on Knowledge Representation 2014.
- PGM, international conference on Probabilistic Graphical Models, 2012, 2014.
- ECSQARU, Symbolic and Quantitative Approaches to Reasoning with Uncertainty, 2015.
- FLAIRS, Florida Artificial Intelligence Research Society Conference (FLAIRS) : 2016, 2017.
- ROADEF, Congrès National de la société Française de recherche opérationnelle 2012-2017.

Évaluation de laboratoires (type Hceres)

- member of the evaluation committee of a project-team, Cork Constraint Computation Center (Ireland), 2013.

Évaluation de projets de recherche

- member of the scientific committee of the PGMO programm (Gaspard Monge research program for optimization and operations research)
- evaluation of research projects for the research commission of the Dept. of Computer Science of the Free University of Bozen-Bolzano (Italy)
- reviewer for the “Emergence” program of the city of Paris, 2016.
- member of the steering committee of EquipEx Amical4Home, INRIA Grenoble.

3. Activités d’expertise scientifique

Sans objet.

4. Organisation de colloques / congrès

- chair and co-organizer of the 3rd International Conference on Algorithmic Theory, Brussels, 2013.
- organizer of the DSS 2.0 conference in Paris, UPMC, 2014.
- co-chair and organizer of the CONTEXT-17 conference in Paris, UPMC, 2017.
- co-chair of the ICJAI 2015 Workshop on Intelligent Personalization
- co-chair of the Multidisciplinary workshop on Advances in Preference Handling (M-PREF13) in 2012 and 2013
- co-organizer of the workshop on Graphical structures for Knowledge Representation at IJCAI 2013
- organizer of the track Graphical Models, IEA/AIE’17
- chair of the doctoral symposium of and member of the organization committee of the main conference track (Scandinavian Conference on Artificial Intelligence (SCAI 2013))
- organizer of JFRB 2016 (Journées Francophones sur les Réseaux Bayésiens et les Modèles Graphiques Probabilistes)
- co-organizer of the spring doctoral CNRS school in Algorithmic Decision Theory, UPMC, Paris, June 2012.
- co-organizer the meetings of the working group on “Algorithmic Decision Theory and Game Theory” (TADJ, GDR RO).
- We co-organized the meetings of the working group on “Theory and Applications of Multiobjective Optimization.” (GDR RO) (ATOM, GDR RO)

5. Post-doctorants et chercheurs accueillis

- Angelina Vidali, post-doc, 2013-2014 (1 publication in IJCAI).
- Morgane Chopin, post-doc, 2015-2016 (1 publication in TCS).
- Kimberly Garcia, post-doc, 2014-2016 (3 publications in the proceedings of CONTEXT' 15, CONTEXT' 17)
- Andrea Passerini (associate professor at the University of Trento) 2 visits, one week each, in 2016 and in 2017
- Paolo Dragone (University of Trento), visiting PhD student for one month during March 2017

6. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

- Institut de radioprotection et de sûreté nucléaire, industrial collaboration (2012 - 2016, Total : 30keuros with 30keuros for LIP6). Partners : IRSN, UPMC.
- Institut de radioprotection et de sûreté nucléaire, industrial collaboration (2016 - 2020, Total : 30keuros with 30keuros for LIP6). Partners : IRSN, UPMC.
- EDF R&D. "Design and development of a tool for creating and maintaining Probabilistic Relational Models; application to EDF's case studies", industrial collaboration. 2014-2015. Total 28 Keuros.
- TACTIC project : Contextualized support on a tablet for the transmission of command information (2013-2014). Total : 287 Keuros with 22.5 Keuros for LIP6. Partners : MASA Group, Intuitive World, LabSTICC, Deev.
- FlexMIm project, labélisé par le Pôle Systematic et par Medicen, FUI-AAP13, "Plate-forme de traitement et de partage d'images médicales en environnement cloud : déclinaison à l'anatomopathologie (ACP)" (01/09/2012-31/08/2015, Total : 1,793 Meuros, with 348 keuros for UPMC). Partners : Orange, Pertimm, Tribvn, AP-HP, Université Paris 7.
- MICO project, ANR TecSan, ANR-10-TECS-015, "COgnitive MIcroscope : A cognition-driven visual explorer for histopathology. Application to breast cancer grading", (2011-2014, Total : 1,5 Meuros with 190 Keuros for LIP6). Partners : AGFA, Thalès, AP-HP, IPAL, UPMC.
- Dem@factory, SAFIG, Decision Aid and Scheduling for the digitalization of documents, cooperation with SAFIG, and the RO team), 72 Keuros including 10 in 2012.

Bourses Cifre

- Simple Engineering. CIFRE. "Model and inference-driven automated testing of services architectures". 2010-2013. Total : 30 Keuros.
- France Telecom. CIFRE. "Model and inference-driven automated testing of services architectures". 2009-2012. Total : 30 Keuros.
- IBM CIFRE Hamza Agli, 2014-2017, Total : 25keuros with 45keuros for LIP6). Partners : IBM, UPMC.
- CEA CIFRE, Nguyen Dang Phuong, 2013-2016, Total : 30 Keuros.

7. Contrats de recherche financés par des institutions publiques ou caritatives

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

- SCISSOR, projet H2020, H2020-ICT-2014-1 #644425, Security In trusted SCADA and smart-grids (2015 - 2018, Total : 3,989 Meuros with 426 keuros for LIP6). Partners : ASSYSTEM, SIXSQ, CNIT, RADIO6SENSE, SRFG, KU LEUVEN, AGH, SEA, UPMC.
- MIDAS project, seven framework program (FP7) – call FP7-ICT-2011-8, "Model and Inference Driven, Automated testing of Services architectures", 3.923 Meuros with 425 Keuros for LIP6 (teams : Decision and Move), Partners : Simple Engineering France Sarl, CNR (Italy), Dedalus Spa, Sintesis Ustanova, Goettingen University, T6 Ecosystems S.R.L., Instituto Tecnológico De Aragon, Fraunhofer, UPMC.
- DREAM "Design and developpement of REAListic food Models (with well- characterised micro- and macro-structure and composition)". European community's seven framework program (FP7) – call FP7-KBBE-2007-2A. 40 Keuros.

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

- Leader of the ANR project GUEPARD on “Exact and Approximate Algorithms for Multiobjective Combinatorial Optimization” joint project with LAMSADE (Paris Dauphine) and LINA (Nantes), 2009-2013 (155 Keuros for LIP6 including 73 in 2012-2013).
- Partner of the ANR project CoCoRiCo-CoDec (2014-2017) on “Computation, Communication, Rationality and Incentives in Collective and Cooperative Decision Making”, joint project with LAMSADE (Paris Dauphine) and CREME (Caen), 2014-2017 (145 Keuros for LIP6).
- Partner of the ANR project LARDONS “Learning And Reasoning for Deciding Optimally using Numerical and Symbolic knowledge”. ANR SIMI 2, 2010-2015. 150 Keuros.
- Partner of the ANR project (young researchers) COCA “Combinatorial Optimization with Competing Agents”, joint project with LAMSADE, 2009-2013.
- Participation to the ANR project Business Recommendation for Configurable Products (BR4CP), 2012-2015.

Contrats financés dans le cadre du PIA

- ELICIT project (Preference Elicitation), Idex “Investissement d’avenir”, Fondation de coopération scientifique Sorbonne Université (FCS-SU), 78 Keuros for the LIP6.
- DeMAGMA project, Idex SUPER DeMAGMA, DeMAGMA_SU-2014-R-DPD-02-2/3, “Décisions multi-acteurs autour de la gestion de populations : apport de la modélisation mathématique”, (2014-2016, Total : 99 Keuros with 16 Keuros for LIP6). Partners : UPMC-IMJ-PRG, UPMC-LIP6, MNHN, UPS.

8. Indices de reconnaissance

Prix

- Jean-Christophe Magnan, Pierre-Henri Wuillemain : “On-Line Learning of Multi-Valued Decision Diagrams”. FLAIRS Conference 2015 : 576-580 (best student paper).
- Nawal Benabbou, Patrice Perny, Paolo Viappiani : “Incremental Elicitation of Choquet Capacities for Multicriteria Decision Making”. ECAI 2014 : 87-92 (best student paper).
- Olivier Spanjaard, Paul Weng : “Markov Decision Processes with Functional Rewards”. MIWAI 2013 : 269-280 (best paper).
- Raoul Berger, Séverine Dubuisson, Christophe Gonzales : “Fast multiple histogram computation using Kruskal’s algorithm”. ICIP 2012 : 2373-2376 (best student paper).
- Hugo Gilbert, second au prix Jeunes Chercheurs, ROADEF 2016.

Responsabilités dans des sociétés savantes

- co-leader of the axis “Decision, Modeling, Forecasting and Evaluation” in the GDR RO national research group
- co-leader of the working group “Algorithmic Decision Theory and Game Theory” common to GDR RO and pre-GDR IA national research groups.
- co-leader of the working group “Application and Theory of Multiobjective Optimization” in the GDR RO national research group.
- member of the office of the French Society of Operational Research and Decision Aid (ROADEF), vice-president in charge of the ROADEF bulletin.
- member of the evaluation committee of the PGMO/ROADEF/SMAI-MODE thesis award.

Invitations à des colloques / congrès à l’étranger, séjours dans des laboratoires étrangers

- Paolo Viappiani was invited professor at the University of Trento (Italy) for one month in 2015.
- Invited Talk at the International Conference of the Florida Artificial Intelligence Research Society (FLAIRS), uncertain reasoning track, 2016 (Christophe Gonzales).
- Invited talk at the Workshop on Algorithmic issues for Inference in Graphical Models (AIGM), 2015 (Christophe Gonzales).

- Invited talk at the Workshop on Learning with Structured Data and applications on Natural Language and Biology (CIMI), 2015 (Christophe Gonzales).
- invited Seminar at IBM, 2014 (Christophe Gonzales).
- Invited talk at Université Nationale de Hanoi, Vietnam, 2013 (Viet Hung Nguyen).
- Invited talk at TU Ilmenau, Germany 2015, (Viet Hung Nguyen).
- Invited Plenary Lecture at the MDAI conference, Barcelona, Spain 2013 (Patrice Perny).
- Invited talk at conference on Graph and Decision 2014 (Patrice Perny).
- Invited talk at Euro mini conference on “From Multiple Criteria Decision Aid To Preference Learning”, DA2PL 2016 (Patrice Perny).
- Invited talk at the international workshop From Multiple Criteria Decision Aid To Preference Learning, DA2PL, 2012(Paolo Viappiani).
- Selected tutorial on preference handling at ACM Recommender Systems Conference, Recsys 2013, (Paolo Viappiani).
- Invited participation and talk at the Dagstuhl Seminar 14101 on “Preference learning” 2014 (Paolo Viappiani).
- Invited tutorial at the International Conference on Scalable Uncertainty Management, SUM, 2016 (Paolo Viappiani)
- Invited talk at the Computational Decision Making and Data Science Workshop (sponsored by the U.S office of Naval Research), Belgrade, 2017 (Paolo Viappiani).

MOCAH

Nom de l'équipe : Modèles et Outils en ingénierie des Connaissances pour l'Apprentissage Humain
Acronyme : MOCAH

Nom du responsable pour le contrat en cours : Jean-Marc Labat until December 2016, Vanda Luengo after

Nom du responsable pour le contrat à venir : Vanda Luengo

I. PRODUITS DE LA RECHERCHE

Before introducing the selection of 20% of our production, we selected 5 publications representing the key points of our research activity.

- [MOCAH-M-1] Jason M. Harley, Cassia K. Carter, Niki Papaioannou, **François Bouchet**, Ronald S. Landis, Roger Azevedo, and Lana Karabachian. Examining the predictive relationship between personality and emotion traits and students' agent-directed emotions : towards emotionally-adaptive agent-based learning environments. *User Modeling and User-Adapted Interaction*, 26(2) :177–219, February 2016.
- [MOCAH-M-2] **Bertrand Marne** and **Jean-Marc Labat**. Model and Authoring Tool to Help Teachers Adapt Serious Games to their Educational Contexts. *International Journal of Learning Technology*, 9(2) :161–180, August 2014.
- [MOCAH-M-3] Philippe Dessus, Olivier Cosnefroy, and **Vanda Luengo**. “Keep Your Eyes on 'em all!” : A Mobile Eye-Tracking Analysis of Teachers' Sensitivity to Students. In K. Verbert, M. Sharples, and T. Klobučar, editors, *11th European Conf. on Technology Enhanced Learning (EC-TEL 2016)*, pages 72–84, Lyon, France, 2016. Springer.
- [MOCAH-M-4] **Mathieu Muratet**, **Amel Yessad**, and **Thibault Carron**. Understanding Learners' Behaviors in Serious Games. In *ICWL 2016 - International Conference on Web-based Learning*, Rome, Italy, October 2016. Best paper award.
- [MOCAH-M-5] **Mathieu Muratet**, **Elisabeth Delozanne**, Patrice Torguet, and Fabienne Viallet. Serious Game and Students' Learning Motivation : Effect of Context Using Prog&Play. In *11th international conference on Intelligent Tutoring Systems*, volume 7315 of *Lecture Notes in Computer Science*, pages 123–128, Chania, Greece, June 2012. Springer.

1. Journaux/revues

Articles scientifiques

- [MOCAH-J-1] Ben-Manson Toussaint, **Vanda Luengo**, and Jambon Francis. Analyse de connaissances perceptivo-gestuelles dans un Système Tutoriel Intelligent. *Sciences et Technologies de l'Information et de la Communication pour l'Éducation et la Formation (STICEF)*, June 2017.
- [MOCAH-J-2] Jason M. Harley, Cassia K. Carter, Niki Papaioannou, **François Bouchet**, Ronald S. Landis, Roger Azevedo, and Lana Karabachian. Examining the predictive relationship between personality and emotion traits and students' agent-directed emotions : towards emotionally-adaptive agent-based learning environments. *User Modeling and User-Adapted Interaction*, 26(2) :177–219, February 2016.

- [MOCAH-J-3] **Bertrand Marne** and **Jean-Marc Labat**. Model and Authoring Tool to Help Teachers Adapt Serious Games to their Educational Contexts. *International Journal of Learning Technology*, 9(2) :161–180, August 2014.
- [MOCAH-J-4] Philippe Pernelle, Jean-Charles Marty, and **Thibault Carron**. From Traces to indicators for Serious Games : Case study concerning a new way to introduce Product Lifecycle Management. *International Journal of Learning Technology*, 8(2) :127–146, June 2013.
- [MOCAH-J-5] **Mathieu Muratet**, **Elisabeth Delozanne**, Patrice Torguet, and Fabienne Viallet. Addressing teachers' concerns about the Prog&Play serious game with context adaptation. *International Journal of Learning Technology*, 7(4) :419–433, 2012.

Articles de synthèse / revues bibliographiques

- [MOCAH-SJ-1] Hugues Labarthe, **Vanda Luengo** : “L’analytique des apprentissages numériques”, Rapport de synthèse pour la direction du Numérique pour l’Éducation (DNE, MEN). Novembre 2016

Autres articles (articles publiés dans des revues professionnelles ou techniques, etc.)

- [MOCAH-OJ-1] Ben-Manson Toussaint, **Vanda Luengo**, and Francis Jambon. Understanding perceptual-gestural knowledge in TEL systems with eye-tracking . *Revista Romana de Interactiune Om-Calculator*, 8(4) :321–340, December 2015.
- [MOCAH-OJ-2] Julia Pilet, **Elisabeth Delozanne**, Françoise Chenevotot, Brigitte Grugeon, Dominique Prévité, and Naïma El-Kechai. Les outils Pépite sur LaboMeP : Identifier des besoins d’apprentissage des élèves pour réguler l’enseignement. *MathemaTICE*, 37 :14, November 2013.
- [MOCAH-OJ-3] **Thibault Carron**. Les “Serious Games” pour apprendre autrement ! *Revue ESPRIUT “le magazine des IUT de France”*, (8) :6, March 2012.
- [MOCAH-OJ-4] **Mathieu Muratet**. Prog&Play : conception et utilisation. *Argos. La revue des BCD et CDI*, (50) :13–15, 2012.

2. Ouvrages

Monographies et ouvrages scientifiques, éditions critiques, traductions

Sans objet

Direction / édition scientifique

- [MOCAH-DB-1] Jean-Charles Marty and **Thibault Carron**. *International Journal of Learning Technology - Special Issue on Game-Based Learning*, volume 9. Inderscience Publishers, 2014.

Chapitres d’ouvrage

- [MOCAH-CB-1] **Javier Melero**, **Naima El-Kechai**, **Amel Yessad**, and **Jean-Marc Labat**. Adapting Learning Paths in Serious Games : An Approach Based on Teachers' Requirements. In *Computer Supported Education - 7th International Conference, CSEDU 2015, Lisbon, Portugal, May 23-25, 2015, Revised Selected Papers*, volume 583 of *Communications in Computer and Information Science*, pages 376–394. Springer, 2016.
- [MOCAH-CB-2] John Ranellucci, Eric G. Poitras, **François Bouchet**, Susanne P. Lajoie, and Nathan C. Hall. Understanding Emotional Expressions in Social Media through Data Mining. In Sharon Y. Tettegah, editor, *Emotions, Technology, and Social Media*, pages 85–104. Academic Press, May 2016.

Thèses publiées / éditées

1. MARTIN Bruno : « Diagnostic comportemental et cognitif des erreurs dans la résolution de problèmes arithmétiques », direction de recherche E. Sander (Pr en Psychologie cognitive, Paris 8), co-direction Jean-Marc Labat, soutenance 11/07/2016.
2. CHEN Yang : « Apports à la Modélisation de l'Élève pour l'Apprentissage Individualisé », direction de recherche Jean-Marc LABAT, soutenance 29/09/2015.
3. THOMAS Pradeepa : « Analyse des traces dans un serious game », direction de recherche Jean-Marc LABAT, soutenance 10/04/2015.
4. MARNE Bertrand : « Modèles et outils pour la conception de jeux sérieux : une approche meta-design », direction de recherche Jean-Marc LABAT, soutenance 10/07/2014.
5. CAPDEVILA Bruno : « Architecture et design de jeux-sérieux : framework modulaire de systèmes d'entités, basé-composant, dirigé-donnée, pour aider à la modélisation et design systémiques dans des développements des jeux-sérieux agiles », direction de recherche Jean-Marc LABAT, soutenance 18/12/2013.
6. ZAGHBIB Amina : « Instrumentation d'un système d'information de gestion de projets innovants pour l'accompagnement au changement dans le contexte de la R&D industrielle », direction de recherche Thibault CARRON, soutenance 29/08/2013.

3. Colloques / congrès, séminaires de recherche

Éditions d'actes de colloques / congrès

[MOCAH-CP-1] Claude Frasson, **Jean-Marc Labat**, Fabien Gandon, David Cassagne, Clement Jonquet, Stefano A. Cerri, and Philippe Pujas, editors. *Actes de la 9ème conférence des Technologies de l'Information et de la Communication pour l'Enseignement (TICE 2014)*, Béziers, France, November 2014. IUT Béziers, IUT Béziers.

Articles publiés dans des actes de colloques / congrès

- [MOCAH-C-1] **Yannick Bourrier**, Jambon Francis, Catherine Garbay, and **Vanda Luengo**. A multi-layered architecture for analysis of non-technical-skills in critical situations. In *Artificial Intelligence In Education*, AIED 2017, Wuhan, China, June 2017.
- [MOCAH-C-2] **François Bouchet**, Jason M Harley, and Roger Azevedo. Can Adaptive Pedagogical Agents' Prompting Strategies Improve Students' Learning and Self-Regulation? In Springer International Publishing, editor, *13th International Conference Intelligent Tutoring Systems* :, Intelligent Tutoring Systems, pages 368 – 374, Zagreb, Croatia, June 2016.
- [MOCAH-C-3] Philippe Dessus, Olivier Cosnefroy, and **Vanda Luengo**. “Keep Your Eyes on 'em all!” : A Mobile Eye-Tracking Analysis of Teachers' Sensitivity to Students. In K. Verbert, M. Sharples, and T. Klobučar, editors, *11th European Conf. on Technology Enhanced Learning (EC-TEL 2016)*, pages 72–84, Lyon, France, 2016. Springer.
- [MOCAH-C-4] Hugues Labarthe, **François Bouchet**, Rémi Bachelet, and Kalina Yacef. Does a Peer Recommender Foster Students' Engagement in MOOCs? In International Educational Data Mining Society (IEDMS), editor, *9th International Conference on Educational Data Mining*, pages 418–423, Raleigh, United States, June 2016.
- [MOCAH-C-5] **Alexis Lebis**, Marie Lefevre, **Vanda Luengo**, and Nathalie Guin. Towards a Capitalization of Processes Analyzing Learning Interaction Traces. In *11th European Conference on Technology Enhanced Learning (EC-TEL 2016)*, volume 9891 of *Lecture Notes in Computer Science*, pages 397–403, Lyon, France, September 2016. Springer.
- [MOCAH-C-6] Jean-Charles Marty, Audrey Serna, **Thibault Carron**, Philippe Pernelle, and David Wayntal. Multi-device Territoriality to Support Collaborative Activities. In *11th European Conference on Technology Enhanced Learning, EC-TEL 2016*, volume 9891 of *Lecture Notes in Computer Science*, pages 152–164, Lyon, France, September 2016. Springer International Publishing.

- [MOCAH-C-7] **Mathieu Muratet, Amel Yessad, and Thibault Carron.** Understanding Learners' Behaviors in Serious Games. In *ICWL 2016 - International Conference on Web-based Learning*, Rome, Italy, October 2016.
- [MOCAH-C-8] **Mathieu Vermeulen, Nadine Mandran, and Jean-Marc Labat.** Chronicle of a scenario graph : from expected to observed learning path. In *11th European Conference on Technology Enhanced Learning (EC-TEL 2016)*, volume 9891 of *Lecture Notes in Computer Science*, pages 321–330, Lyon, France, September 2016. Springer.
- [MOCAH-C-9] **Yang Chen, Pierre-Henri Wuillemin, and Jean-Marc Labat.** Discovering Prerequisite Structure of Skills through Probabilistic Association Rules Mining. In *The 8th International Conference on Educational Data Mining*, pages 117–124, Madrid, Spain, June 2015.
- [MOCAH-C-10] Françoise Chenevotot, Brigitte Grugeon, Julia Pilet, Dominique Prévité, and **Elisabeth Delozanne.** The diagnostic assessment Pépite and the question of its transfer at different school levels. In *The Ninth Congress of the European society for Research in Mathematics Education CERME9*, page (to appear), Prague, Czech Republic, February 2015.
- [MOCAH-C-11] Jason M. Harley, Cassia K. Carter, Niki Papaioannou, **François Bouchet**, Ronald S. Landis, Roger Azevedo, and Lana Karabachian. Examining the predictive relationship between personality and emotion traits and learners' agent-directed emotions. In *The 17th Conference on Artificial Intelligence in Education (AIED 2015)*, volume 9112 of *Lecture Notes in Artificial Intelligence*, pages 145–154, Madrid, Spain, June 2015. Springer International Publishing.
- [MOCAH-C-12] Michelle Taub, Roger Azevedo, Nicholas Mudrick, Erika Clodfelter, and **François Bouchet.** Can scaffolds from pedagogical agents influence effective completion of sub-goals during learning with Metatutor? In *Learning and becoming in practice : The International Conference of the Learning Sciences (ICLS) 2014*, volume 2, pages 1052–1056, Boulder, CO, United States, June 2014. International Society of the Learning Sciences.
- [MOCAH-C-13] **Amel Yessad, Isabelle Mounier, Jean-Marc Labat, Fabrice Kordon, and Thibault Carron.** Have you found the error? A Formal Framework for Learning Game Verification. In *9th European Conference on Technology Enhanced Learning*, volume 8719 of *Lecture Notes in Computer Science*, pages 476–481, Graz, Austria, September 2014. Springer.
- [MOCAH-C-14] **Thibault Carron, Fabrice Kordon, Jean-Marc Labat, Isabelle Mounier, and Amel Yessad.** Toward Improvement of Serious Game Reliability. In *7th European Conference on Games Based Learning*, volume 2, pages 80–87, Porto, Portugal, October 2013. Academic Conferences and Publishing International.
- [MOCAH-C-15] Iza Marfisi-Schottman, **Jean-Marc Labat, and Thibault Carron.** Building on the Case Teaching Method to Generate Learning Games Relevant to Numerous Educational Fields. In *International Conference on Advanced Learning Technologies, ICALT*, pages 156–160, Beijing, China, July 2013.
- [MOCAH-C-16] Julia Pilet, Françoise Chenevotot, Brigitte Grugeon, **Naima El Kechai, and Elisabeth Delozanne.** Bridging diagnosis and learning of elementary algebra using technologies. In *The Eighth Congress of the European society for Research in Mathematics Education CERME8*, pages 2684–2693, Manavgat-Side/Antalya, Turkey, February 2013.
- [MOCAH-C-17] Jean-Paul Sansonnet and **François Bouchet.** A Framework Covering the Influence of FFM/NEO PI-R Traits over the Dialogical Process of Rational Agents. In *5th International Conference on Agents and Artificial Intelligence, ICAART 2013*, volume 449 of *Communications in Computer and Information Science*, pages 62–79, Barcelona, Spain, February 2013. Springer.
- [MOCAH-C-18] **Amel Yessad, Jean-Marc Labat, and Thibault Carron.** An approach to model and validate scenarios of serious games in the design stage. In *International Conference on Web-based Learning*, volume 8167 of *Lecture Notes in Computer Science*, pages 264–273, Kenting, Taiwan, October 2013. Springer.
- [MOCAH-C-19] **Bertrand Marne, John Wisdom, Benjamin Huynh-Kim-Bang, and Jean-Marc Labat.** A Design Pattern Library for Mutual Understanding and Cooperation in Serious Game Design. In *11th International Conference on Intelligent Tutoring Systems (ITS 2012)*, volume 7315 of *Lecture Notes in Computer Science*, pages 135–140, Chania, Greece, June 2012. Springer Berlin / Heidelberg

[MOCAH-C-20] **Mathieu Muratet, Elisabeth Delozanne**, Patrice Torguet, and Fabienne Viallet. Serious Game and Students' Learning Motivation : Effect of Context Using Prog&Play. In *11th international conference on Intelligent Tutoring Systems*, volume 7315 of *Lecture Notes in Computer Science*, pages 123–128, Chania, Greece, June 2012. Springer.

[MOCAH-C-21] **Pradeepa Thomas, Jean-Marc Labat, Mathieu Muratet**, and **Amel Yessad**. How to Evaluate Competencies in Game-Based Learning Systems Automatically? In *11th international conference on Intelligent Tutoring Systems*, volume 7315 of *Lecture Notes in Computer Science*, pages 168–173, Chania, Greece, June 2012. Springer.

Autres produits présentés dans des colloques / congrès et des séminaires de recherche

1. Jeu sérieux pour la formation : Une méthodologie de conception basée sur le meta-design. **J-M. Labat**. Invited seminar. Sorbonne universités, 2016.
2. Data Mining and Learning analytics, news opportunities. **V. Luengo**. Invited seminar. Journées scientifiques Infotronique, Haïti, 2016.
3. L'analyse des Traces en EIAH. **V. Luengo** Invited speaker. Conference RJC-EIAH, Montpellier 2016.
4. Learning Analytics and Educational Data Mining. **V. Luengo**. Invited seminar. Journées scientifiques MOOCs, Cachan, 2015.
5. L'intelligence Artificielle, robotique et les logiciels d'apprentissage. **V. Luengo**. Invited seminar. Journées scientifiques Infotronique, Haïti, 2015.
6. Serious games pour la formation : Définition, potentiel et questions de recherche. **J-M. Labat**. Invited seminar. Grenoble, Journée Arc 06, 2013.
7. Diagnostic cognitif de l'apprenant : Méthodes, Modèles et Outils. **J-M. Labat**. Invited speaker at Journée en l'honneur de J-F Richard, Paris 8, 2013.
8. Typologie de serious games et apprentissages associés, outils pour les serious games à métaphore intrinsèque. **J-M. Labat**. Invited seminar. Lirmm, Montpellier 2012.
9. Ingénierie des serious games. **J-M. Labat**. Invited seminar. Heudiasyc, UTC, 2012.

4. Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs

Sans objet

Plateformes et observatoires

Coordination of HUMAN OBSERVATORY Based on analysis of e-learning traces (Hubble) - **V. Luengo**

5. Produits et outils informatiques

Logiciels

Prog&Play / SPRED

Prog&Play is a library designed for training students on programming concepts through controlling Real Time Strategy games (RTS). It enables players to program easily and interactively units of an RTS. Currently, Prog&Play is integrated into Kernel Panic, a multiplayer RTS. Associated to Prog&Play, we developed SPRED a level editor designed to edit any game developed on the Spring engine, including Prog&Play.

Access : <http://progandplay.lip6.fr/index.php>

FYFY

FYFY (FamilY For unitY) is an Unity based framework (ECS) implementing the Entity-Component-System paradigm. Each year, this programming framework is used in courses of the Master ANDROIDE (Computer science) for training students on serious games development. It is also used to experiment our research approaches.

Access : <https://github.com/Mocahteam/FYFY>

Laalys V2

Laalys (Learner Activity AnaLYser) is a software based on an approach that mixes expert driven and data driven approaches to describe players' behaviors in serious games. Pedagogical and semantic labels are inferred to describe the players' actions. The former version of Laalys was developed during P. Thomas PhD and was well adapted to case study serious games. The latest version of Laalys is adapted to highly interactive serious games with large state spaces.

PERSYL

PERSYL (PEer Recommending SYstem for Learning) is a plug-in that can be installed on MOOCs in order to recommend learners one can interact with to socialize or learn together. The recommendations are mixing strategies based on sociodemographics similarities and progress in the MOOC. This plugin developed in collaboration with the University of Sydney (K. Yacef) has been tested over 3 sessions of the MOOC "Gestion de projet" from Centrale Lille, on a Canvas platform owned by Unow.

MAGAMmanager

MAGAMmanager is an HTML/PHP implementation of the framework MAGAM : the Multi-Aspect Generic Adaptation Model. It is a computational model based on the Q-matrix and aims at taking into account heterogeneous data (didactic data, learning strategies, Affective and Motivational data, etc.) to select adapted activities to learners. This application developed during the postdoctoral fellowship of Baptiste Monterat and funded by Sorbonne Universités has been tested during french lessons of 1st year students at UPMC.

Bases de données / cohortes

Prog&Play is used regularly in experimentations with students at UPMC. The objective of the last experimentation (March 2017) was to evaluate the automatic feedback that we integrated into the serious game. 70 students participated to this experimentation and we gathered data from game traces, questionnaires and student's qualitative assessment. This data is being processed to verify research hypotheses.

PERSYL has been used over 3 sessions of the GdP MOOC from Centrale Lille : the data collected (recommendations made, interactions with the widgets, messages sent...) in a database hosted at LIP6. Over 7,000 students have been exposed to the peer recommender system (PRS) in each session. The first experimentation allowed to demonstrate the benefits of a PRS in a MOOC, while the following ones examined which recommending strategies were most adapted in which situations.

MAGAMmanager has been used over 4 weeks with students at UPMC (during french lessons). Both didactic and gaming adaptations were performed to recommend activities to almost 97 students in classroom and moodle sessions. The collected data are hosted at a LIP6 database server.

6. Brevets, licences et déclarations d'invention

Within the FYFY framework, in 2017 we filed a SOLEAU envelope to record the creation date of this contribution.

7. Rapports d'expertises techniques, produits des instances de normalisation

Sans objet

8. Produits des activités didactiques

E-learning, moocs, cours multimedia, etc.

Coordination and participation to a national MOOC : EIAH (ANR réseau Orphée)
Participation to the MOOCs thematics with Ecole des mines de Douai

9. Produits destinés au grand public

Émissions radio, TV, presse écrite

Interview for the AEF (Agence pour l'Education et la Formation) (**J-M. Labat**)

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

M. Vermeulen, J. Laval, X. Serpaggi, R. Pinot : « Soyez agiles dans les A.L.P.E.S. ! Une pédagogie en mode agile. », 9ème Colloque Questions de Pédagogie dans l'Enseignement Supérieur (QPES 2017), Grenoble, France 2017.

J. Laval, **M. Vermeulen** : « LES A.L.P.E.S. : APPROCHES AGILES POUR L'ENSEIGNEMENT SUPERIEUR : Un outil de personnalisation de la formation pour les enseignants du supérieur », 29ème Congrès de l'Association Internationale de Pédagogie Universitaire (AIPU 2016), Lausanne, Switzerland.

C. Popescu, **M. Muratet**, C. Moreau : « Appropriations et détournements d'un dispositif numérique adapté : le cas d'une expérimentation concernant la scolarisation des jeunes en situation de handicap en milieu ordinaire », Ludovia 2015, Ax-les-Thermes, France.

Ph. Pernelle, **Th. Carron** : « Plateforme Serious Game mutualisée et pluridisciplinaire : les IUT en première ligne », Second congrès national de la recherche en IUT, Corte 2013, France.

Produits de médiation scientifique

We present Prog&Play during the French festival of science. Visitors (parents and children) experiment the game and discuss with us to understand our research.

Printemps du numérique des universités numériques thématiques Paris 2015, Campus européen sur l'éducation Poitiers 2016, EDUCATICE 2016

Presentation of learning analytics and of the Hubble project to : Internet de l'éducation, Nantes 2015

Débats science et société

- Intelligence Artificielle en éducation, 6 scénarios. **V. Luengo**. Invited seminar. Rencontres de l'Orme, Marseille, 2017.
- What artificial intelligence can bring to Education. **F. Bouchet**. Invited seminar. 2nd D-TRANSFORM Leadership school, Nancy, 2017.
- Quel type de serious game pour quel type d'apprentissage ? **J-M. Labat**. Invited seminar at CIUEN 2012.
- Serious game et apprentissage : quelques éléments de réflexion. **J-M. Labat**. Invited seminar at UNR Vivaldi 2012.

10. Autres produits propres à une discipline

Sans objet

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

RIA (Revue d'intelligence artificielle) : **J-M. Labat**

STICEF (Sciences et Technologies de l'Information et de la Communication pour l'Éducation et la Formation) : **J-M. Labat**

Direction de collections et de séries

Director of the collection « Systèmes de formation et d'enseignement », Editions Hermès, **J-M. Labat**

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

Co-présidente du comité ANR CE 38 « Révolution numérique : rapports au savoir et à la culture » (**V. Luengo**)

Membre du comité ANR CES 24 « Contenus, connaissances, interactions » (2014 and 2015) (**J-M. Labat**)

Évaluation d'articles et d'ouvrages scientifiques

International journals : IJHCS (*F. Bouchet*), IJHCI (*F. Bouchet*), IJAIED (*F. Bouchet, V. Luengo*), JEDM (*F. Bouchet, V. Luengo*), TIIS (*F. Bouchet*), CHB (*F. Bouchet*), ESWA (*F. Bouchet*), EAAI (*F. Bouchet*), ZDM (*V. Luengo*), Computers & Education (*J-M. Labat*), RITPU/IJTHER (*J-M. Labat*), TCIAIG (*T. Carron*), IJTEL (*T. Carron*), IJCAT (*T. Carron*)

National journals : RIA (*F. Bouchet, V. Luengo, A. Yessad*), TSI (*V. Luengo, J-M. Labat*), STICEF (*T. Carron, J-M. Labat*), SIM (*T. Carron*)

International conferences : AIED (*F. Bouchet, V. Luengo, J-M Labat, A. Yessad, T. Carron*), ITS (*F. Bouchet, V. Luengo, J-M. Labat [meta-reviewer]*) EDM (*F. Bouchet, V. Luengo*), LAK (*F. Bouchet, V. Luengo*), CSEDU (*F. Bouchet, J-M. Labat, A. Yessad, T. Carron*), ICALT (*V. Luengo, J-M. Labat, A. Yessad*), ECTEL (*V. Luengo*), ICWL (*J-M. Labat*), ICCHP (*M. Muratet*), Interaccion (*T. Carron*)

National conferences : EIAH (*F. Bouchet, V. Luengo, J-M. Labat, A. Yessad, T. Carron*), TICE (*J-M. Labat, V. Luengo, T. Carron*), RJC EIAH (*F. Bouchet, V. Luengo, A. Yessad, T. Carron*), atelier EIAH&IA (*F. Bouchet, V. Luengo, A. Yessad*), IC (*V. Luengo, A. Yessad*), APIA (*A. Yessad*)

Évaluation de laboratoires (type Hceres)

Sans objet

Évaluation de projets de recherche

Evaluations of 3 europeans projects (**V. Luengo**).

ANR evaluations (**J-M. Labat, T. Carron, V. Luengo**).

Evaluation of « incubateurs du numérique et l'éducation » , DNE (**J-M. Labat, V. Luengo**).

Invitation to Serve as an External Reviewer for NSERC (Canada) (**J-M. Labat**)

Invitation to Serve as an External Reviewer for MITACS (Canada) (**T. Carron**)

Invitation to Serve an an External Reviewer Conicyt Project (Chile) (**V. Luengo**)

3. Activités d'expertise scientifique

Participation to the report from the ATHENA and ALLISTENE alliance to Thierry Mandon : « Rapport sur la recherche en éducation » . (**V. Luengo**)

Activités de consultant

Sans objet

Participation à des instances d'expertises (type Anses) ou de normalisation

Sans objet

Expertise juridique

Sans objet

4. Organisation de colloques / congrès

Organisation de la journée EIAH&IA lors de la plateforme IA 2015 (**V. Luengo, A. Yessad, F. Bouchet**)
<http://pfia2015.inria.fr/journees-bilaterales/journee-eiah-ia>

5. Post-doctorants et chercheurs accueillis

Invited researchers for one month : Cristina Conati (University of British Columbia), Carsten Ullrich (DFKI GmbH)

Invited researcher for one year : Leônidas de Oliveira Brandão (Computer Science Dep. of IME-USP, Brazil) [one joint publication at the MoodleMoot conference]

Several post-docs and research engineers were recruited for our research projects : M. Muratet, I. Marfisi, N. El Kechai, J. Melero, D. Camacho Vega, B. Monerrat

6. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

Sans objet

Bourses Cifre

1 CIFRE agreement with KTM Advance (30k€) for the PhD thesis of Bruno Capdevilla (2009-2012)

Créations de laboratoires communs avec une / des entreprise(s)

Sans objet

Création de réseaux ou d'unités mixtes technologiques

Sans objet

Créations d'entreprises, de start-up

Sans objet

7. Contrats de recherche financés par des institutions publiques ou caritatives

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

Sans objet

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

Project name [funding]	Start	End	Total amount (k€)
Cartographie [DGSIP MINES]	01/2012	09/2012	30
Generic SG [PIA E-learning]	03/2012	06/2013	47
Play Serious [FUI]	05/2011	03/2015	340
Prog & Play [IDEX SU]	09/2015	06/2016	51
Zoom (jeu orientation pour étudiants) [IDEX SU]	09/2015	06/2016	30
NeoPraEval [ANR]	03/2014	03/2018	59
Learning Analytics et adaptation cycle 3 [Minist. Educ., Dir. Num.]	12/2015	12/2018	216
Chaire EIAH [IDEX SU]	11/2015	12/2018	328
HUBBLE [ANR]	09/2015	03/2019	230
MacCoy [ANR]	09/2015	03/2019	150

Contrats avec les collectivités territoriales

Sans objet

Contrats financés dans le cadre du PIA

Sans objet

Contrats financés par des associations caritatives et des fondations (ARC, FMR, FRM, etc.)

Sans objet

8. Indices de reconnaissance

Prix

Best paper award for the paper « Understanding learner's behavior in learning games » (**M. Muratet, A. Yessad** and **T. Carron**) presented at the 15th International Conference on Web-based Learning, ICWL 2016, Rome

Best paper award for the paper « Jeu sérieux et motivation des étudiants pour apprendre : influence du contexte avec Prog&Play » (**M. Muratet, E. Delozanne**, Patrice Torguet and Fabienne Viallet) presented at the 8th Conference on Technologies de l'Information et de la Communication pour l'Enseignement, TICE 2012, Lyon.

Best poster award for the paper « Identifying the Relationships Between Students' Questions Type and their Behavior » (**F. Harrak, F. Bouchet, V. Luengo**) presented at the 10th International Conference on Educational Data Mining, EDM 2017, Wuhan

« Coup de coeur » prize for Prog&Play at the Trophées des Technologies Educatives 2013 during the Educatec-Educatices salon.

Distinctions

Chair to Vanda Luengo : Environnements Informatiques pour l'Apprentissage Humain

Responsabilités dans des sociétés savantes

Member of the ATIEF Management board : **J-M. Labat** (president, 2004-2016), **V. Luengo** (international relationship)

Member of the steering committee of the national network ORPHEE (ANR grant) : **V. Luengo, J-M. Labat**

Member of the scientific committee of the UNT UNIT : **J-M. Labat**

Contrats financés dans le cadre du PIA

Sans objet

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

Invited speaker at European project Dig-e-Lab, (Tournai, 2017) : Comment réduire l'attrition dans les MOOC : Exploration de 2 voies. **J-M. Labat**

3 weeks research guest at the University of Sydney (Australia, June 2017) : **F. Bouchet**

Invited speaker at Learning analytics : Needs and opportunities panel to TEEM conference (Salamanca, 2016) : **V. Luengo**

Invited speaker at GALA conference (Utrecht, 2016) : Towards enhancing the usage of educational games by teachers : a meta-design perspective. **J-M. Labat**

1 week research guest at North Carolina State University (Raleigh, Fall 2015) : **F. Bouchet**

Invited speaker at Institut des Sciences Cognitives, Univ du Québec à Montréal (Montréal, 2012) : Modèles, méthodes et outils pour des serious games à métaphore intrinsèque. **J-M. Labat**

Annexe 4 EQUIPE RO

Nom de l'équipe : Recherche Opérationnelle – Operation Research
Acronyme : RO

Nom du responsable pour le contrat en cours : Christoph Dürr
Nom du responsable pour le contrat à venir : idem

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

- [RO-A1] **Christoph Dürr**, Flavio Guíñez, and Martín Matamala. Reconstructing 3-Colored Grids from Horizontal and Vertical Projections is NP-Hard : A Solution to the 2-Atom Problem in Discrete Tomography. *Siam Journal on Discrete Mathematics*, 26(1) :330–352, 2012.
- [RO-A2] Nabil Absi, Stéphane Dauzère-Pérès, **Safia Kedad-Sidhoum**, Bernard Penz, and Christophe Rapine. Lot sizing with carbon emission constraints. *European Journal of Operational Research*, 227(1) :55–61, March 2013.
- [RO-A3] **Spyros Angelopoulos** and Pascal Schweitzer. Paging and list update under bijective analysis. *Journal of the ACM (JACM)*, 60(2) :7, April 2013.
- [RO-A4] **Evrpidis Bampis**, **Dimitrios Letsios**, **Giorgio Lucarelli**, Evangelos Markakis, and Ioannis Milis. On multiprocessor temperature-aware scheduling problems. *Journal of Scheduling*, 16(5) :529–538, March 2013.
- [RO-A5] Benjamin Doerr, **Carola Doerr**, and Timo Kötzing. The unbiased black-box complexity of partition is polynomial. *Artificial Intelligence*, 216 :12, 2014.
- [RO-A6] Alejandro López-Ortiz, **Spyros Angelopoulos**, and Angele M. Hamel. Optimal Scheduling of Contract Algorithms for Anytime Problem-Solving. *Journal of Artificial Intelligence Research*, 51 :533–554, 2014.
- [RO-A7] **Yasmina Seddik**, Christophe Gonzales, and **Safia Kedad-Sidhoum**. Performance guarantees for a scheduling problem with common stepwise job payoffs. *Theoretical Computer Science*, 562 :377–394, January 2015.
- [RO-A8] Edouard Bonnet, **Bruno Escoffier**, Vangelis Paschos, and Emeric Tourniaire. Multi-parameter Analysis for Local Graph Partitioning Problems : Using Greediness for Parameterization. *Algorithmica*, 71(3) :566–580, March 2015.
- [RO-A9] Edouard Bonnet, **Bruno Escoffier**, Eunjung Kim, and Vangelis Paschos. On Subexponential and FPT-Time Inapproximability. *Algorithmica*, 71(3) :541–565, March 2015.
- [RO-A10] **Bruno Escoffier**, Jérôme Monnot, Vangelis Paschos, and Mingyu Xiao. New Results on Polynomial Inapproximability and Fixed Parameter Approximability of Edge Dominating Set. *Theory of Computing Systems*, 56(2) :330–346, February 2015.
- [RO-A11] **Evrpidis Bampis**, Alexander Kononov, **Dimitrios Letsios**, **Giorgio Lucarelli**, and Ioannis Nemparis. From preemptive to non-preemptive speed-scaling scheduling. *Discrete Applied Mathematics*, 181 :11–20, January 2015.

- [RO-A12] **Evripidis Bampis, Dimitrios Letsios, and Giorgio Lucarelli.** Green scheduling, flows and matchings. *Journal of Theoretical Computer Science (TCS)*, 579 :126–136, May 2015.
- [RO-A13] **Pascale Bendotti, Pierre Foulhoux, and Philippe Chrétienne.** Feasibility recovery for the Unit-capacity Constrained Permutation Problem. *Discrete Optimization*, Volume 22, Part A :66–86, November 2016.
- [RO-A14] Benjamin Doerr, **Carola Doerr**, Reto Spoehel, and Henning Thomas. Playing Mastermind with Many Colors. *Journal of the ACM (JACM)*, 63, December 2016.
- [RO-A15] **Spyros Angelopoulos**, Diogo Arsenio, **Christoph Dürr**, and Alejandro López-Ortiz. Multi-processor Search and Scheduling Problems with Setup Cost. *Theory of Computing Systems*, 2016.
- [RO-A16] **Pascale Bendotti, Philippe Chrétienne, Pierre Foulhoux**, and Alain Quilliot. Anchored reactive and proactive solutions to the CPM-scheduling problem. *European Journal of Operational Research*, 261(1) :67–74, August 2017.
- [RO-A17] Laurent Gourvès, Jérôme Monnot, **Fanny Pascual**, and Daniel Vanderpooten. Bi-objective matchings with the triangle inequality. *Theoretical Computer Science*, 670 :1 – 10, 2017.
- [RO-A18] **Safia Kedad-Sidhoum, Florence Monna**, Grégory Mounié, and Denis Trystram. A Family of Scheduling Algorithms for Hybrid Parallel Platforms. *International Journal of Foundations of Computer Science*, 2017.
- [RO-A19] Aurélien Carlier, **Claire C. Hanen**, and Alix Munier-Kordon. The equivalence of two classical list scheduling algorithms for dependent typed tasks with release dates, due dates and precedence delays. *Journal of Scheduling*, pages 1–9, 2017.

Articles de synthèse / revues bibliographiques

Autres articles (articles publiés dans des revues professionnelles ou techniques, etc.)

2. Ouvrages

Monographies et ouvrages scientifiques, éditions critiques, traductions

Direction / édition scientifique

- [RO-B1] **Christoph Dürr** and Thomas Schwentick. *Special Issue on Theoretical Aspects of Computer Science*, volume 53 of *Theory of Computing Systems*, Dortmund, Germany, April 2013. Springer.
- [RO-B2] **Carola Doerr** and Francisco Chicano. Special issue on theory of genetic and evolutionary computation, 2017.

Chapitres d'ouvrage

- [RO-C1] Diodato Ferraioli, Laurent Gourvès, Stefano Moretti, **Fanny Pascual**, and Olivier Spanjaard. Combinatorial Optimization with Competing Agents. In *Paradigms of Combinatorial Optimization : Problems and New Approaches, 2nd Edition*, Mathematics and Statistics Series, pages 675–706. Wiley-ISTE, 2014.
- [RO-C2] **Spyros Angelopoulos.** Deterministic Searching on the Line. In *Encyclopedia of Algorithms*, pages 531–533. 2016.

Thèses publiées / éditées

- [RO-D1] Alexandre Blogowski. *Prise en compte des incertitudes dans le déploiement des réseaux mobiles LTE*. PhD thesis, Université Pierre et Marie Curie (UPMC), LIP6, 2013. Type : Thèse de Doctorat – Soutenue le : 2013-04-08 – Dirigée par : Chrétienne, Philippe – Encadrée par : OUOROU Adam, PASCUAL Fanny.
- [RO-D2] Óscar Carlos Vásquez Pérez. *Job scheduling in order to aggregate energy consumption and quality of service : optimization and game theory*. PhD thesis, Université Pierre et Marie Curie (UPMC), LIP6, 2014. Type : Thèse de Doctorat – Soutenue le : 2014-01-23 – Dirigée par : Dürr, Christoph.

- [RO-D3] Florence Monna. *Ordonnancement pour les nouvelles plateformes de calcul avec GPUs*. PhD thesis, Université Pierre et Marie Curie (UPMC), LIP6, 2014. Type : Thèse de Doctorat – Soutenue le : 2014-11-25 – Co-dirigée par : Kedad-sidhoum, Safia.
- [RO-D4] Georgios Zois. *Problèmes algorithmiques dans les systèmes informatiques sous contraintes d'énergie*. PhD thesis, Université Pierre et Marie Curie (UPMC), LIP6, 2014. Type : Thèse de Doctorat – Soutenue le : 2014-12-12 – Dirigée par : Bampis, Evripidis – Encadrée par : MILIS Ioannis.

3. Colloques / congrès, séminaires de recherche

Éditions d'actes de colloques / congrès

- [RO-E1] *Experimental Algorithms*, volume 9125 of *Lecture Notes in Computer Science*, Paris, France, 2015. Springer Verlag.

Articles publiés dans des actes de colloques / congrès

- [RO-F1] **Pierre Fouilhoux** and **Aurélien Questel**. The Non-Disjoint m-Ring-Star Problem : polyhedral results and SDH/SONET network design. In *International Symposium on Combinatorial Optimization (ISCO 2012)*, volume 7422 of *Lecture Notes in Computer Science*, pages 93–104, Athènes, Greece, April 2012. Springer.
- [RO-F2] **Safia Kedad-Sidhoum**, **Florence Monna**, Grégory Mounié, and Denis Trystram. Scheduling Independent Tasks on Multi-cores with GPU Accelerators. In *HeteroPar 2013 - 11th International Workshop on Algorithms, Models and Tools for Parallel Computing on Heterogeneous Platforms*, volume 8374 of *Lecture Notes in Computer Science*, pages 228–237, Aachen, Germany, August 2013. Springer. Best Paper Award.
- [RO-F3] **Evripidis Bampis**, Alexander Kononov, **Dimitrios Letsios**, **Giorgio Lucarelli**, and Maxim Sviridenko. Energy efficient scheduling and routing via randomized rounding. In *33rd IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2013)*, volume 24 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 449–460, Guwahati, India, December 2013.
- [RO-F4] **Pierre Fouilhoux** and **Aurélien Questel**. Branch-and-Cut-and-Price using Stable Set polytope inequalities for the Capacitated- Ring-Star Problem. In *International Symposium on Combinatorial Optimization (ISCO 2014)*, Lisbon, Portugal, March 2014.
- [RO-F5] Johanne Cohen and **Fanny Pascual**. Scheduling tasks from selfish multi-tasks agents. In *21st International Conference on Parallel and Distributed Computing*, volume 9233 of *Lecture Notes in Computer Science*, pages 183–195, Vienna, Austria, August 2015. Springer.
- [RO-F6] Benjamin Doerr and **Carola Doerr**. Optimal Parameter Choices Through Self-Adjustment : Applying the 1/5-th Rule in Discrete Settings. In *GECCO '15 - 2015 Annual Conference on Genetic and Evolutionary Computation*, pages 1335–1342, Madrid, Spain, July 2015. ACM.
- [RO-F7] **Spyros Angelopoulos**, **Christoph Dürr**, Shahin Kamali, **Marc Renault**, and Adi Rosén. Online Bin Packing with Advice of Small Size. In *Algorithms and Data Structures*, volume 9214 of *Lecture Notes in Computer Science*, pages 40–53, Victoria, Canada, August 2015. Springer.
- [RO-F8] **Spyros Angelopoulos**, **Giorgio Lucarelli**, and Kim Thang Nguyen. Primal-Dual and Dual-Fitting analysis of online scheduling algorithms for generalized flow time problems. In *23rd European Symposium on Algorithms (ESA 2015)*, volume 9294, pages 35–46, Patras, Greece, September 2015.
- [RO-F9] Eric Angel, **Evripidis Bampis**, **Vincent Chau**, and Alexander Kononov. Min-Power Covering Problems. In *26th International Symposium (ISAAC 2015)*, volume 9472 of *Lecture Notes in Computer Science*, pages 367–377, Nagoya, Japan, December 2015.
- [RO-F10] **Carola Doerr** and Johannes Lengler. The (1+1) Elitist Black-Box Complexity of LeadingOnes. In *GECCO 2016 - Genetic and Evolutionary Computation Conference*, pages 1131–1138, Denver, United States, July 2016. ACM.

- [RO-F11] Eric Angel, **Evrpidis Bampis**, **Bruno Escoffier**, and Michail Lampis. Parameterized Power Vertex Cover. In *WG 2016, 42nd International Workshop on Graph-Theoretic Concepts in Computer Science*, volume 9941 of *Lecture Notes in Computer Science*, pages 97–108, Istanbul, Turkey, June 2016. Springer.
- [RO-F12] Edouard Bonnet, **Bruno Escoffier**, Vangelis Paschos, and Giorgios Stamoulis. A 0.821-Ratio Purely Combinatorial Algorithm for Maximum k-vertex Cover in Bipartite Graphs. In *LATIN 2016 : Theoretical Informatics - 12th Latin American Symposium*, volume 9644 of *Lecture Notes in Computer Science*, pages 235–248, Ensenada, Mexico, 2016. Springer.
- [RO-F13] **Christoph Dürr**, Christian Konrad, and **Marc Renault**. On the Power of Advice and Randomization for Online Bipartite Matching. In *The 24th European Symposium on Algorithms (ESA)*, Aarhus, Denmark, August 2016.
- [RO-F14] Marcin Bienkowski, Martin Böhm, Jaroslaw Byrka, Marek Chrobak, **Christoph Dürr**, Lukáš Folwarczny, Łukasz Jeż, Jiri Sgall, Kim Thang Nguyen, and Pavel Veselý. Online Algorithms for Multi-Level Aggregation. In *The 24th European Symposium on Algorithms (ESA)*, Aarhus, Denmark, August 2016.
- [RO-F15] **Spyros Angelopoulos**, **Christoph Dürr**, and Thomas Lidbetter. The expanding search ratio of a graph. In *The 33rd Symposium on Theoretical Aspects of Computer Science (STACS)*, volume 47 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 4 :1–9 :14, Orléans, France, February 2016. Nicolas Ollinger and Heribert Vollmer, Schloss Dagstuhl–Leibniz-Zentrum fuer Informatik.
- [RO-F16] Susanne Albers, **Evrpidis Bampis**, **Dimitrios Letsios**, **Giorgio Lucarelli**, and Stotz Richard. Scheduling on Power-Heterogeneous Processors. In Edgar Chávez Evangelos Kranakis, Gonzalo Navarro, editor, *LATIN 2016 : Theoretical Informatics*, volume 9644 of *Lecture Notes in Computer Science*, pages 41–54, Ensenada, Mexico, April 2016.
- [RO-F17] Marco Casazza, **Pierre Foulhoux**, and Stefano Secci. Securing Virtual Network Function Placement with High Availability Guarantees. In Hongbo Jiang Tilman Wolf Viktoria Fodor Gunnar Karlsson, Anna Brunstrom, editor, *IFIP Networking 2017*, volume 16th International IFIP TC6 Networking Conference, Networking 2017, Stockholm, June 12-16, 2017 of *IFIP Open Digital Library*, Stockholm, Sweden, June 2017.
- [RO-F18] **Fanny Pascual** and Krzysztof Rzdca. Optimizing egalitarian performance in the side-effects model of colocation for data center resource management. In *23rd International European Conference on Parallel and Distributed Computing (Euro-Par 2017)*, Lectures Notes in Computer Science, Santiago de Compostela, Spain, August 2017.

Autres produits présentés dans des colloques / congrès et des séminaires de recherche

- [RO-G1] **Pierre Foulhoux** and Olivier Spanjaard. Une nouvelle linéarisation de la moyenne ordonnée pondérée pour l’optimisation équitable. In *13ème Congrès de la Société Française de Recherche Opérationnelle et d’Aide à la Décision (ROADEF 2012)*, Angers, France, April 2012.
- [RO-G2] **Pierre Foulhoux**. Clique-branching formulation for the vertex coloring problem. In *International Symposium on Combinatorial Optimization (ISCO 2012)*, Athènes, Greece, April 2012.
- [RO-G3] **Claire Hanen** and Zdenek Hanzalek. Grouping tasks to save energy in a cyclic scheduling problem : a complexity study. In *ROADEF 2012*, Angers, France, April 2012. ROADEF.
- [RO-G4] Sylvie Borne, **Pierre Foulhoux**, Roland Grappe, Mathieu Lacroix, and Pierre Pesneau. Branch-and-Cut algorithm for the connected-cut problem. In *ROADEF - 15ème congrès annuel de la Société française de recherche opérationnelle et d’aide à la décision*, Bordeaux, France, February 2014. Société française de recherche opérationnelle et d’aide à la décision.
- [RO-G5] **Christoph Dürr**. Tutoriel : Gestion de tampon en ligne. In *ROADEF - 15ème congrès annuel de la Société française de recherche opérationnelle et d’aide à la décision*, Bordeaux, France, February 2014. Société française de recherche opérationnelle et d’aide à la décision.

- [RO-G6] **Fanny Pascual** and Olivier Spanjaard. Deux approches pour l'identification d'un axe politique gauche-droite à partir de données de votes par approbation. In *17ème congrès annuel de la Société française de recherche opérationnelle et d'aide à la décision (ROADEF)*, Compiègne, France, February 2016.
- [RO-G7] **Siao-Leu Phouratsamay, Safia Kedad-Sidhoum, and Fanny Pascual**. Two-level supply chain coordination under complete or asymmetric information. In *ISCO - 4th International Symposium on Combinatorial Optimization*, Salerne, Italy, 2016.
- [RO-G8] **Philippe Chrétienne, Pierre Fouilhoux, and Pascale Bendotti**. PERT, recherche d'ordonnancements stables en présence de durées incertaines. In *Congrès annuel de la société Française de Recherche Opérationnelle et d'Aide à la Décision (ROADEF)*, Compiègne, France, February 2016.
- [RO-G9] **Philippe Chrétienne**. Ordonnement réactif sur une machine conservant un nombre maximum de dates de début,. In *Congrès annuel de la société Française de Recherche Opérationnelle et d'Aide à la Décision (ROADEF)*, Metz, France, February 2017.
- [RO-G10] **Christoph Dürr, Thomas Erlebach, Nicole Megow, and Meißner Julie**. An Adversarial Model for Scheduling with Testing. In *Workshop on Models and Algorithms for Planning and Scheduling Problems (MAPSP)*, Proceedings of the 13th Workshop on Models and Algorithms for Planning and Scheduling Problems, pages 68–70, Seon, Germany, June 2017.

4. Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs

Plateformes et observatoires

- *the scheduling zoo*, a searchable bibliography on scheduling problems : since 2006

5. Produits et outils informatiques

Logiciels

- *tryalgo*, a Python library with general purpose algorithms and data-structures : since 2016
- *marmotte*, an open environment for modeling with Markov chains. This platform aims at providing the general scientific user with tools for creating Markov models and computing, or simulating, their behavior : since 2016

Bases de données / cohortes

Outils présentés dans le cadre de compétitions de solveurs

Outils d'aide à la décision

6. Brevets, licences et déclarations d'invention

7. Rapports d'expertises techniques, produits des instances de normalisation

8. Produits des activités didactiques

Ouvrages

- [RO-H1] **Christoph Dürr** and Jill-Jênn Vie. *Programmation efficace*. ellipses, March 2016

E-learning, moocs, cours multimedia, etc.

- *Tryalgo.org* : a didactic blog on algorithmic puzzles
- Since 2011 we yearly train students for the ACM/ICPC/SWERC programming competition

9. Produits destinés au grand public

Émissions radio, TV, presse écrite

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

Produits de médiation scientifique

— *Recreational Algorithms* at the yearly science fair (*Fête de la science* at UPMC) since 2014

Débats science et société

10. Autres produits propres à une discipline

Créations artistiques théorisées

Mises en scènes

Films

...

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

- Guest editor of a Special Issue in *Algorithmica* (2017)
- Review Editor in the Editorial Board of *Optimization*, a specialty of *Frontiers in Applied Mathematics and Statistics*

Direction de collections et de séries

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

Évaluation d'articles et d'ouvrages scientifiques

Évaluation de laboratoires (type Hceres)

- Participation in the HCRERES committee evaluating the Laboratoire d'informatique d'Avignon, 2017

Évaluation de projets de recherche

- Evaluation reports for grant proposals at the ANR (Agence Nationale de la Recherche) in 2012, 2014, 2017

3. Activités d'expertise scientifique

Activités de consultant

Participation à des instances d'expertises (type Anses) ou de normalisation

Expertise juridique

4. Organisation de colloques / congrès

We organized

- the International Symposium on Theoretical Aspects of Computer Science (STACS) in 2012
- the International Symposium on Experimental Algorithms (SEA) in 2015 — which we co-founded in 2001 (called WEA then)

- the the spring school "théorie des jeux algorithmique", in 2012
- COST training school, to be held at UPMC in fall 2017

We co-organized

- Tutorial chair at The 14th International Conference on Parallel Problem Solving from Nature (PPSN) 2016
- Co-organizers of the 8th International Workshop on Graph Searching : Theory and Algorithms (GRASTA) 2017
- Co-organizers of the International Workshop Search Games : Theory and Algorithms, Lorentz Center, Leiden, 2016
- Co-organizers of the summer school on optimization and decision making under uncertainty (supported by the GdR RO), Grenoble, 2017
- Co-organizers of the Dagstuhl seminar 17191 on Theory of Randomized Optimization Heuristics, May 2017

We served in the programming committees of

- the *congrès annuel de la Société française de Recherche Opérationnelle et d'Aide à la Décision* (ROA-DEF) in 2012–2017
- the International Symposium on Combinatorial Optimization (ISCO) in 2012
- the International Symposium on Theoretical Aspects of Computer Science (STACS) in 2012 as a PC co-chair
- the Workshop on Approximation Parameterized and EXact algorithms (APEX) in 2012–2013 as a PC co-chair
- the Workshop on Approximation and Online Algorithms (WAOA), 2012, 2014, once as a PC co-chair
- the Genetic and Evolutionary Computation Conference (GECCO) in 2013–2017, twice as a PC co-chair
- the IEEE Congress on Evolutionary Computation (CEC) in 2013–2016
- the International Conference on Parallel Problem Solving from Nature (PPSN) in 2014, 2016
- the Algorithms and Data Structures Symposium (WADS) 2015
- the International Symposium on Experimental Algorithms (SEA) 2015 as a PC chair
- the European Symposium on Algorithms (ESA) in 2015, 2017
- the International Conference on Distributed Computing and Networking (ICDCN) in 2015
- the International Joint Conference on Artificial Intelligence (IJCAI) in 2015
- the IEEE International Parallel & Distributed Processing Symposium (IPDPS) in 2015
- the ACM/SIGEVO Workshop on Foundations of Genetic Algorithms (FOGA) in 2015, 2017
- the bi-annual IEEE World Congress on Computational Intelligence (IEEE WCCI) in 2016
- the International European Conference on Parallel and Distributed Computing (Euro-Par) in 2016 as local chair
- the IEEE International Parallel & Distributed Processing Symposium in 2017
- the Biennial International Conference on Artificial Evolution (EA) in 2017
- the IEEE Symposium Series on Computational Intelligence (IEEE SSCI) in 2017
- the European Conference on Evolutionary Computation in Combinatorial Optimisation (EvoCOP) in 2017

We are in the steering committees of

- the Workshop on Approximation and Online Algorithms (WAOA) — which we co-founded
- the International Symposium on Theoretical Aspects of Computer Science (STACS)
- the International Symposium on Combinatorial Optimization (ISCO)
- the International Workshop on Lot Sizing (IWLS) — which we co-founded

5. Post-doctorants et chercheurs accueillis

- Giorgio Lucarelli, post-doc, 2013–2014
- Aboud Mourad, engineer, 2016

Only long term visits are mentioned with periods ranging from 2 weeks to 3 month.

- Flavio Guíñez (Center for Mathematical Modeling, Chile)
- Oncu Hazir (Middle East Technical University, Ankara, Turkey)
- Timo Kötzing (HPI Potsdam, Germany)

- Alexander Kononov (Sobolev Institute of Mathematics, Russia)
- Christian Konrad (Reykjavik University, Island)
- Johannes Lengler (ETH Zuerich, Switzerland)
- Håkan Lennerstad (Blekinge Tekniska Högskola, Sweden)
- Ioanis Millis (Athens University of Economics and Business, Greece)
- Konstantinos Panagiotou (Universität München, Germany)
- George Rouskas (North Carolina State University, USA)
- Krzysztof Rzdca (University of Warsaw, Poland)
- Maxim Sviridenko (University of Warwick, UK)

6. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

- *Electricité de France*, Feb 2012 – Jan 2015, Combinatorial optimization problems arising in the energy management and scheduling of maintenance

Bourses Cifre

- Cifre France Telecom : Nov 2009 – Oct 2012 : Philippe Crétienne : student Alexandre Blogowski
- Cifre Thales Air Systems : Nov 2010 – Oct 2013 : Philippe Crétienne : student Vincent Jeauneau
- Cifre Electricité de France : Nov 2015 – Oct 2018 : Pierre Fouilhoux : student Cécile Rottner

Créations de laboratoires communs avec une / des entreprise(s)

Création de réseaux ou d'unités mixtes technologiques

Créations d'entreprises, de start-up

7. Contrats de recherche financés par des institutions publiques ou caritatives

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

- Vice-chair of COST Action CA15140 : Improving Applicability of Nature-Inspired Optimization by Joining Theory and Practice (ImAppNIO), 2016-2020
- Project ECOSUD DYGAME (Dynamic Games Methods : theory, algorithmics and applications), 2015-2017

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

- ANR TODO : 2009 – 2013 : Time Versus Optimality in Discrete Optimization : budget hosted in University Paris-Dauphine
- ANR COCA : 2009 – 2013 : Combinatorial Optimization with Competing Agents : budget hosted in University Paris-Dauphine
- ANR COCORICO : 2014 – 2018 : Computation, Communication, Rationality and Incentives in Collective and Cooperative Decision Making : budget hosted in University Paris-Dauphine
- ANR Netoc : Nov 2011 - Oct 2015 : New Techniques in Online Algorithm
- ANR Marmotte : Jan 2013 – June 2017 : Develop a framework dedicated to Markov chain models
- FUI Dem@t-Factory : Dec 2008 - Mai 2012 : Digitalization of written heritage, theoretical and practical tools. (budget hosted in the SMA team)
- FUI RCSM : 2014–2017 : Risk, Credit Chain & Supply Chain Management. (budget hosted in the SMA team)
- PGMO : Sep 2014 – Aug 2017 : Carola Doerr : Towards a complexity Theory for black-box optimisation
- PGMO : Sep 2015 – Aug 2017 : Spyros Angelopoulos : Search and Surveillance Games : Theory, Algorithms and Applications
- PGMO : Jan 2016 – Dec 2017 : Carola Doerr and Fanny Pascual : How Randomness Helps in Scheduling Problems

- PGMO : Sep 2016 – Aug 2018 : Bruno Escoffier : Stability versus Optimality in Dynamic Environment Algorithmics
- PGMO : 2015-2017 : S. Kedad-Sidhoum : Stochastic Optimization for Planning Remanufacturing Activities in Reverse Supply Chains
- PGMO : 2016-2017 : S. Kedad-Sidhoum : Optimizing energy allocation using lot sizing models

Contrats avec les collectivités territoriales

Contrats financés dans le cadre du PIA

Contrats financés par des associations caritatives et des fondations (ARC, FMR, FRM, etc.)

8. Indices de reconnaissance

Prix

- Best paper awards in the Genetic and Evolutionary Computation Conference (GECCO) 2016
- Best paper awards in the International Workshop on Algorithms, Models and Tools for Parallel Computing on Heterogeneous Platforms (HeteroPar) 2013
- Participant in the Fast Track Program of the Robert Bosch Stiftung for excellent women in science, Sep 2012 – Aug 2014

Distinctions

Responsabilités dans des sociétés savantes

- Members of the scientific board of the "groupement de recherche" on Operation Research (GdR RO), where we animate several working groups

Contrats financés dans le cadre du PIA

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

Only long term visits (at least 2 weeks) are mentioned.

- Christoph Dürr visited the University of Santiago, Chile, for 3 weeks in oct 2013, for 4 weeks in Oct 2014, and for 2 weeks in Oct 2015
- Spyros Angelopoulos visited the Center for Advanced Studies, University of Munich, in June-July 2016

Annexe 4 EQUIPE SMA

Nom de l'équipe : Systèmes Multi-Agents

Acronyme : SMA

Nom du responsable pour le contrat en cours : Amal El Fallah Seghrouchni

Nom du responsable pour le contrat à venir : Amal El Fallah Seghrouchni

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

Articles scientifiques

- [SMA-J-1] Khaled Belahcene, Christophe Labreuche, **Nicolas Maudet**, Vincent Mousseau, and Wassila Ouerdane. Explaining robust additive utility models by sequences of preference swaps. *Theory and Decision*, 82(2) :151–183, 2017.
- [SMA-J-2] Yann Chevaleyre, Ulle Endriss, and **Nicolas Maudet**. Distributed Fair Allocation of Indivisible Goods. *Artificial Intelligence*, 242 :1–22, January 2017.
- [SMA-J-3] Maryam Amiri, Hussein Al Osman, Shervin Shirmohammadi, and **Maha Abdallah**. Toward Delay-Efficient Game-Aware Data Centers for Cloud Gaming. *ACM Transactions on Multimedia Computing, Communications, and Applications (TOMCCAP)*, 12(5s), September 2016.
- [SMA-J-4] Gérard Ballot, **Jean-Daniel Kant**, and Olivier Goudet. Un modèle multi-agents du marché du travail français, outil d'évaluation des politiques de l'emploi. L'exemple du contrat de génération. *Revue Economique*, 67(4) :831–869, 2016.
- [SMA-J-5] Kei-Léo Brousmiche, **Jean-Daniel Kant**, Nicolas Sabouret, and François Prenot-Guinard. From Beliefs to Attitudes : Polias, a Model of Attitude Dynamics Based on Cognitive Modeling and Field Data. *Journal of Artificial Societies and Social Simulation*, 19(4) :2, October 2016.
- [SMA-J-6] Ahmed Chawki Chaouche, **El Fallah Seghrouchni**, **Amal**, Jean-Michel Ilié, and Djamel Eddine Saïdouni. Learning from situated experiences for a contextual planning guidance. *Journal of Ambient Intelligence and Humanized Computing*, 7(4) :555–566, August 2016.
- [SMA-J-7] Olivier Goudet, **Jean-Daniel Kant**, and Gérard Ballot. WorkSim : A Calibrated Agent-Based Model of the Labor Market Accounting for Workers' Stocks and Gross Flows. *Computational Economics*, 50(1) :21–68, July 2016.
- [SMA-J-8] Guillaume Lozenguez, Lounis Adouane, **Aurélie Beynier**, Abdel-illah Mouaddib, and Philippe Martinet. Punctual versus continuous auction coordination for multi-robot and multi-task topological navigation. *Autonomous Robots*, 40(4) :599–613, April 2016.
- [SMA-J-9] Radja Boukharrou, Ahmed-Chawki Chaouche, **Amal El Fallah Seghrouchni**, Jean-Michel Ilié, and Djamel Eddine Saïdouni. Dealing with temporal failure in ambient systems : a dynamic revision of plans. *Journal of Ambient Intelligence and Humanized Computing*, 6(3) :325–336, June 2015.
- [SMA-J-10] Feirouz Ksontini, René Mandiau, **Zahia Guessoum**, and Stéphane Espié. Affordance-based Agent model for road traffic simulation. *Autonomous Agents and Multi-Agent Systems*, page To appear, 2015.

- [SMA-J-11] Sophie Martin, Isabelle Alvarez, and **Jean-Daniel Kant**. Micro/macro viability analysis of individual-based models : Investigation into the viability of a stylized agricultural cooperative. *Complexity*, 21(2) :276–296, 2015.
- [SMA-J-12] Sara Jane Casare, Anarosa Brandão, **Zahia Guessoum**, and Jaime S. Sichman. Medee Method Framework : a situational approach for organization-centered MAS. *Autonomous Agents and Multi-Agent Systems*, 28(3) :430–473, May 2014.
- [SMA-J-13] Ahmed Chawki Chaouche, **Amal El Fallah Seghrouchni**, Jean-Michel Ilié, and Djamel Eddine Saidouni. A Higher-order Agent Model with Contextual Management for Ambient Systems. *Transactions on Computational Collective Intelligence XVI*, 8780 :146–169, September 2014. 146-169.
- [SMA-J-14] **Jean-Pierre Briot**. Composants et agents : évolution de la programmation et analyse comparative. *Technique et Science Informatiques*, 33(1-2) :85–115, January 2014.
- [SMA-J-15] Andrei Olaru, Adina Magda Florea, and **Amal El Fallah Seghrouchni**. A Context-Aware Multi-Agent System as a Middleware for Ambient Intelligence. *Journal on Mobile Networks and Applications (MONET)*, 18(3) :429–443, June 2013.
- [SMA-J-16] Guillaume Lozenguez, Lounis Adouane, **Aurélie Beynier**, Abdel-Ilah Mouaddib, and Philippe Martinet. Map Partitioning to Approximate an Exploration Strategy in Mobile Robotics. *Multiagent and Grid Systems - An International Journal of Cloud Computing*, 8(3) :275–288, 2012.

Articles de synthèse / revues bibliographiques

Autres articles (articles publiés dans des revues professionnelles ou techniques, etc.)

N/A

2. Ouvrages

Monographies et ouvrages scientifiques, éditions critiques, traductions

N/A.

Direction / édition scientifique

- [SMA-D-1] **Amal El Fallah Seghrouchni**, Fuyuki Ishikawa, Laurent Herault, and Tokuda Hideyuki. *Enablers for smart cities*. July 2016.
- [SMA-D-2] Pierre Chevaillier, **Amal El Fallah Seghrouchni**, Domitile Lourdeaux, and Patrick Reignier. *Systèmes d'Intelligence Ambiante et Systèmes Immersifs*, volume 29 of *Revue d'Intelligence Artificielle*. Hermes Science Publication, 2015.

Chapitres d'ouvrage

- [SMA-O-1] **Philippe Codognot**, Danny Munera, Daniel Diaz, and Salvador Abreu. Parallel Local Search. In Springer, editor, *Handbook of Parallel Constraint Reasoning*. August 2017.
- [SMA-O-2] **Jean-Pierre Briot**, Marta de Azevedo Irving, José Eurico Vasconcelos Filho, Gustavo Mendes de Melo, Isabelle Alvarez, Alessandro Sordoni, and Carlos José Pereira de Lucena. Participatory Management of Protected Areas for Biodiversity Conservation and Social Inclusion. In Diana F. Adamatti, editor, *Multi-Agent Based Simulations Applied to Biological and Environmental Systems*, Advances in Computational Intelligence and Robotics (ACIR) Book Series, pages 295–332. IGI Global, January 2017.
- [SMA-O-3] Sylvain Bouveret, Yann Chevaleyre, and **Nicolas Maudet**. Fair Division of Indivisible Goods. In Ulle Endriss Jérôme Lang Felix Brandt, Vincent Conitzer and Ariel D. Procaccia, editors, *Handbook of Computational Social Choice*. Cambridge University Press, 2016.
- [SMA-O-4] Ferdinand Piette, **Amal El Fallah Seghrouchni**, Costin Caval, Patrick Taillibert, and Cédric Diant. A Multi-Agent Middleware for Deployment of Ambient Applications. In *Enablers for Smart Cities*. July 2016.

Thèses publiées / éditées

Katia Potiron, Amal El Fallah Seghrouchni, Patrick Taillibert. From Fault Classification to Fault Tolerance for Multi-Agent Systems. Springer Briefs in Computer Science, Springer 2013, ISBN 978-1-4471-5045-9. (The thesis of Katia Potiron was co-advised by Amal El Fallah Seghrouchni, Patrick Taillibert and published by Springer).

Olivier Goudet : Modélisation et simulation du marché du travail français . Advisor : Jean-Daniel Kant. Defended 19/11/2015.

Kei-Léo Brousmiche : Modélisation et simulation de la formation et de la dynamique des attitudes basées sur les croyances. CIFRE UPMC-Airbus Defence and Space. Advisor : Nicolas Sabouret and Jean-Daniel Kant. Defended 16/12/2015

Kevin Chapuis : Modélisation et simulation multi-agents de la satisfaction au travail . CIFRE UPMC-Technologia. Advisor : Jean-Daniel Kant. Defended 16/01/2016.

Anastasia Jonathan Damamme : Allocation de ressources distribuée. Advisors : Aurélie Beynier and Nicolas Maudet. Defended 12/12/2016

Emmanuel Hadoux : Markovian sequential decision-making in non-stationary environments : application to argumentative debates. Advisors : Aurélie Beynier, Nicolas Maudet, Paul Weng. Defended 26/11/2015

Hang Luo : Influence in Combinatorial and Collective Decision-making –by the Example of UN Security Council Voting. UPMC-Tsinghua University. Co-advisors : Prof. Meng and N. Maudet.

Patrick Simo-Kanmeugne : Algorithmes pour la navigation réaliste en environnement urbain. CIFRE UPMC-Thales. Advisor : Aurélie Beynier. Defended 11/07/2014

Guillaume Lozenguez : Stratégie coopérative pour la mise en œuvre d'une flotte de robots mobiles dans un milieu ouvert et encombré. Advisors : Abdel-illah Mouaddib, Aurélie Beynier, Lounis Adouane, Philippe Martinet. Defended 11/12/2012

Ferdinand Piette : Proposition d'un intergiciel agent-artifact pour le déploiement, la configuration et la supervision d'applications dans un système d'intelligence ambiante ». 17/01/ 2017. Co-advisors : Amal El Fallah Seghrouchni (LIP6) and Cédric Dinont (ISEN - Lille).

Costin Caval (CIFRE with Thales Airborne Systems) : Tolérance aux fautes imprévues dans les systèmes multi-agents critiques. 31/05/2016.

Pierre-Yves Dumas (CIFRE with Thales Airborne Systems) : Re-planification dynamique d'une flottille de drones en mission. 03/07/2015.

Ahmed C. Chaouche (Co-tutelle with Constantine University) : Une approche multi-agent pour la conception d'applications d'intelligence ambiante : un modèle formel basé sur la planification et l'apprentissage.15/03/2015 Co-advisors : Amal El Fallah Seghrouchni (LIP6), Jean-Michel Ilie (LIP6) and Djamel Saidouni (Constantine-Algérie).

Cédric Herpson (Project DematFactory) : Apprentissage et diagnostic multi-agents. 10/12/ 2013. Co-advisers : Amal El Fallah Seghrouchni (LIP6) and Vincent Corruble (LIP6).

Cyril Poulet (Project TerraDynamica) : Coordination of autonomous agents in a dynamic environment. 23/04/2013 Co-advisers : Amal El Fallah Seghrouchni (LIP6) and Vincent Corruble (LIP6).

Nguyen Trong Khanh (Grant IFI-Hanoi, Viet Nam) : Plateforme multi-agents de simulation collaborative.30/09/2013 Co-advisers : Amal El Fallah Seghrouchni (LIP6), Nicolas Marilleau (IRD) and Hô Tuong Vinh (IFI Hanoi, Viet Nam).

Sylvain Dekoker (CIFRE with Thales Airborne Systems) : ALMA : Un langage de programmation d'agents cognitifs. 14/05/2012. o-advisers : Amal El Fallah Seghrouchni (LIP6) and Patrick Taillibert.

Adnan Hashmi (Cooperation GRANT France-Pakistan) : An Agent Oriented Programming Language integrating Temporal Planning and the Plans Coordination Mechanisms. 24/01/2012.

3. Colloques / congrès, séminaires de recherche

Éditions d'actes de colloques / congrès

[SMA-E-1] Costin Badica and **Amal El Fallah-Seghrouchni** and **Aurélie Beynier** and David Camacho and **Cédric Herpson** and Koen V. Hindriks and Paulo Novais. *Intelligent Distributed Computing X - Proceedings of the 10th International Symposium on Intelligent Distributed Computing - IDC 2016, Paris, France, October 10-12 2016.* , France, 2017.

[SMA-E-2] **François Pachet** and Amílcar Cardoso and **Vincent Corruble** and Fiammetta Ghedini. *Proceedings of the Seventh International Conference on Computational Creativity, UPMC, Paris, France, June 27 - July 1, 2016.*, France, 2016.

Articles publiés dans des actes de colloques / congrès

- [SMA-C-1] Stéphane Airiau, Elise Bonzon, Ulle Endriss, **Nicolas Maudet**, and Julien Rossit. Rationalisation of Profiles of Abstract Argumentation Frameworks. In *AAMAS 2016, Proceedings of the 15th International Conference on Autonomous Agents and Multiagent Systems*, Singapore, Singapore, May 2016.
- [SMA-C-2] Elise Bonzon, Jérôme Delobelle, Sébastien Konieczny, and **Nicolas Maudet**. A Comparative Study of Ranking-based Semantics for Abstract Argumentation. In *30th AAAI Conference on Artificial Intelligence (AAAI-2016)*, Phoenix, United States, February 2016.
- [SMA-C-3] **Aurélie Beynier**. Cooperative Multiagent Patrolling for Detecting Multiple Illegal Actions Under Uncertainty. In *International Conference on Tools with Artificial Intelligence (ICTAI)*, San José, United States, November 2016. Best Paper.
- [SMA-C-4] Maryam Amiri, Hussein Al Osman, Shervin Shirmohammadi, and **Maha Abdallah**. An SDN Controller for Delay and Jitter Reduction in Cloud Gaming. In *MM 2015 - ACM international conference on Multimedia*, pages 1043–1046, Brisbane, Australia, October 2015. ACM.
- [SMA-C-5] Anastasia Damamme, **Aurélie Beynier**, Yann Chevaleyre, and **Nicolas Maudet**. The Power of Swap Deals in Distributed Resource Allocation. In *The 14th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2015)*, pages 625–633, Istanbul, Turkey, May 2015.
- [SMA-C-6] Emmanuel Hadoux, **Aurélie Beynier**, **Nicolas Maudet**, Paul Weng, and Anthony Hunter. Optimization of Probabilistic Argumentation With Markov Decision Models. In *International Joint Conference on Artificial Intelligence*, Buenos Aires, Argentina, July 2015.
- [SMA-C-7] Quentin Reynaud, Jean-Yves Donnart, and **Vincent Corruble**. Evaluating the impact of anticipation on the efficiency and believability of virtual agents. In *14th International Conference (IVA 2014)*, Boston, MA, United States, August 2014. Springer.
- [SMA-C-8] Patrick Simo Kanmeugne and **Aurélie Beynier**. Simulating Autonomous Pedestrians Navigation : A Generic Multi-Agent Model to Couple Individual and Collective Dynamics. In *Eighth International Workshop on Agents in Traffic and Transportation (ATT 2014)*, Paris, France, May 2014.
- [SMA-C-9] **Cédric Herpson**, **Amal El Fallah Seghrouchni**, and **Vincent Corruble**. ADS2 : Anytime Distributed Supervision of Distributed Systems that Face Unreliable or Costly Communication. In *ECAI 2014 : 21st European Conference on Artificial Intelligence*, volume 263 of *Frontiers in Artificial Intelligence and Applications*, page 1264, Prague, Czech Republic, August 2014. IOS Press.
- [SMA-C-10] Sabrina Campano, Nicolas Sabouret, Etienne De Sevin, and **Vincent Corruble**. An Evaluation of the COR-E Computational Model for Affective Behaviors. In *12th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2013)*, Saint-Paul, Minnesota, United States, May 2013. IFAAMAS.
- [SMA-C-11] Anisse Ismaili, Evripidis Bampis, **Nicolas Maudet**, and Patrice Perny. A study on the stability and efficiency of graphical games with unbounded treewidth. In *12th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2013)*, pages 263–270, Saint Paul, MN, United States, May 2013.
- [SMA-C-12] Feirouz Ksontini, **Zahia Guessoum**, René Mandiau, and Stéphane Espié. Using ego-centered affordances in multi-agent traffic simulation. In *12th International Conference on Autonomous Agents and Multiagent systems, AAMAS 2013*, pages 151–158, Saint Paul, Minnesota, United States, May 2013.
- [SMA-C-13] Alberto Maran, **Nicolas Maudet**, Maria Silvia Pini, Francesca Rossi, and Kristen Brent Venable. A Framework for Aggregating Influenced CP-nets and Its Resistance to Bribery. In *The twenty-seventh AAAI conference (AAAI-2013)*, Bellevue, Washington, United States, July 2013.
- [SMA-C-14] Laurent Navarro, **Vincent Corruble**, Fabien Flacher, and Jean-Daniel Zucker. A Flexible Approach to Multi-Level Agent-Based Simulation with the Mesoscopic Representation. In *12th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2013)*, Saint Paul, United States, May 2013. IFAAMAS.

[SMA-C-15] Cyril Poulet, **Vincent Corruble**, and **Amal El Fallah Seghrouchni**. Working as a team : using social criteria in the timed patrolling problem. In *24th IEEE International Conference on Tools with Artificial Intelligence (ICTAI)*, pages 933–938, Athènes, Greece, November 2012. IEEE.

Autres produits présentés dans des colloques / congrès et des séminaires de recherche

4. Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs

N/A.

Plateformes et observatoires

N/A.

5. Produits et outils informatiques

Logiciels

- Flow machines : The goal of Flow Machines is to generate music autonomously or in collaboration with human artists. Coordination achieved by F. Pachet.
- Terra Dynamica : This program intends to populate and animate a virtual city in a realistic way (cars and inhabitants dynamically and credibly adapt their behaviours to events). Coordination achieved by V. Corruble.
- Medee : Medee Method Framework allows the development of organization-centered MAS. It is developed under the supervision of Z. Guessoum
- RAMSES : RAMSES is a Project of Research and Innovation funded by Thales Airborne System- It was contracted by Amal El Fallah Seghrouchni. The project output is a Multi-Agent Architecture endowed with scheduling ability to optimize the use of resources (sensors) on the next generation of airborne platforms.

Bases de données / cohortes

Outils présentés dans le cadre de compétitions de solveurs

Outils d'aide à la décision

- WorkSim : WorkSim is a calibrated agent-based program used to model and simulate the French labor market. It was created and is coordinated by J-D. Kant.
- SmaCD : This program goal is to automatically and dynamically detect and extract community structures in Social Networks. Coordination achieved by Z. Guessoum

6. Brevets, licences et déclarations d'invention

- “Méthodologie de formation et exploration de gestion participative de parcs nationaux et d'espaces protégés pour la conservation de la biodiversité et l'inclusion sociale (SimParc) et prototype informatique associé”, dépôt logiciel N° IDDN.FR.001.170020.000.S.P.2012.000.10800, Agence pour la Protection des Programmes, 26 April 2012.

7. Rapports d'expertises techniques, produits des instances de normalisation

- A. El Fallah Seghrouchni, member of the cartography group in the context of - Stratégie France I.A.(2017).
- J.-P. Briot, La coopération scientifique avec le Brésil, Bilan et perspectives, Conseil de politique européenne et internationale (CPEI) – Réunion du 13 janvier 2015, CNRS, Paris, 41 pages.
- J.-P. Briot, International et interdisciplinarité – Politiques de soutien à l'interdisciplinarité, pages 25–29, DERCI/CNRS, Paris, June 2013.

- J.-P. Briot et V. da Costa, International et Innovation – Politiques de soutien à l’innovation, pages 59–67, DERCI/CNRS, Paris, June 2013.
- J.-P. Briot, Audition dans le cadre du Projet Brésil de la Stratégie Nationale de Recherche et d’Innovation (SNRI), MENESR, Paris, 19 November 2012.
- J.-P. Briot, 63 Notes d’information, CNRS–Brésil, Rio de Janeiro–Paris.
- J.-P. Briot, 6 Bulletins Electroniques (BE) d’information, ADIT, Paris.

9. Produits destinés au grand public

Émissions radio, TV, presse écrite

- Several media interventions by J.-D. Kant on the project WorkSim and the simulation of the French Labor Law "El Khomri". Radio : France Info; TV : Mediapart; Press : Le Monde, Marianne, L’Obs-Rue89, La Tribune, Mediapart, The Conversation, Challenges, Sud-Ouest. March-May 2016.
cf. <http://worksim.lip6.fr>
- Interview of J.-P. Briot on final considerations and on experience of collaboration with CNRS, Seminar “International Cooperation in Science, Technology and Innovation : Panorama, Challenges and Opportunities”, organized by FAPERJ (Fundação de Amparo a Pesquisa do Estado do Rio de Janeiro) and ABC (Academia Brasileira de Ciências), DVD, Rio de Janeiro, RJ, Brazil, 30 April 2013.
- Interview of J.-P. Briot on scientific cooperation between France and Brazil in marine sciences, Workshop “Brazil – France Meeting on Marine Sciences”, Arraial do Cabo, RJ, Brazil, 12–13 March 2012, Globo National TV Channel, Brazil, 12 March 2012.

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

- J.-P. Briot, Interview with Jean-Pierre Briot, former representative of CNRS in Brazil. EURAXESS Links Brazil Newsletter, Europe–Brazil, (21) :7–9, January 2015.

Produits de médiation scientifique

- At Journées numériques de Paris Descartes, V. Corruble gave the talk "Smart city : simuler la vie d’une métropole par l’intelligence artificielle"; A. El Fallah Seghrouchni gave the talk "Game of Drones : les bouleversements des systèmes distribués"; and J.-D Kant talk : "Les machines peuvent-elles prédire les comportements humains ". 17 November 2016.

Débats science et société

J.-D. Kant was auditioned by a joint commission of French National Senate and National Assembly (OPECST) to discuss issues on Artificial Intelligence. Public Audition, 19/01/17.

10. Autres produits propres à une discipline

Créations artistiques théorisées

Mises en scènes

Films

N/A.

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

- International Journal of Agent-Oriented Software Engineering (Amal El Fallah Seghrouchni, Editorial Board Member)

- Online Journal in Open Access Multi-agent Systems (Amal El Fallah Seghrouchni, Editor-in-Chief)
- Journal of Artificial Intelligence Research (Nicolas Maudet, Editorial Board Member)
- Journal of Autonomous Agents and Multi-Agent Systems (Nicolas Maudet, Editeur Associé)
- Revue d'Intelligence Artificielle (Amal El Fallah Seghrouchni (2010-2013), Nicolas Maudet (2016-), membres du Comité Editorial)

Direction de collections et de séries

N/A.

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

Évaluation d'articles et d'ouvrages scientifiques

- Reviewer d'articles pour revues scientifiques : AIJ (A. Beynier), TNNLS, RIA, JASSS, Advances in Complex Systems, Plos, International Journal of Microsimulation, Journal of Environmental Psychology, Neurocomputing, JASSS, ACM Transactions on Multimedia Computing Communications and Applications (M. Abdallah), IEEE Internet Computing (M. Abdallah).
- Book Editorial Advisory Board : Multi-Agent Based Simulations Applied to Biological and Environmental Systems, IGI-Global, 2017 (J.-P. Briot).

Évaluation de laboratoires (type Hceres)

- A. El Fallah Seghrouchni, member of the HCERES for the evaluation of CESI institute (2016).
- A. El Fallah Seghrouchni, member of the AERES for the evaluation of LIFL/LAGIS and the creation of CRISTAL lab (2014).
- Maha Abdallah, Scientific Advisory Board member at : Simula Research Laboratory, Norway (2014-2016).

Évaluation de projets de recherche

- Comité d'évaluation ANR CONTINT 2012 (A. El Fallah Seghrouchni)
- Expert ANR CONTINT 2013 (A. Beynier), CE25 Infrastructures 2017 (Z. Guessoum).
- Évaluateur de projets de l'Institut Universitaire d'Ingénierie pour la Santé (AAP2 en 2014, AAP3 en 2015) (A. El Fallah Seghrouchni)
- Évaluateur de projets du Labex SMART (A. El Fallah Seghrouchni)
- Programme Emergence(s), Direction du Développement économique, de l'Emploi et de l'Enseignement supérieur, Ville de Paris, May 2016 and May 2017 (J.-P. Briot).
- Programme de recherche interdisciplinaire Convergence, Sorbonne Universités, March 2014 (J.-P. Briot).
- Bourses du Programme Réseau Français d'Etudes Brésiliennes (REFEB), MAEDI, January 2012 (J.-P. Briot).

3. Activités d'expertise scientifique

Activités de consultant

- A. El Fallah Seghrouchni : External Collaborator at Thales Airborne Systems (2009-2015). Expertise on autonomous systems and UAVs (A.I. and M.A.S techniques).
- J.-P. Briot is scientific consultant for the Project Flow Machines, ERC coordinated by François Pachet, about interactive creative processes (notably for creating musical contents), Sony Computer Science Laboratory–Paris – LIP6/UPMC, September 2015–July 2017.

Participation à des instances d'expertises (type Anses) ou de normalisation

Expertise juridique

4. Organisation de colloques / congrès

- Organisation
 - AAMAS 2014 : International Conference on Autonomous Agents. (Local chair : A. El Fallah Seghrouchni and organisation co-chair : Vincent Corruble).
 - NetGames 2015, 2012 : ACM/IEEE International Workshop on Network and Systems Support for Games (M. Abdallah).
 - DSVCC 2015 : IEEE Workshop on Delay-Sensitive Video Computing in the Cloud (M. Abdallah).
 - C-Game 2014 : IEEE Workshop on Cloud Gaming Systems and Networks (M. Abdallah).
 - IDC 2016 : International Symposium on Distributed Computing (General Chair : A. El Fallah Seghrouchni; PC Chair : A. Beynier and Local Chair : C. Herpson).
 - ICCV 2016 : International Conference on Computational Creativity 2016 (F. Pachet and V. Corruble).
 - Dagstuhl Seminar 2015 : Computational Social Choice : Theory and Applications (N. Maudet).
 - MAGECO 2016, 2014, 2013 : Journées sur les modèles basés agents en économie (J-D. Kant).
 - Knowledge Café Creative Participatory Methodologies for Protected Areas Management : New Approaches and Challenges, IUCN 2012 (J-P. Briot).
- Chairing
 - General Chair : IDC 2016 (A. El Fallah Seghrouchni).
 - Program Chair : IDC 2016 (A. Beynier), IDC 2015 (A. El Fallah Seghrouchni), EMAS 2013 and EMAS 2017 (A. El Fallah Seghrouchni);
 - General Chair and PC Chair : NetGames 2015, 2012; DSVCC 2015; C-Game 2014 (M. Abdallah);
 - Finance Chair at AAMAS 2017, Area Expert at AAMAS 2016, Innovative Applications Track Chair at AAMAS 2015 (A. El Fallah Seghrouchni).
 - Area chair ACM Multimedia 2017 (Multimedia Systems and Middleware area) (M. Abdallah).
 - Program chair of the European Agent Systems Summer School EASSS 2016 (A. El Fallah Seghrouchni).
 - Steering Committee : ProMAS 2012-2013 and EMAS 2017-2013 (A. El Fallah Seghrouchni); NU-COM/SBCM, NetGames (M. Abdallah).
- SPC and PC members
 - International Conferences : IJCAI 2017 (SP, 2), 2016 (SP, 2), 2015; ECAI 2016 (SP); AAMAS 2014. PRIMA 2017 (SP, 2); AAMAS 2017 (2), 2016 (3), 2015 (3), 2014, 2012 (3); AAAI 2015; ECAI 2016; IDC 2017, 2016 (2); ICRA 2012, 2010; ICCV; IEEE CIG; Culture and Computing 2017, 2015, 2013; Digital Government Research 2017; EPIA 2017; ACM Multimedia 2015, 2013; IEEE International Conference on Multimedia and Expo 2013, 2012; IEEE Consumer Communications and Networking Conference 2016, 2015, 2014; Artificial Economics (4); Social Simulation Conference-ESSA (5); Word Congress on Social Simulation (2).
 - National Conferences : JFSMA.
 - International Workshops : AGERE ! 2014; Workshop MSDM - AAMAS 2013, 2012, 2011, 2010; Workshop OptMas - AAMAS 2017, 2016, 2015; NetGames 2017, 2014, 2013; ACM Workshop on Network and Operating Systems Support for Digital Audio and Video 2014, 2013, 2012; Workshop on Micro Aerial Vehicle Networks, Systems, and Applications for Civilian Use 2016, 2015; Workshop on Massively Multiuser Virtual Environments 2013-2016; EMAS 2013-2017.
 - National Workshops : SBCM 2017, 2015, 2013; SBC WCAMA 2017, 2016, 2015, 2014, 2013.
 - Demonstration Track Committee : IJCAI 2017.

5. Post-doctorants et chercheurs accueillis

- Sylvain Ductor, project FUI RSCSM, July/June 2016, Post-doc
- Loïs Vanhé, RAMSES project, January/September 2016, Post-doc
- Etienne De Sevin, Terra Dynamica, January 2012/November 2012, Post-doc

- Ulle Endriss, ILLC, University of Amsterdam. February/March 2016. Invited Professor.
- Anarosa F. Brandao, UNiversity of Sao Paulo, September 2014/August 2015. Invited Professor.
- Sara J. Casare, IBM of Sao Paulo, September 2015/August 2016. Invited Professor.

6. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

- *THALES Airborne Systems* : RAMSES – Research and Innovation Project - 1 year (2016) - Contractor : Amal El Fallah Seghrouchni.
- *THALES Airborne Systems* : GFAI – Research and Innovation Project (Unforeseen Faults Tolerance) - 1 year (2014) - Contractor : Amal El Fallah Seghrouchni.

Bourses Cifre

- *Airbus Defence and Space* (2012-2015). Modélisation et simulation de la formation et de la dynamique des attitudes basées sur les croyances (projet Polias). Thèse de Kei Brousmiche soutenue le 16/12/2015. Advisors : Nicolas Sabouret et Jean-Daniel Kant.
- *IBM*. Karim El Mernissi- Sujet de thèse : "Explanation Generation for Rule-Based Systems". 2014-2017. Advisor : Nicolas Maudet.
- *Kyriba*. Cédric Buron- Sujet de thèse : "Un système multi-agents pour gérer les échanges BFR entre des acteurs". 2014-2017. Advisor : Zahia Guessoum.
- *Technologia* (2012-2015). Modélisation et simulation multi-agents de la satisfaction au travail (projet HappyWork). Thèse de Kevin Chapuis soutenue le 16/01/2016. Advisor : Jean-Daniel Kant.
- *THALES Airborne Systems*. Ludovic Grivault - Sujet de Thèse : «Une approche multi-agent pour la coordination des ressources au sein d'un système de capteurs distribués sur plateforme aéroportée ». Depuis Octobre 2014. Advisor : Amal El Fallah Seghrouchni.
- *THALES Airborne Systems* Costin Caval. Sujet de thèse : « Tolérance aux fautes imprévues dans les systèmes multi-agents critiques ». Soutenue le 31 Mai 2016. Advisor : Amal El Fallah Seghrouchni.
- *THALES Airborne Systems* Pierre-Yves Dumas. Sujet de thèse : « Re-planification dynamique d'une flottille de drones en mission ». Soutenue le 3 Juillet 2015. Advisor : Amal El Fallah Seghrouchni.
- *THALES Airborne Systems* Sylvain Dekoker- Sujet de thèse : Langage de programmation d'agents cognitifs. Soutenue le 14 May 2012. Advisor : Amal El Fallah Seghrouchni.
- *THALES Services : Thesis* (2010-2013). Niveau de Détail Dynamique et Progressif de l'Intelligence Artificielle pour le passage à l'Echelle dans la Simulation de Comportements Humains à Base d'Agents. Thèse de Laurent Navarro soutenue le 24/09/2013. Advisor : Vincent Corruble.
- *THALES Training and Simulation* (2011-2014). Une architecture hybride et flexible pour agents virtuels en environnement urbain : Problématiques de la composition de comportements et de l'anticipation (projet FUI Terra Dynamica). Thèse de Quentin Reynaud soutenue le 29/04/2014. Advisor : Vincent Corruble.
- *THALES Training and Simulation* (2010-2014). Simulation crédible des déplacements de piétons en temps réel : modèle microscopique à influence macroscopique (projet FUI Terra Dynamica). Thèse de Patrick Simo Kanmeugne soutenue le 11/07/2014. Advisor : Aurélie Beynier.
- *THALES Training and Simulation* (2010-2015). Étude et définition de mécanismes sémantiques dans les environnements virtuels pour augmenter la crédibilité comportementale des agents : utilisation d'une ontologie de services (projet FUI Terra Dynamica). Thèse de Kenza Harkouken-Saiah soutenue le 7/10/2015. Advisor : Nicolas Sabouret.

Créations de laboratoires communs avec une / des entreprise(s)

Création de réseaux ou d'unités mixtes technologiques

- Creation and Direction of the Bureau CNRS Brésil (CNRS Brasil – Permanent representation of CNRS in Brazil), Rio de Janeiro, RJ, Brazil, 2010–2014 (J.-P. Briot).

- Cofounder and co-leader of MAGECO, the first French network of research on Agent-Based Computational Economics (J.D. Kant)

Créations d'entreprises, de start-up

7. Contrats de recherche financés par des institutions publiques ou caritatives

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

- *ERC Project Flow Machines* (2012–2017), Sony CSL-Paris and LIP6/UPMC. Coordinator : François Pachet.
- *Project FP7 ERRIC* : Empowering Romanian Research on Intelligent Information Technologies (FP7-REGPOT-2010-1), 2010-2013. Coordination : Pr. Adina Magda Florea. Participant : Amal El Fallah Seghrouchni.
- *Projet TARDIS, FP7* (2011-2014) Training young Adult's Regulation of emotions and Development of social Interaction Skills. FP7-ICT-2011-7. Coordination : Nicolas Sabouret.
- *Réseau COST, Computational Social Choice*. Responsable de workpackage : Nicolas Maudet.
- *PHC Van Gogh Program, France-Netherlands* (2016), Scaling Networked Virtual Environments with Social Overlays. Project Coordinator : Maha Abdallah.
- *PICS CNRS* (2017–2019) "Ingénierie de systèmes multi-agents", Programme Projets Internationaux de Coopération Scientifique (PICS), CNRS, with Brazil (DI/PUC-Rio, RJ, Brazil). Coordination : Jean-Pierre Briot.

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

- *Projet RCSM : FUI-Finance Innovation 2013-2017* Le projet RCMS vise la simulation et l'optimisation du BFR, de la trésorerie et de la supply chain financière, en intégrant l'évaluation des risques opérationnels et financiers dans une relation donneur d'ordres/fournisseurs/organismes de financement, et en tenant compte de la dématérialisation des échanges.
- *Projet TerraDynamica, FUI 8* (2010-2013). Le projet TerraDynamica visait à produire les technologies et briques logicielles pour la simulation de la vie dans la ville, et principalement (responsabilité LIP6/SMA) l'animation comportementale des habitants (en particulier piétons) dans leurs activités habituelles et autres circonstances (manifestations, accidents, ...). Porteur : THALES Training and Simulation. 5 thèses (dont 3 CIFRE) et un post-doc, ainsi que 4 permanents LIP6/SMA impliqués. Coordination Vincent Corruble.
- *Dem@t-Factory Project, FUI-Cap Digital* (2008-2012) : Project of the French R&D initiative, its objective was to improve both the digitization and the supervision of an existing digitizing chain distributed over several sites across the globe.
- *Projet ANR AMANDE* (2013-2018, coordinateur) sur les approches formelles d'argumentation pour la modélisation de la délibération. Le projet propose de nouvelles outils de représentation et de nouveaux algorithmes de raisonnement permettant d'appréhender les situations de délibération multiagents.
- *Projet ANR Cocorico-CoDec* (2014-2018), sur le choix social computationnel : aspects algorithmiques du vote, du partage équitable, de la formation de coalitions.
- *Projet ANR LARDONS* (2010-2015) sur la prise de décision et l'apprentissage dans des environnements non classiques. Ce projet s'intéressait aux problèmes de prise de décision pour des agents disposant de connaissances à la fois numériques et symboliques et aux problématiques d'apprentissage dans l'incertain sous critères non classiques.
- *Projet ANR R-DISCOVER* (2008-2012) : ce projet avait pour objectif principal le développement et la mise en œuvre d'un réseau décentralisé de robots coopératifs (drone + robots terrestres) pour l'exploration et la couverture d'un espace inconnu.
- *WorkSim Project* (2012-2015) : Agent-based simulation of the French Labor Market. Funding by PDI (International Doctoral Program) on complex systems, funded by UPMC and IRD. PhD Thesis of Olivier Goudet, supervised by Jean-Daniel Kant.
- *Projet PEPS INS2I/CNRS AGEXPA* (2017) : Design of argumentation-based and viability-based expert assistant agents to help participatory decision and management of environmental resources.

Contrats avec les collectivités territoriales

Contrats financés dans le cadre du PIA

- *Projet OPUS GePa2* (2017–2018, coordinator) : “Gestion Participative de Patrimoines Socio-Écologiques”, Programme Projets exploratoires, Observatoire des Patrimoines (OPUS), IdEx Sorbonne Universités Pour l’Enseignement et la Recherche (SUPER).

Contrats financés par des associations caritatives et des fondations (ARC, FMR, FRM, etc.)

8. Indices de reconnaissance

Prix

- AAMAS 2016 Best Paper Award. S. Airiau, E. Bonzon, U. Endriss, N. Maudet, J. Rossit. Rationalisation of Profiles of Abstract Argumentation Frameworks.
- ICTAI 2016 Best Paper Award. A. Beynier, Multiagent Patrolling for Detecting Multiple Illegal Actions Under Uncertainty
- Social Simulation Conference 2015 (SSC 2015) Best Student Paper. K.L. Brousmiche, J.D. Kant, N. Sabouret, S. Fournier, F. Prenot-Guinard. From Field Data to Attitude Formation.

Distinctions

Responsabilités dans des sociétés savantes

- Amal El Fallah Seghrouchni is an elected member of the Board of Directors of International Foundation for Autonomous Agents and Multiagent Systems (IFAAMAS) - 2016-2022.
- Amal El Fallah Seghrouchni is an elected member of the Board of Directors of the European Association for Multi-Agent Systems (EURAMAS) - 2016-2020.
- Nicolas Maudet was a member of the AFIA Board, and he was a member of the Board of Directors of the European Association for Multi-Agent Systems (EURAMAS) - 2012-2016.
- Jean-Daniel Kant is the co-founder and co-leader of MAGECO Network (French Network for research on agent-based computational economics).

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

- J.-P. Briot is Permanent Visiting Professor, Departamento de Informática, Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio), Rio de Janeiro, RJ, Brazil.
- Amal El Fallah Seghrouchni is visiting professor at the NII (National Institute of Informatics) since 2011.
- Amal El Fallah Seghrouchni has been invited at Lorenz Center - Interactive Intelligence Workshop. 10-13 June 2014.
- 5 members of the SMA team were invited to the Workshop at NII 2013.
- Zahia Guessoum was an invited speaker at "Troisième Conférence internationale sur la Vision Artificielle CVA 2015, Tizi-Ouzou le 12-14 avril 2015.
- Nicolas Maudet was an invited speaker : at the Fair Division Summer School of the COMSOC COST Action (San Sebastian, 2016), at the Erasmus Program on Computational Logic (TU Dresden, 2013).
- Jean-Daniel Kant was invited at Oxford University and Kingston University in June 2017

**Annexe 4 DEPARTEMENT
NETSYS**

EQUIPE ALMASTY

Nom de l'équipe : Algorithmique Mathématique pour la Sécurité

Acronyme : Almasty

Nom du responsable pour le contrat en cours : Antoine Joux

Nom du responsable pour le contrat à venir : Damien Vergnaud

I. PRODUITS DE LA RECHERCHE

1. Articles scientifiques

- [ALMA-J1] **Jean-Claude Bajard**, Julien Eynard, and **Nabil Merkiche**. Montgomery reduction within the context of residue number system arithmetic. *Journal of Cryptographic Engineering*, pages 1–12, 2017.
- [ALMA-J2] Razvan Barbulescu and **Cécile Pierrot**. The multiple number field sieve for medium- and high-characteristic finite fields. *LMS Journal of Computation and Mathematics*, 17(A):230–246, 2014.
- [ALMA-J3] Anja Becker, Nicolas Gama, and **Antoine Joux**. A sieve algorithm based on overlattices. *LMS Journal of Computation and Mathematics*, 17(A):49–70, 2014.
- [ALMA-J4] Eli Biham, Rafi Chen, and **Antoine Joux**. Cryptanalysis of SHA-0 and reduced SHA-1. *J. Cryptology*, 28(1):110–160, 2015.
- [ALMA-J5] **Alexandre Gélín** and **Antoine Joux**. Reducing number field defining polynomials: an application to class group computations. *LMS Journal of Computation and Mathematics*, 19(A):315–331, 2016.
- [ALMA-J6] Jaime Gutierrez, Álgar Ibeas, and **Antoine Joux**. Recovering a sum of two squares decomposition. *J. Symb. Comput.*, 64:16–21, 2014.
- [ALMA-J7] **Antoine Joux** and **Cécile Pierrot**. Technical history of discrete logarithms in small characteristic finite fields - the road from subexponential to quasi-polynomial complexity. *Des. Codes Cryptography*, 78(1):73–85, 2016.
- [ALMA-J8] Paulo Martins, Julien Eynard, **Jean-Claude Bajard**, and Leonel Sousa. Arithmetical Improvement of the Round-Off for Cryptosystems in High-Dimensional Lattices. *IEEE Transactions on Computers*, PP(Issue: 99), April 2017.

Articles de Conférences

- [ALMA-C1] **Jean-Claude Bajard**, Julien Eynard, Anwar Hasan, and **Vincent Zucca**. A full RNS variant of FV like somewhat homomorphic encryption schemes. *IACR Cryptology ePrint Archive*, 2016:510, 2016. To appear in the proceedings of Selected Areas in Cryptography (SAC).
- [ALMA-C2] Razvan Barbulescu, Pierrick Gaudry, **Antoine Joux**, and Emmanuel Thomé. A heuristic quasi-polynomial algorithm for discrete logarithm in finite fields of small characteristic. In *EUROCRYPT*, volume 8441 of *Lecture Notes in Computer Science*, pages 1–16. Springer, 2014.
- [ALMA-C3] Jean-François Biasse, **Thomas Espitau**, Pierre-Alain Fouque, **Alexandre Gélín**, and Paul Kirchner. Computing generator in cyclotomic integer rings - A subfield algorithm for the principal ideal problem and application to the cryptanalysis of a FHE scheme. In *EUROCRYPT (1)*, volume 10210 of *Lecture Notes in Computer Science*, pages 60–88, 2017.
- [ALMA-C4] Jean-Guillaume Dumas and **Vincent Zucca**. Prover efficient public verification of dense or sparse/structured matrix-vector multiplication. In *ACISP (2)*, volume 10343 of *Lecture Notes in Computer Science*, pages 115–134. Springer, 2017.
- [ALMA-C5] Jean-Charles Faugère, Louise Huot, **Antoine Joux**, Guénaél Renault, and Vanessa Vitse. Symmetrized summation polynomials: Using small order torsion points to speed up elliptic curve index calculus. In *EUROCRYPT*, volume 8441 of *Lecture Notes in Computer Science*, pages 40–57. Springer, 2014.
- [ALMA-C6] Pierre-Alain Fouque, **Antoine Joux**, and **Chrysanthi Mavromati**. Multi-user collisions: Applications to discrete logarithm, Even-Mansour and PRINCE. In *ASIACRYPT (1)*, volume 8873 of *Lecture Notes in Computer Science*, pages 420–438. Springer, 2014.

- [ALMA-C7] **Alexandre Gélín** and Benjamin Wesolowski. Loop-abort faults on supersingular isogeny cryptosystems. In *PQCrypto*, volume 10346 of *Lecture Notes in Computer Science*, pages 93–106. Springer, 2017.
- [ALMA-C8] **Antoine Joux**. Discrete logarithms in small characteristic finite fields: a survey of recent advances (invited talk). In *STACS*, volume 66 of *LIPICs*, pages 3:1–3:1. Schloss Dagstuhl - Leibniz-Zentrum fuer Informatik, 2017.
- [ALMA-C9] **Antoine Joux** and **Cécile Pierrot**. Improving the polynomial time precomputation of Frobenius representation discrete logarithm algorithms - simplified setting for small characteristic finite fields. In *ASIACRYPT (1)*, volume 8873 of *Lecture Notes in Computer Science*, pages 378–397. Springer, 2014.
- [ALMA-C10] **Cécile Pierrot**. The multiple number field sieve with conjugation and generalized Joux-Lercier methods. In *EUROCRYPT (1)*, volume 9056 of *Lecture Notes in Computer Science*, pages 156–170. Springer, 2015.
- [ALMA-C11] **Cécile Pierrot** and Benjamin Wesolowski. Malleability of the blockchain's entropy. In *ArcticCrypt 2016*, Longyearbyen, Norway, July 2016.

Pre-publications

- [ALMA-P1] Divesh Aggarwal, **Antoine Joux**, Anupam Prakash, and Miklos Santha. A new public-key cryptosystem via mersenne numbers. *IACR Cryptology ePrint Archive*, 2017:481, 2017.
- [ALMA-P2] **Thomas Espitau**, Pierre-Alain Fouque, Benoît Gérard, and Mehdi Tibouchi. Loop abort faults on lattice-based Fiat-Shamir & Hash'n Sign signatures. *IACR Cryptology ePrint Archive*, 2016:449, 2016.
- [ALMA-P3] **Thomas Espitau** and **Antoine Joux**. Adaptive precision LLL and potential-LLL reductions with interval arithmetic. *IACR Cryptology ePrint Archive*, 2016:528, 2016.
- [ALMA-P4] **Alexandre Gélín**, Thorsten Kleinjung, and Arjen K. Lenstra. Parametrizations for families of ECM-friendly curves. *IACR Cryptology ePrint Archive*, 2016:1092, 2016.
- [ALMA-P5] **Antoine Joux** and Vanessa Vitse. A crossbred algorithm for solving boolean polynomial systems. *IACR Cryptology ePrint Archive*, 2017:372, 2017.

Articles de synthèse / revues bibliographiques

Non applicable.

Autres articles (articles publiés dans des revues professionnelles ou techniques, etc.)

Non applicable.

2. Ouvrages

Chapitres et Livres

- [ALMA-L1] **Jean-Claude Bajard** and Julien Eynard. RNS Approach in Lattice-Based Cryptography. In Springer International Publishing, editor, *Embedded Systems Design with Special Arithmetic and Number Systems*, pages pp 345–368. 2017.
- [ALMA-L2] **Antoine Joux**, Andrew M. Odlyzko, and **Cécile Pierrot**. The past, evolving present, and future of the discrete logarithm. In *Open Problems in Mathematics and Computational Science*, pages 5–36. Springer, 2014.
- [ALMA-L3] **Antoine Joux** and **Cécile Pierrot**. *Nearly sparse linear algebra and application to discrete logarithms computations*, pages 119–144. WORLD SCIENTIFIC, 2016.
- [ALMA-L4] **Antoine Joux** and Amr M. Youssef, editors. *Selected Areas in Cryptography - SAC 2014 - 21st International Conference, Montreal, QC, Canada, August 14-15, 2014, Revised Selected Papers*, volume 8781 of *Lecture Notes in Computer Science*. Springer, 2014.

Monographies et ouvrages scientifiques, éditions critiques, traductions

Non applicable.

Direction / édition scientifique

Non applicable.

Chapitres d'ouvrage

Cf biblio *Chapitres et Livres*.

Thèses publiées / éditées

- Cécile Pierrot (Nov 2016). *Le Logarithme discret dans les corps finis*
- Chysanthi Mavromati (Jan 2017). *Cryptanalyse des algorithmes de type Even-Mansour*
- Alexandre Gélin (Sep 2017). *Class group computations in numbers fields, applications to Cryptology*

3. Colloques / congrès, séminaires de recherche**Éditions d'actes de colloques / congrès**

Cf biblio *Chapitres et Livres*.

Articles publiés dans des actes de colloques / congrès

Cf biblio *Conférences*.

Autres produits présentés dans des colloques / congrès et des séminaires de recherche

Non applicable.

4. Développements instrumentaux et méthodologiques**Prototypes et démonstrateurs**

Non applicable.

Plateformes et observatoires

Non applicable.

...

Non applicable.

5. Produits et outils informatiques**Logiciels**

The interval-arithmetic lattice reduction code corresponding to [ALMA-P3] can be obtained from Thomas Espitau's webpage.

Bases de données / cohortes

Non applicable.

Outils présentés dans le cadre de compétitions de solveurs

Non applicable.

Outils d'aide à la décision

Non applicable.

6. Brevets, licences et déclarations d'invention

Non applicable.

7. Rapports d'expertises techniques, produits des instances de normalisation

Non applicable.

8. Produits des activités didactiques

Non applicable.

Ouvrages

Cf biblio *Chapitres et Livres*.

E-learning, moocs, cours multimedia, etc.

Non applicable.

9. Produits destinés au grand public

Émissions radio, TV, presse écrite

Non applicable.

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

Non applicable.

Produits de médiation scientifique

Non applicable.

Débats science et société

Non applicable.

10. Autres produits propres à une discipline

Créations artistiques théorisées

Non applicable.

Mises en scènes

Non applicable.

Films

Non applicable.

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Non applicable.

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

Non applicable.

Direction de collections et de séries

Non applicable.

2. Activités d'évaluation**Responsabilités au sein d'instances d'évaluation**

Non applicable.

Évaluation d'articles et d'ouvrages scientifiques

- Antoine Joux, Program Chair SAC 2014.
- Jean-Claude Bajard, Program committee ARITH 2015.
- Antoine Joux, Program committee SAC 2015.
- Cécile Pierrot, Program committee LatinCrypt 2015.
- Jean-Claude Bajard, Program committee WAIFI 2016.
- Antoine Joux, Program committee Asiacrypt 2016.

Évaluation de laboratoires (type Hceres)**Évaluation de projets de recherche**

- On-site evaluation of a project for Science Foundation Ireland (Antoine Joux)

Évaluation de projets de recherche

- External reviews for the ERC PE6 panel. (Antoine Joux)

3. Activités d'expertise scientifique**Activités de consultant**

Non applicable.

Participation à des instances d'expertises (type Anses) ou de normalisation

Non applicable.

Expertise juridique

Non applicable.

4. Organisation de colloques / congrès

- Workshop WHEAT. July 5–7, 2016. Homomorphic Encryption Applications and Technology (H2020-ICT-644209)

5. Post-doctorants et chercheurs accueillis

- Faruk Gologlu. Invited researcher from June 1st to September 30th, 2016.
- Anand Kumar Narayanan. Post doctorate from June 1st, 2017.

6. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

Non applicable.

Bourses Cifre

La bourse de Chrysanthi Moavromati était une bourse CIFRE rattachée à l'ancien laboratoire d'Antoine Joux à l'UVSQ.

Créations de laboratoires communs avec une / des entreprise(s)

Non applicable.

Création de réseaux ou d'unités mixtes technologiques

Non applicable.

Créations d'entreprises, de start-up

Non applicable.

7. Contrats de recherche financés par des institutions publiques ou caritatives

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

- HEAT : Homomorphic Encryption Applications and Technology, H2020-ICT-644209. Funding from Jan 2015 to Dec 2017.
- ALMACRYPT : Algorithmic Mathematics for Cryptology , H2020-ERC-669891. Funding from Jan 2016 to Dec 2020.

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

- ARRAND : Arithmétiques randomisées. ANR funding from Feb 2016 to Nov 2019.

Contrats avec les collectivités territoriales

Non applicable.

Contrats financés dans le cadre du PIA

Non applicable.

Contrats financés par des associations caritatives et des fondations (ARC, FMR, FRM, etc.)

Non applicable.

8. Indices de reconnaissance

Prix

- Gödel prize 2013. Awarded to Antoine Joux while he was at UVSQ.
- Best paper award Eurocrypt 2014 to [ALMA-C2]
- K2 cybersecurity trophy granted to Cécile Pierrot for the research performed during her PhD.

Distinctions

- Antoine Joux, Fellow IACR 2014.
- Antoine Joux, ERC advanced 2015.

Responsabilités dans des sociétés savantes

Non applicable.

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

- Antoine Joux, Invited speaker COST summer school, Portugal
- Antoine Joux, Invited speaker PKC 2015, USA
- Antoine Joux, Research visit MIT April 2015, USA
- Antoine Joux, Invited speaker Fq12, 2015, USA
- Cécile Pierrot, Invited speaker ECC 2015, Bordeaux
- Antoine Joux, Invited speaker Workshop on discrete mathematics at Chongqing university, 2015, China
- Antoine Joux, Invited at Dagstuhl Cryptography seminar 2016, Germany
- Alexandre Gélin, Research visit Apr-Jul 2016, EPFL, Switzerland
- Antoine Joux, Invited speaker KIT summer school 2106, Germany
- Antoine Joux, Invited speaker Workshop on Mathematics of Information-Theoretic Cryptography, 2016, Singapore
- Cécile Pierrot, Research visit Oct-Dec 2016, Oxford
- Natalia Kharchenko, Seminar and visit at Poncelet Lab., Dec. 2016, Moscow
- Antoine Joux, Invited at Oberwolfach Cryptography seminar 2017, Germany
- Antoine Joux, Research visit Center For Quantum Computing, Singapore, 2017
- Antoine Joux, Invited speaker STACS 2017, Germany
- Antoine Joux, Invited speaker Advanced seminar on coding and cryptography 2017, China

The team is also receiving a CNRS PICS funding (Projet International de Coopération Scientifique) for a collaboration with the University of Wollongong in Australia. Three one-month visits to Wollongong by Jean-Claude Bajard, Vincent Zucca and Jeremy Marrez already took place in 2016 and 2017.

Annexe 4 EQUIPE NPA

Nom de l'équipe : Networks and Performance Analysis

Acronyme : NPA

Nom du responsable pour le contrat en cours : Marcelo Dias de Amorim, DR CNRS

Nom du responsable pour le contrat à venir : Maria Potop-Butucaru, Pr UPMC

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

- [NPA-J-1] **Blin, L., Tixeuil, S.**, “Compact deterministic self-stabilizing leader election on a ring : the exponential advantage of being talkative”. In : *Distributed Computing* 4 (2017), p. 454–454.
- [NPA-J-2] Ragaleux, A., **Baey, S.**, Karaca, M., “Standard-compliant LTE-A Uplink Scheduling Scheme with Quality of Service”. In : *IEEE Transactions on Vehicular Technology* (jan. 2017).
- [NPA-J-3] Baron, B., **Spathis, P.**, Rivano, H., **Dias De Amorim, M.**, “Offloading Massive Data onto Passenger Vehicles : Topology Simplification and Traffic Assignment”. In : *IEEE/ACM Transactions on Networking* 24.6 (déc. 2016), p. 3248–3261.
- [NPA-J-4] Begin, T., **Baynat, B.**, Guérin Lassous, I., Abreu, T., “Performance analysis of multi-hop flows in IEEE 802.11 networks : A flexible and accurate modeling framework”. In : *Performance Evaluation* 96 (fév. 2016), p. 12–32.
- [NPA-J-5] Bérard, B., Lafourcade, P., Millet, L., **Potop-Butucaru, M.**, Thierry-Mieg, Y., **Tixeuil, S.**, “Formal verification of mobile robot protocols”. In : *Distributed Computing*. Distributed Computing 29 (avr. 2016), p. 1–25.
- [NPA-J-6] Cicalese, D., Joulblatt, D., Rossi, D., Buob, M.-O., Auge, J., **Friedman, T.**, “Latency-Based Anycast Geolocation : Algorithms, Software, and Datasets”. In : *IEEE Journal on Selected Areas in Communications* 34.6 (2016), p. 1889–1903.
- [NPA-J-7] Lertsinsrubtavee, A., **Malouch, N.**, “Hybrid Spectrum Sharing through Adaptive Spectrum Handoff and Selection”. In : *IEEE Transactions on Mobile Computing* 15.11 (2016), p. 2781–2793.
- [NPA-J-8] Belblidia, N., Sammarco, M., **Dias De Amorim, M.**, Costa, L. H. M. K., “EPICS : Fair Opportunistic Multi-Content Dissemination”. In : *IEEE Transactions on Mobile Computing* 14.9 (sept. 2015), p. 1847–1860.
- [NPA-J-9] Maurer, A., **Tixeuil, S.**, “Containing Byzantine Failures with Control Zones”. In : *IEEE Transactions on Parallel and Distributed Systems* 26.2 (fév. 2015), p. 362–370.
- [NPA-J-10] Auge, J., Parmentelat, T., Turro, N., Avakian, S., Baron, L., Larabi, M. A., Rahman, M. Y., **Friedman, T., Fdida, S.**, “Tools to foster a global federation of testbeds”. In : *Computer Networks*. Special issue on Future Internet Testbeds – Part II 63 (avr. 2014), p. 205–220.
- [NPA-J-11] Gerla, M., Wu, C., **Pau, G.**, Zhu, X., “Content distribution in VANETs”. In : *Vehicular Communications* 1.1 (jan. 2014), p. 3–12.
- [NPA-J-12] Honorat, A., **Potop-Butucaru, M., Tixeuil, S.**, “Gathering fat mobile robots with slim omnidirectional cameras”. In : *Theoretical Computer Science* 557 (nov. 2014), p. 1–27.

- [NPA-J-13] **Blin, L., Potop-Butucaru, M.,** Rovedakis, S., “A super-stabilizing log(n)-approximation algorithm for dynamic Steiner trees”. In : *Theoretical Computer Science* 500 (août 2013), p. 90–112.
- [NPA-J-14] Diallo, M., Sourlas, V., Flegkas, P., **Fdida, S.,** Tassioulas, L., “A content-based publish/subscribe framework for large-scale content delivery”. In : *Computer Networks* 57.4 (2013), p. 924–943.
- [NPA-J-15] Dubois, S., Masuzawa, T., **Tixeuil, S.,** “Bounding the Impact of Unbounded Attacks in Stabilization”. In : *IEEE Transactions on Parallel and Distributed Systems* 23.3 (mar. 2012), p. 460–466.

Articles de synthèse / revues bibliographiques

- [NPA-S-1] Balabonski, T., Courtieu, P., Rieg, L., **Tixeuil, S.,** Urbain, X., “Certified Gathering of Oblivious Mobile Robots : survey of recent results and open problems”. In : *Formal Methods for Industrial Critical Systems and Automated Verification of Critical Systems (FMICS/AVOCS)*. Turin, Italy, sept. 2017.
- [NPA-S-2] Baron, L., Klacza, R., Kurose, N., Rahman, M. Y., Scognamiglio, C., **Friedman, T., Fdida, S.,** Saint-Marcel, F., “OneLab Tutorial : A Single Portal to Heterogeneous Testbeds”. In : *Trident-Com 2015*. European Alliance for Innovation. Vancouver, Canada, juin 2015.
- [NPA-S-3] Rebecchi, F., **Dias De Amorim, M.,** Conan, V., Passarella, A., Bruno, R., Conti, M., “Data Offloading Techniques in Cellular Networks : A Survey”. In : *Communications Surveys and Tutorials, IEEE Communications Society* 17.2 (avr. 2015), p. 580–603.
- [NPA-S-4] Tatar, A., **Dias De Amorim, M., Fdida, S.,** Antoniadis, P., “A survey on predicting the popularity of web content.” In : *Journal of Internet Services and Applications* 5.1 (nov. 2014), p. 8.

Autres articles (articles publiés dans des revues professionnelles ou techniques, etc.)

N/A

2. Ouvrages

Monographies et ouvrages scientifiques, éditions critiques, traductions

N/A

Direction / édition scientifique

- [NPA-D-1] Brousseau, E., **Marzouki, M.,** Méadel, C., *Governance, Regulation and Powers on the Internet*. Cambridge University Press, avr. 2012, p. 446.

Chapitres d’ouvrage

- [NPA-O-1] Levinson, N. S., **Marzouki, M.,** “IOs and Global Internet Governance Interorganizational Architecture”. In : *The Turn to Infrastructure in Internet Governance*. Sous la dir. de Francesca MUSIANI, Derrick L. COGBURN, Laura DENARDIS et Nanette S. LEVINSON. Palgrave-MacMillan, 2016, p. 47–71.
- [NPA-O-2] Levinson, N. S., **Marzouki, M.,** “Internet Governance Institutionalization : Process and Trajectories”. In : *Global Governance Facing Structural Changes : New Institutional Trajectories in the Internet Era*. Sous la dir. de Michèle RIOUX et Kim FONTAINE-SKRONSKI. Palgrave-MacMillan, 2015, p. 17–35.
- [NPA-O-3] Brousseau, E., **Marzouki, M.,** “Internet Governance : Old Issues, New Framings, Uncertain Implications”. In : *Governance, Regulations and Powers on the Internet*. Sous la dir. d’Eric BROUSSEAU, Meryem MARZOUKI et Cécile MÉADEL. Cambridge University Press, 2012, p. 368–397.

- [NPA-O-4] Brousseau, E., **Marzouki, M.**, Méadel, C., “Governance, Networks and Information Technologies : Societal, Political, and organizational Innovations”. In : *Governance, Regulations and Powers on the Internet*. Sous la dir. d’Eric BROUSSEAU, Meryem MARZOUKI et Cécile MÉADEL. Cambridge University Press, Cambridge, 2012, p. 3–36.

Thèses publiées / éditées

HDR :

- [NPA-H-1] **Spathis, P.** “Information Delivery : Past Struggles & New Directions”. Habilitation à diriger des recherches. UPMC Université Paris VI, déc. 2016.
- [NPA-H-2] **Malouch, N.** “Studying and Improving Various Control Mechanisms in Today’s and Future Networks”. Habilitation à diriger des recherches. UPMC Université Paris VI, jan. 2013.
- [NPA-H-3] **Baccelli, E.** “IP-Disruptive Wireless Networking : Integration in the Internet”. Habilitation à diriger des recherches. UPMC Université Paris VI, déc. 2012.
- [NPA-H-4] **Fladenmuller, A.** “Vers un Meilleur Routage pour un Internet Ambient”. Habilitation à diriger des recherches. UPMC Université Paris VI, oct. 2012.

PhD theses :

- [NPA-T-1] Del Pozzo, A. “Abstractions for Distributed Storages with Byzantine Faults”. Ph.D. Thesis. UPMC Université Paris VI, fév. 2017.
- [NPA-T-2] Baron, B. “Intermodal Data Transport for Massive Offloading of Conventional Data Networks”. Ph.D. Thesis. UPMC Université Paris VI, oct. 2016.
- [NPA-T-3] Benchaita, W. “Stabilizing and Optimizing Content Delivery Networks”. Ph.D. Thesis. UPMC Université Paris VI, déc. 2016.
- [NPA-T-4] Boubekeur, F. “Arbres Couvrants de la Théorie à la Pratique : Algorithmes Auto-Stabilisants et Réseaux de Capteurs”. Ph.D. Thesis. UPMC Université Paris VI, oct. 2016.
- [NPA-T-5] Bramas, Q. “Energy-Centric Wireless Sensor Networks”. Ph.D. Thesis. UPMC Université Paris VI, oct. 2016.
- [NPA-T-6] Mazloum, R. “La Caractérisation du Routage dans l’Internet à l’Aide des Mesures IP et BGP”. Ph.D. Thesis. UPMC Université Paris VI, déc. 2016.
- [NPA-T-7] Ragaleux, A. “Multiple Access Mechanisms in Broadband Wireless Networks”. Ph.D. Thesis. UPMC Université Paris VI, sept. 2016.
- [NPA-T-8] Durand, F. “Toward less Manipulable Voting Systems”. Ph.D. Thesis. UPMC Université Paris VI, sept. 2015.
- [NPA-T-9] Millet, L. “Verification and Synthesis of Robot Protocols”. Ph.D. Thesis. UPMC Université Paris VI, déc. 2015.
- [NPA-T-10] Rebecchi, F. “Device-to-Device Data Offloading : From Model to Implementation”. Ph.D. Thesis. UPMC Université Paris VI, sept. 2015.
- [NPA-T-11] Rozhnova, N. “Congestion Control for Content-Centric Networking”. Ph.D. Thesis. UPMC Université Paris VI, mai 2015.
- [NPA-T-12] Florin Tatar, A. “Predicting User-Centric Behavior : Content Popularity and Mobility”. Ph.D. Thesis. UPMC Université Paris VI, juil. 2014.
- [NPA-T-13] Goga, O. “Matching User Accounts Across Online Social Networks : Methods and Applications”. Ph.D. Thesis. UPMC Université Paris VI, mai 2014.
- [NPA-T-14] Maurer, A. “Reliable Communication Despite Byzantine Failures in Sparse Networks”. Ph.D. Thesis. UPMC Université Paris VI, nov. 2014.
- [NPA-T-15] Phe-Neau, T. “Properties and Impact of Vicinity in Mobile Opportunistic Networks”. Ph.D. Thesis. UPMC Université Paris VI, jan. 2014.

- [NPA-T-16] Reggani, A. “Domestic and Mobile Networks : Measurements, Analyses, and Patterns”. Ph.D. Thesis. UPMC Université Paris VI, jan. 2014.
- [NPA-T-17] Sammarco, M. “Opportunistic Multi-Content Dissemination : Passive Monitoring and Adaptation to Network Conditions”. Ph.D. Thesis. UPMC Université Paris VI, mai 2014.
- [NPA-T-18] Sbihi, N. “Traffic Management in Content Centric Networks”. Ph.D. Thesis. UPMC Université Paris VI, mar. 2014.
- [NPA-T-19] Bourgeau, T. “IP-Level Internet Topology Dynamics Capture”. Ph.D. Thesis. UPMC Université Paris VI, nov. 2013.
- [NPA-T-20] Bouzid, Z. “Modèles et Algorithmes pour les Systèmes Émergents”. Ph.D. Thesis. UPMC Université Paris VI, juin 2013.
- [NPA-T-21] Di Cioccio, L. “Home Network Monitoring”. Ph.D. Thesis. UPMC Université Paris VI, avr. 2013.
- [NPA-T-22] Diallo, M. “Content-Based Networking for Global Scale Mediation Services”. Ph.D. Thesis. UPMC Université Paris VI, mar. 2013.
- [NPA-T-23] Gorcitz, R. A. “From Small-Scale Data Dissemination to Large Data Transfers in Vehicular Environments”. Ph.D. Thesis. UPMC Université Paris VI, juil. 2013.
- [NPA-T-24] Lertsinsrubtavee, A. “Adaptive Requirement-Driven Spectrum Handoff and Selection for Cognitive Radio Networks”. Ph.D. Thesis. UPMC Université Paris VI, sept. 2013.
- [NPA-T-25] Belblidia, N. “Capacity-Aware Opportunistic Networks : Characterization and Impact on the Dissemination of Large Contents”. Ph.D. Thesis. UPMC Université Paris VI, avr. 2012.
- [NPA-T-26] Jarma Alviz, Y. “Resource Protection in Enterprise Data Centers : Architecture and Protocols”. Ph.D. Thesis. UPMC Université Paris VI, jan. 2012.
- [NPA-T-27] Rocha Jimenez Vieira, F. “Ordonnancement des Liens et Routage de Multiples Chemins pour les Réseaux Maillés Sans Fil”. Ph.D. Thesis. UPMC Université Paris VI, mai 2012.
- [NPA-T-28] Whitbeck, J. “Mobile Opportunistic Networks : Visualization, Modeling, and Application to Data Offloading”. Ph.D. Thesis. UPMC Université Paris VI, juin 2012.
- [NPA-T-29] Zeaiter Joumblatt, D. “Prediction of User Dissatisfaction with Network Application Performance at End-Hosts”. Ph.D. Thesis. UPMC Université Paris VI, déc. 2012.

3. Colloques / congrès, séminaires de recherche

Éditions d'actes de colloques / congrès

- [NPA-P-1] M. COUPECHOUX, A. GIOVANIDIS, J. WALRAND, T. BONALD, M. DEBBAH, J. HUANG et M. MÉDARD, éd. *Proceedings of the 15th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt) 2017*. Telecom ParisTech and IFIP. Paris, France, mai 2017.
- [NPA-P-2] M. HILTUNEN et S. TIXEUIL, éd. *35th IEEE Symposium on Reliable Distributed Systems (SRDS 2016)*. Budapest, Hungary : IEEE Computer Society, 2016.
- [NPA-P-3] S. FDIDA, G. PAU, S. Kumar KASERA et H. ZHENG, éd. *Proceedings of the 21st Annual ACM International Conference on Mobile Computing and Networking (Mobicom)*. ACM. Paris, France, sept. 2015.

Articles publiés dans des actes de colloques / congrès

- [NPA-C-1] ABDELFAH, A., **Malouch, N.**, “Modeling and Performance Analysis of Wi-Fi Networks Coexisting with LTE-U”. In : *IEEE International Conference on Computer Communications (INFOCOM 2017)*. Atlanta, GA, United States, mai 2017.

- [NPA-C-2] Bonomi, S., Del Pozzo, A., **Potop-Butucaru, M., Tixeuil, S.**, “Optimal Storage under Unsynchronized Mobile Byzantine Faults”. In : *36th IEEE Symposium on Reliable Distributed Systems (SRDS 2017)*. Hong Kong, China : IEEE Computer Society, sept. 2017.
- [NPA-C-3] Krolkowski, J., **Giovanidis, A.**, Di Renzo, M., “Fair distributed user-traffic association in cache equipped cellular networks”. In : *WIOPT’17 - 2nd Content Caching and Delivery in Wireless Networks Workshop (CCDWN 2017)*. Paris, France, mai 2017.
- [NPA-C-4] **Marzouki, M.** “At the Crossroads of Globalization and Digitization : Global Internet Governance as a Science Diplomacy Terrain”. In : *The 58th ISA (International Studies Association) Annual Convention*. International Studies Association). Baltimore, MD, United States, fév. 2017.
- [NPA-C-5] Abdelfattah, A., **Malouch, N.**, “Studying the Impact of LTE-U on Wi-Fi Downlink Performance”. In : *2016 IEEE 12th International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob)*. New York, United States, oct. 2016.
- [NPA-C-6] Abuteir, R. M., **Fladenmuller, A., Fourmaux, O.**, “SDN Based Architecture to Improve Video Streaming in Home Networks”. In : *The 30th IEEE International Conference on Advanced Information Networking and Applications (AINA-2016)*. Crans-Montana, Switzerland, mar. 2016.
- [NPA-C-7] **Baynat, B.**, Nya, N., “Performance Model for 4G/5G Networks Taking Into Account Intra- and Inter-Cell Mobility of Users”. In : *41st IEEE International Conference on Local Computer Networks (LCN 2016)*. Dubai, United Arab Emirates, nov. 2016.
- [NPA-C-8] Bonomi, S., Del Pozzo, A., **Potop-Butucaru, M., Tixeuil, S.**, “Optimal Mobile Byzantine Fault Tolerant Distributed Storage”. In : *ACM Conference on Principles of Distributed Computing (PODC)*. ACM. Chicago, United States, juil. 2016.
- [NPA-C-9] Coriat, F., **Fladenmuller, A.**, Arantes, L., Marin, O., “Crowdsourcing-based architecture for post-disaster geolocation : A comparative performance evaluation”. In : *The 15th IEEE International Symposium on Network Computing and Applications (NCA 2016)*. Cambridge, MA, United States, oct. 2016, p. 1–9.
- [NPA-C-10] Courtieu, P., Rieg, L., **Tixeuil, S.**, Urbain, X., “A Certified Universal Gathering Algorithm for Oblivious Mobile Robots”. In : *Distributed Computing (DISC)*. Paris, France, sept. 2016.
- [NPA-C-11] **Fourmaux, O.**, Rahman, M. Y., Tranoris, C., Pareit, D., Gerwen, J. V.-V., Jourjon, G., Collins, D., Marquez-Barja, J. M., “FORGE Enabling FIRE Facilities for the eLearning Community”. In : *19th International Conference on Interactive Collaborative Learning*. Belfast, United Kingdom, sept. 2016.
- [NPA-C-12] Gallardo, G. A., **Baynat, B.**, Begin, T., “Performance modeling of virtual switching systems”. In : *IEEE 24th International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems, MASCOTS 2016*. London, United Kingdom, sept. 2016.
- [NPA-C-13] Levinson, N. S., **Marzouki, M.**, “Global Internet Governance Actors and Strategies : A Fifteen-Year Assessment”. In : *2016 ECPR General Conference*. Prague, Czech Republic, sept. 2016.
- [NPA-C-14] Rebecchi, F., **Dias De Amorim, M.**, Conan, V., “Should I seed or should I not : On the remuneration of seeders in D2D offloading”. In : *IEEE WoWMoM 2016 Seventeenth International Symposium on a World of Wireless, Mobile and Multimedia Networks*. Coimbra, Portugal, juin 2016.
- [NPA-C-15] Badreddine, W., Chaudet, C., Petruzzi, F., **Potop-Butucaru, M.**, “Broadcast strategies in Wireless Body Area Networks”. In : *18th ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM)*. Cancun, Mexico : ACM, nov. 2015, p. 83–90.
- [NPA-C-16] Belouanas, S. E., **Thai, K.-L., Spathis, P., Dias De Amorim, M.**, “SCoD : Saving Cellular Resources by Delaying Transmissions of Popular Content”. In : *IEEE Twelfth International Symposium on Wireless Communication Systems*. Brussels, Belgium : IEEE, août 2015, p. 111–115.

- [NPA-C-17] **Blin, L.**, Boubekour, F., Dubois, S., “A Self-Stabilizing Memory Efficient Algorithm for the Minimum Diameter Spanning Tree under an Omnipotent Daemon”. In : *29rd IEEE International Symposium on Parallel and Distributed Processing (IPDPS 2015)*. Hyberabad, India : IEEE, mai 2015, p. 1065–1074.
- [NPA-C-18] **Blin, L.**, Fraigniaud, P., “Space-Optimal Time-Efficient Silent Self-Stabilizing Constructions of Constrained Spanning Trees”. In : *35th IEEE International Conference on Distributed Computing Systems (ICDCS)*. Columbus, United States : IEEE, juin 2015, p. 589–598.
- [NPA-C-19] Levinson, N. S., **Marzouki, M.**, “Global Internet Governance and Europe : A Regional International Organization Perspective”. In : *The 22nd International Conference of Europeanists (CES) "Contradictions : Envisioning European Futures"*. Paris, France, juil. 2015.
- [NPA-C-20] Maurer, A., Défago, X., **Tixeuil, S.**, “Communicating Reliably in Multihop Dynamic Networks despite Byzantine Failures”. In : *The International Symposium on Reliable Distributed Systems (SRDS2015)*. Montreal, Canada : IEEE Press, sept. 2015.
- [NPA-C-21] Abreu, T., **Baynat, B.**, Begin, T., Guérin Lassous, I., Nguyen, N., “Modeling of IEEE 802.11 Multi-hop Wireless Chains with Hidden Nodes”. In : *17th ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (2014)*. Montréal, Canada : ACM, sept. 2014, p. 159–162.
- [NPA-C-22] Baron, B., **Spathis, P.**, Rivano, H., **Dias De Amorim, M.**, “Vehicles as Big Data Carriers : Road Map Space Reduction and Efficient Data Assignment”. In : *VTC2014-Fall - IEEE 80th Vehicular Technology Conference*. Vancouver, Canada : IEEE, sept. 2014, p. 1–5.
- [NPA-C-23] Gerla, M., Lee, E.-K., **Pau, G.**, Lee, U., “Internet of vehicles : From intelligent grid to autonomous cars and vehicular clouds”. In : *Internet of Things (WF-IoT), 2014 IEEE World Forum on*. Seoul, South Korea : IEEE, mar. 2014, p. 241–246.
- [NPA-C-24] Hoang-Van, H., Miyoshi, T., **Fourmaux, O.**, “A Hierarchical P2P Traffic Localization Method with Bandwidth Limitation”. In : *IEEE International Conference on Communications, ICC 2014*. Sidney, Australia : IEEE, juin 2014, p. 3136–3141.
- [NPA-C-25] Lertsinsrubtavee, A., **Malouch, N.**, **Fdida, S.**, “Hybrid spectrum sharing through adaptive spectrum handoff for cognitive radio networks”. In : *2014 IFIP Networking Conference*. Trondheim, Norway : IEEE, juin 2014, p. 1–9.
- [NPA-C-26] Levinson, N. S., **Marzouki, M.**, “Internet Governance Institutionalization : Tensions and Trajectories”. In : *23rd IPSA World Congress of Political Science*. Montreal, Canada, juil. 2014, <http://paperroom.ipsa.org/>.
- [NPA-C-27] Maurer, A., **Tixeuil, S.**, “Self-stabilizing Byzantine Broadcast”. In : *The 33rd IEEE Symposium on Reliable Distributed Systems (SRDS 2014)*. Nara, Japan : IEEE, oct. 2014, p. 152–160.
- [NPA-C-28] Mazloum, R., Buob, M.-O., Auge, J., **Baynat, B.**, Rossi, D., **Friedman, T.**, “Violation of inter-domain routing assumptions”. In : *PAM 2014 - 15th International Conference on Passive and Active Measurement*. T. 8362. Lecture Notes in Computer Science. Los Angeles,, United States : Springer, mar. 2014, p. 173–182.
- [NPA-C-29] Rebecchi, F., **Dias De Amorim, M.**, Conan, V., “DROiD : Adapting to Individual Mobility Pays Off in Mobile Data Offloading”. In : *IFIP Networking 2014*. Trondheim, Norway, juin 2014, p. 1–6.
- [NPA-C-30] Rozhnova, N., **Fdida, S.**, “An extended Hop-by-hop Interest shaping mechanism for Content-Centric Networking”. In : *IEEE GLOBECOM 2014*. IEEE. Austin, Texas, United States, déc. 2014.
- [NPA-C-31] Abreu, T., **Baynat, B.**, Begin, T., Guérin Lassous, I., “Hierarchical Modeling of IEEE 802.11 Multi-hop Wireless Networks”. In : *MSWiM'13 - 16th ACM Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems*. Barcelone, Spain : ACM, nov. 2013, p. 143–150.

- [NPA-C-32] **Blin, L., Tixeuil, S.**, “Compact Deterministic Self-stabilizing Leader Election - The Exponential Advantage of Being Talkative”. In : *DISC 2013 - 27th International Symposium on Distributed Computing*. T. 8205. Lecture Notes in Computer Science. Jerusalem, Israel : Springer, oct. 2013, p. 76–90.
- [NPA-C-33] Bourgeau, T., **Friedman, T.**, “Efficient IP-level network topology capture”. In : *Passive and Active Measurement Conference (PAM)*. Sous la dir. de Springer Berlin HEIDELBERG. T. 7799. Lecture Notes in Computer Science. Hong Kong, Hong Kong SAR China : Springer, mar. 2013, p. 11–20.
- [NPA-C-34] Bouzid, Z., Das, S., **Tixeuil, S.**, “Gathering of Mobile Robots Tolerating Multiple Crash Faults”. In : *International Conference on Distributed Computing Systems*. Philadelphia, United States : IEEE, juil. 2013, p. 337–346.
- [NPA-C-35] Fallahi, N., Bonakdarpour, B., **Tixeuil, S.**, “Rigorous Performance Evaluation of Self-Stabilization Using Probabilistic Model Checking”. In : *International Symposium on Reliable Distributed Systems*. Braga, Portugal : IEEE, sept. 2013, p. 153–162.
- [NPA-C-36] Goga, O., Lei, H., Parthasarathi, S. H. K., Friedland, G., Sommer, R., **Teixeira, R.**, “Exploiting Innocuous Activity for Correlating Users Across Sites”. In : *The 22nd International conference on World Wide Web, WWW’13*. Rio de Janeiro, Brazil : ACM, mai 2013, p. 447–458.
- [NPA-C-37] Khouri, C., Greve, F., **Tixeuil, S.**, “Consensus with Unknown Participants in Shared Memory”. In : *International Symposium on Reliable Distributed Systems*. Braga, Portugal : IEEE, sept. 2013, p. 51–60.
- [NPA-C-38] Lertsinsrubtavee, A., **Malouch, N., Fdida, S.**, Kanchanasut, K., “Spectrum sharing and impact on spectrum handoff in multi-channel cognitive radio networks”. In : *WoWMoM*. Madrid, Spain : IEEE, juin 2013, p. 1–6.
- [NPA-C-39] Pham, T.-M., **Fdida, S.**, Antoniadis, P., “Pricing in Information-Centric Network Interconnection”. In : *IFIP Networking Conference, 2013*. Brooklyn, NY, United States, mai 2013.
- [NPA-C-40] Sundaresan, S., Feamster, N., **Teixeira, R.**, Magharei, N., “Measuring and Mitigating Web Performance Bottlenecks in Broadband Access Networks”. In : *ACM Internet Measurement Conference*. Barcelone, Spain : ACM, oct. 2013, p. 213–226.
- [NPA-C-41] Dhawan, M., Samuel, J., **Teixeira, R.**, Kreibich, C., Allman, M., Weaver, N., Paxson, V., “Fathom : A Browser-based Network Measurement Platform”. In : *ACM Internet Measurement Conference*. Boston, United States : ACM, nov. 2012, p. 73–86.
- [NPA-C-42] Maurer, A., **Tixeuil, S.**, “Limiting Byzantine Influence in Multihop Asynchronous Networks”. In : *International Conference on Distributed Computing Systems*. Macau, China, juin 2012, p. 183–192.
- [NPA-C-43] Maurer, A., **Tixeuil, S.**, “On Byzantine Broadcast in Loosely Connected Networks”. In : *26th International Symposium on Distributed Computing, DISC 2012*. T. 7611. Lecture Notes in Computer Science. 14. Salvador, Brazil, oct. 2012, p. 253–266.
- [NPA-C-44] Tatar, A., Antoniadis, P., **Dias De Amorim, M., Fdida, S.**, “Ranking news articles based on popularity prediction”. In : *Advances in Social Networks Analysis and Mining (ASONAM)*. Istanbul, Turkey : IEEE, août 2012, p. 106–110.
- [NPA-C-45] To, B. L., Mohamed, O., Nguyen, T.-M.-T., **Fladenmuller, A.**, Pujolle, G., “Decentralized Cooperative Spectrum Sensing for Cognitive Radio Ad-Hoc Network : Hidden Terminal Awareness Approach”. In : *The 11th International Conference on Information Sciences, Signal Processing and their Applications*. Montreal, Canada : IEEE, juil. 2012, p. 146–151.
- [NPA-C-46] Whitbeck, J., **Dias De Amorim, M.**, Conan, V., Guillaume, J.-L., “Temporal Reachability Graphs”. In : *ACM Mobicom*. Istanbul, Turkey : ACM, août 2012, p. 377–388.

Autres produits présentés dans des colloques / congrès et des séminaires de recherche

- [NPA-P-1] Baron, L., Klacza, R., Rahman, M. Y., Scognamiglio, C., **Friedman, T., Fdida, S.**, Saint-Marcel, F., “OneLab : On-demand deployment of IoT over IPv6 Infrastructure as a service for IEEE INFOCOM community”. In : *IEEE Infocom 2016*. San Francisco, United States, avr. 2016.
- [NPA-P-2] Baron, L., Boubekour, F., Klacza, R., Rahman, M.-Y., Scognamiglio, C., Kurose, N., **Friedman, T., Fdida, S.**, “Demo : OneLab : Major Computer Networking Testbeds for IoT and Wireless Experimentation”. In : *MobiCom 2015*. ACM. Paris, France, sept. 2015.
- [NPA-P-3] Grassi, G., Pesavento, D., **Pau, G.**, Zhang, L., **Fdida, S.**, “Navigo : Interest forwarding by geolocations in vehicular Named Data Networking”. In : *World of Wireless, Mobile and Multimedia Networks (WoWMoM), 2015 IEEE 16th International Symposium on a World of Wireless, Mobile and Multimedia Networks*. Boston, United States, juin 2015.
- [NPA-P-4] Sammarco, M., Belblidia, N., Lopez, Y., **Dias De Amorim, M.**, Costa, L. H. M. K., Leguay, J., “PePiT : Opportunistic Dissemination of Large Contents on Android Mobile Devices”. In : *ACM MobiOpp workshop Demo Session*. Zurich, Switzerland : ACM, mar. 2012, p. 79–80.

4. Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs

Canarin-II : A low-cost portable PM2.5 sensor for environmental monitoring and personal exposure assessment (canarin.net). Canarin has the potential to be used by any citizen to provide a cooperative assessment of the pollution. The system provides PM information that is geographically tagged and time-referenced. Canarin is adaptive, it automatically connects to available WiFi networks and when disconnected stores the date rating for next connection opportunity. Canarin is the outcome of an international collaboration between UPMC-LIP6, the Asian Institute of Technology, and the Macao Polytechnic Institute and will be used in proof of concept deployments in France, Thailand and Portugal. The system has been demonstrated in Bologna at the G7 Environment in June 2017 and featured in the France National news France 3 (June 20, 2017).

Car-Fi : Opportunistic V2I Communications (carfi.mobi). Opportunistic V2I Communications (carfi.mobi). Car-Fi proposes an approach that leverages existing home Wi-Fi access points configured in dual-access mode, in order to offload all data traffic from the congested and expensive cellular infrastructure to whatever Wi-Fi network is available. Thanks to an improved scanning algorithm and numerous optimizations to the connection setup, Car-Fi makes downloading large amounts of data from a moving car feasible. Thanks to the synergies between UPMC and ATOS CarFi will be deployed in a POC within BBC news as a new mean to upload news on urban scenarios.

PePiT : Opportunistic Dissemination of Large Contents (anr-crowd.lip6.fr). PePiT is an Android application based on PACS, a popularity-based strategy to select pieces of contents to be exchanged between collocated devices solely based on local information. PePiT enables the dissemination of large files between collocated Android devices in an ad hoc mode.

Plateformes et observatoires

Experimental platform OneLab (onelab.eu). Launched in 2014 and structured around a strong international consortium, OneLab offers a unique, long-term open service. The development of OneLab required significant effort for the definition of its architecture, software framework, and management strategy. OneLab combines a large variety of technologies (sensor networks, wireless networks, and large-scale distributed networks) and allows their combination within a single experience.

Experimental platform FIT (fit-equipex.fr). Equipex FIT is an experimental platform which allows remote access to a wide spectrum of computer resources in the context of the internet of things. FIT users can run performance, interoperability, and security tests on more than 3,000 sensor nodes, dozens of mobile robots, a cloud (OpenStack), and overlay networks. FIT became in December 2015 a Research Infrastructure of the French Ministry of Higher Education and Research.

5. Produits et outils informatiques

Logiciels

Software produced by the team :

- MySlice v1 then MySlice v2 (2012→2014).
- TopHat (2012→2014)
- Manifold (2012→2014)
- TCP congestion online course (Forge, Planetlab Europe) (2013→2014)
- MySlice v2 (2016→2017)
- MOOC backend (2015)
- CarFi (2014→2017)

Contribution to community-generated software :

- Planetlab Europe (2012 à 2016)
- FORGE eBook (2012 à 2014)
- SFA Registry (2012 à 2017)
- SFA Wrapper + drivers (2012 à 2014) (iot-lab, Nitos, OpenStack)

Bases de données / cohortes

N/A

Outils présentés dans le cadre de compétitions de solveurs

N/A

Outils d'aide à la décision

N/A

6. Brevets, licences et déclarations d'invention

- Farid Benbadis, Marcelo Dias de Amorim, Vania Conan, and Serge Fdida, “Procédé et système d'échanges de données”, French patent application #1601868, 2016.
- Victor Bahl, Serge Fdida, Giovanni Pau, and Davide Pesavento, “Procédé et système d'établissement d'un accès à Internet par utilisation d'un protocole de communication sans fil en réseau informatique local à partir d'une station cliente mobile”, French patent application #1558266, 2016.
- Christophe Loussert, Brigitte Kervella, Mario Zancanaro, Mauro Sergio Pereira Fonseca, Jean-Michel Akre, Anne Fladenmuller, and Sébastien Baey, “Procédé de discrimination de tags RFID en mouvement de tags statiques”, Brevet #FR3026876-A1, France, 2014.

7. Rapports d'expertises techniques, produits des instances de normalisation

- Expertise report for DGA, “French research on swarm of robots”, July-August 2017.

8. Produits des activités didactiques

Ouvrages

N/A

E-learning, moocs, cours multimedia, etc.

- Timur Friedman and Renata Teixeira, “Internet Measurements : A Hands-on Introduction”, Fun-MOOC, 2016. This course is a hands-on introduction to internet measurements. You will learn about measuring the structure of the internet and the routes through that structure, about delays, losses and connectivity,

about bandwidth, and about traffic. You will see how to make these measurements, and you will understand what you can and cannot learn from them. We teach you how to run measurements from any computer. This course provides you with the ability to launch measurements on PlanetLab Europe, a platform consisting of internet connected servers at over 150 locations around the continent. This course is structured in 5 weeks. Each week, around 6 course sequences will be available with video lectures, supplementary resources, associated quiz and applicative exercises.

- Participation to the design of the MOOC backend, 2015.
- Participation in the European project FORGE (Forging Online Education through FIRE) between October 2013 and September 2016. The idea behind FORGE was to bring the FIRE and eLearning worlds together. FORGE has specified development methodologies and best practices for offering FIRE experimentation facilities to learners and to the learning community in general.
- Contribution to the FORGE eBook (from 2012 to 2014).

9. Produits destinés au grand public

Émissions radio, TV, presse écrite

- Giovanni Pau, interview to France 3, June 2017. France 3 featured Canarin-II, a low-cost portable PM2.5 sensor suitable for environmental monitoring and personal exposure assessment.
- Sébastien Tixeuil, interview by Thierry Lucas in *l'Usine Nouvelle* for the article “Cinq technos qui vont tout changer” pp. 26-27, n. 3423, 5 March 2015.
- Marcelo Dias de Amorim, interview to Indescience, “Des zetaoctets et du cloud”, February 2014.
- Prométhée Spathis, interview to Le Figaro, “Les nouvelles technologies en pointe”, Le Figaro, April 02, 2012.

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

- Serge Fdida, “Equipex FIT Video”, June 2017, <https://vimeo.com/224023485>.
- Serge Fdida, “H2020 F-Interop Video Introduction”, April 2017, <https://www.youtube.com/watch?v=5rZRTKrTUx8>.
- Meryem Marzouki, “Our Data, Our Lives?”, The 2013 Public Voice Conference in Warsaw, EDRi-Gram letters, n. 11.18, September 2013.
- Meryem Marzouki, “Transborder data access : Strong critics on plans to extend CoE Cybercrime Treaty”, EDRi-Gram letters, n. 11.11, June 2013.
- Meryem Marzouki, “Privacy rights as a global challenge”, EDRi-Gram letters, n. 10.21, November 2012.
- Meryem Marzouki, “Amesys - Complicity In Torture : Surveillance Tech Export Control Needed”, EDRi-Gram letters, n. 10.10, Mai 2012.
- Meryem Marzouki, “EU DP Regulation Proposal : The French CNIL Defends Its Turf”, EDRi-Gram letters, n. 10.3, February 2012.

Produits de médiation scientifique

N/A

Débats science et société

- Meryem Marzouki, “Mobilité et vie privée”, Sciences à Cœur Sorbonne Universités, April 2014.
- Marcelo Dias de Amorim, “Le rôle de la mobilité dans les communications du futur”, Sciences à Cœur Sorbonne Universités, février 2014.
- Meryem Marzouki, Audition par le rapporteur de la Commission des lois du Sénat sur la proposition de loi n° 361 (2013-014), visant à limiter l’usage des techniques biométriques, February 2014.
- Meryem Marzouki, Audition par le comité de la Convention 185 (cybercriminalité) du Conseil de l’Europe sur l’accès transfrontière aux données personnelles, June 2013.
- Prométhée Spathis, “3e Cycles et Masters : Où, quand, comment ?”, Salon de l’Étudiant, February 2013.

- Meryem Marzouki, Audition par le comité de la Convention 108 (vie privée et protection des données personnelles) du Conseil de l'Europe sur la modernisation du texte de la Convention, May 2012.
- Meryem Marzouki, Audition par le rapporteur de la Commission des lois du Sénat sur la proposition de directive (E 7054) et sur la proposition de règlement (E 7055) relatives à la protection des personnes physiques à l'égard du traitement des données à caractère personnel, February 2012

10. Autres produits propres à une discipline

Créations artistiques théorisées

N/A

Mises en scènes

N/A

Films

N/A

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

- Anastasios Giovanidis, Associate Editor, EURASIP Journal on Wireless Communications and Networking.
- Serge Fdida, Editorial board, Elsevier Computer Communications Journal.
- Marcelo Dias de Amorim, Scientific council, ISTE-Wiley Publishing.
- Serge Fdida, Editorial board, Springer Journal of Internet Services and Applications (JISA).
- Marcelo Dias de Amorim, Editorial board, IEEE Communications Surveys & Tutorials.

Direction de collections et de séries

N/A

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

- Prométhée Spathis, Faculty Advisory Committee on Appointments and Advancements for Assistant Professors at : Université Pierre et Marie Curie (2013–2015), Université de la Réunion, (since 2009).
- Maria Potop-Butucaru, Faculty Advisory Committee on Appointments and Advancements for Assistant Professors at : Université de Nantes (2012, 2013,2017), Université de Rennes (2016), and Université Aix-Marseille (2017).
- Maria Potop-Butucaru, Faculty Advisory Committee on Appointments and Advancements for Full Professors at : Université de Lorraine (2016), Université Aix-Marseille (2016), Université de Bordeaux (2015), UPMC (2016, 2017).
- Marcelo Dias de Amorim, Faculty Advisory Committee on Appointments and Advancements for Assistant Professors at : Telecom ParisTech (2016) and INSA-Lyon (2017).
- Marcelo Dias de Amorim, Faculty Advisory Committee on Appointments and Advancements for Full Professors at : UPMC (2012).

Évaluation d'articles et d'ouvrages scientifiques

Members of NPA review papers on a regular basis. A non-exhaustive list of journals, conferences, and books is given below :

- Journals : Distributed Computing Journal, Journal of the ACM, TSI, TIC et Société, Internet Policy Review, IEEE/ACM Transactions on Networking, IEEE Transactions on Wireless Communications, IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Intelligent Transportation Systems, IEEE Transactions on Communications, IEEE Transactions on Mobile Computing, Performance Evaluation, Computer Networks, Computer Communications, ACM Wireless Networks, Ad hoc Networks Journal, IEEE Communication Letters, European Transactions on Telecommunications, Wireless Communications and Mobile Computing, and EURASIP Journal on Wireless Communications and Networking.
- Books : MIT Press
- Conferences : ACM PODC, ACM Mobicom, ACM Mobisys, DISC, IEEE IPDPS, IEEE Infocom, ACM CoNext, ACM Chants, IEEE ICC, IEEE Globecom, IEEE Percom PWN, IFIP Networking, SSS, IEEE VTC, IEEE LCN, ACM PE-WASUN, ACM MobilityModels, Algotel, CFIP.

Évaluation de laboratoires (type Hceres)

- Serge Fdida, Scientific Advisory Board, IRT b<>com, 2014–.
- Serge Fdida, president of the evaluation committee on telecommunications, DGA, 2016.
- Sébastien Tixeuil, president of the HCERES evaluations committee of MIS Laboratory (Amiens), 2016.
- Serge Fdida, president of the HCERES evaluations committee of Institut de Recherche en Informatique de Toulouse (IRIT), 2014–2015.
- Maria Potop-Butucaru, member of the evaluation committee of LAAS, 2014–2015.
- Sébastien Tixeuil, member of the evaluation committee of Laboratoire d'Informatique de CentraleSupélec, 2013–2014.

Évaluation de projets de recherche

- Serge Fdida, expert for H2020 and FP7 project proposals, 2012–2017.
- Marcelo Dias de Amorim, expert for ANR, 2012–2017.
- Prométhée Spathis, expert for ANR, 2016.
- Serge Fdida, expert for EACEA KA, 2016.
- Meryem Marzouki, expert for ANR, 2016.
- Meryem Marzouki, member of the International Advisory Board of the FP7 European project “Science in Society” MAPPING (Managing Alternatives for Privacy, Property and Internet Governance), 2014–2018.
- Prométhée Spathis, Selection committee for the DAAD (German Academic Exchange Service), 2016
- Prométhée Spathis, External expert for DIGITEO-DigiCosme call for proposals, 2016.
- Meryem Marzouki, member of the academic network associated with the Global Commission on Internet governance between Centre for International Governance Innovation (Canada) et Chatham House (United Kingdom), 2014–2016.
- Prométhée Spathis, Admission committee for the IGR competition of Université Pierre et Marie Curie, 2016.
- Serge Fdida, NSF CISE Committee of Visitors, 2014.
- Meryem Marzouki, member of the International Advisory Board of the FP7 European project CONSENT (Consumer Sentiment regarding Privacy on user generated content services in the digital economy), 2010–2013.

3. Activités d'expertise scientifique

Activités de consultant

N/A

Participation à des instances d'expertises (type Anses) ou de normalisation

N/A

Expertise juridique

- Meryem Marzouki, member of the expert group on the rights of internet users (MS-DUI), Council of Europe (Media and Internet Division), 2012–2013.

4. Organisation de colloques / congrès

- Marcelo Dias de Amorim, program chair, ICT Tools for Emergency Networks and Disaster Relief (I-TENDER), 2017.
- Maria Potop-Butucaru, track chair, IEEE International Conference on Distributed Computing and Networking (ICDCN), 2017.
- Anastasios Giovanidis, general chair, International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), 2017.
- Meryem Marzouki, general chair, GIG-ARTS (Global Internet Governance as a Diplomacy Issue), 2017.
- Marcelo Dias de Amorim, program chair, IEEE International Conference on Internet of the Future (NOF), 2016.
- Maria Potop-Butucaru, general chair, International Symposium on Distributed Computing (DISC), 2016.
- Lélia Blin, logistic chair, International Symposium on Distributed Computing (DISC), 2016.
- Marcelo Dias de Amorim, program chair, ACM Workshop on Challenged Networks (CHANTS), 2016.
- Maria Potop-Butucaru, program chair, Workshop on Moving and Computing (MAC), 2016.
- Marcelo Dias de Amorim, program chair : Rencontres Francophones sur la Conception de Protocoles, l'Évaluation de Performance et l'Expérimentation des Réseaux de Communication (CoRes), 2016.
- Serge Fdida and Giovanni Pau, general chairs, ACM Mobicom, 2015.
- Giovanni Pau, general chair, ACM Mobisys, 2015.
- Maria Potop-Butucaru, program chair, ACM Workshop on Adaptive Resource Management and Scheduling for Cloud Computing (ARMS-CC), 2015.
- Maria Potop-Butucaru, general chair, International Conference on Principles of Distributed Systems (OPODIS), 2015.
- Marcelo Dias de Amorim, workshops chair, ACM Mobicom, 2015.
- Lélia Blin, program chair, Rencontres Francophones sur les Aspects Algorithmiques des Télécommunications (Algotel), 2015.
- Bruno Baynat, program chair, International Workshop on Intelligent Design and Performance Evaluation of LTE-Advanced Networks, 2015.
- Maria Potop-Butucaru, program chair, ACM Workshop on Adaptive Resource Management and Scheduling for Cloud Computing (ARMS-CC), 2014.
- Maria Potop-Butucaru, organizing committee, ACM ACM Symposium on Principles of Distributed Computing (PODC), 2014.
- Maria Potop-Butucaru, track chair, International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), 2014.
- Prométhée Spathis, program chair, ResCom summer school, “Les réseaux centrés sur les contenus : évolution ou révolution de l'Internet”, 2013.
- Marcelo Dias de Amorim, program chair, Japanese-French workshop on Future Internet Technologies, 2013.
- Lélia Blin, program chair, Workshop on Theoretical Aspects of Dynamic Distributed Systems, 2013.
- Maria Potop-Butucaru, general chair, International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), 2013.
- Lélia Blin, program chair, Workshop on Theoretical Aspects of Dynamic Distributed Systems, 2012.
- Marcelo Dias de Amorim, program chair, ACM/Sigcomm AINTEC, 2012.

5. Post-doctorants et chercheurs accueillis

Invited professors and researchers :

- Paul Vincent Mockapetris (Nominum), 01/07/2010 → 30/09/2017
- Tuan Minh Pham (Thuyloi University), 15/05/2017 → 31/07/2017
- George Kesidis (Pennsylvania State University), 16/05/2017 → 24/05/2017
- Xavier Défago (Tokyo Institute of Technology), 08/03/2017 → 16/03/2017
- JongWon Kim (Gwangju Institute of Science & Technology), 10/10/2016 → 09/11/2016
- Miguel Elias Mitre Campista (Universidade Federal do Rio de Janeiro), 07/10/2016 → 26/10/2016 ; 17/07/2013 → 31/07/2013 ; 01/10/2011 → 30/09/2012
- François Bonnet (Japan Advanced Institute of Science and Technology), 07/07/2016 → 12/07/2016
- Ahmed Helmy (University of Florida), 29/06/2016 → 10/09/2016
- Preechai Mekbungwan (Asian Institute of Technology), 26/06/2016 → 26/10/2016
- Pierre-Ugo Tournoux (Université de la Réunion), 04/04/2016 → 15/04/2016
- Toshimitsu Masuzawa (Osaka University), 25/08/2015 → 28/09/2015
- Luis Henrique Maciel Kosmowski Costa (Universidade Federal do Rio de Janeiro), 01/07/2015 → 25/08/2015 ; 30/09/2013 → 15/11/2013
- Christos Papadopoulos (Colorado State University), 21/06/2015 → 30/07/2015
- Mario Gerla (University of California Los Angeles), 23/02/2015 → 31/03/2015
- Mostafa Ammar (Georgia Institute of Technology), 10/02/2015 → 12/05/2015
- Paramvir Victor Bahl (Microsoft Research), 25/11/2014 → 19/01/2015
- Kanchana Kanchanasut (Asian Institute of Technology), 01/07/2014 → 21/07/2014
- Yannis Viniotis (North Carolina State University and Cisco Systems), 01/07/2014 → 31/07/2014
- Nanette Levinson (American University Washington), 18/06/2014 → 11/07/2014 ; 01/09/2013 → 15/12/2013
- Lixia Zhang (University of California Los Angeles), 01/04/2014 → 30/06/2014
- Dae Young Kim (Chungnam National University), 01/03/2014 → 31/07/2014
- Takumi Miyoshi (Shibaura Institute of Technology), 01/08/2013 → 05/09/2013
- Sayaka Kamei (Hiroshima University), 03/12/2011 → 04/02/2012

Post-docs :

- Fabio Rocha Jimenez Vieira, 06/06/2014 → 31/08/2015
- Thiago Wanderlei Matos de Abreu, 07/01/2013 → 30/04/2013
- Panayotis Antoniadis, 01/09/2009 → 30/09/2012
- Jordan Augé, 01/04/2009 → 28/02/2014
- Mehdi Bezahaf, 01/10/2014 → 31/10/2016
- Raluca Andreea Diaconu, 15/02/2015 → 31/10/2015
- Eduardo Geronimo Pacheco Gomez , 01/11/2014 → 31/10/2015
- Anna Kaisa Pietlainen, 01/01/2013 → 15/11/2013
- Tim Fabian Schneider, 01/04/2010 → 31/03/2012

6. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

- Industrial contract with Atos and Renault (Chair on Smart Mobility), June 2012→May 2018 ; Funding : 1,380 K€
- Industrial contract with Telefonica I+D (PlanetLab Europe Membership), December 2015→December 2017 ; Funding : 25 K€
- Industrial contract with CEA, thesis of Mohamed Labraoui (SDN for Wireless and Mobile Networks), December 2014→December 2017 ; Funding : 1.5 K€
- Industrial contract with Google (M-LAB PlanetLab Google), March 2013→December 2015 ; Funding : 53 K€
- Industrial contract with Thales Communications & Security (Modeling of Multi-Radio Links), July 2014→June 2015 ; Funding : 20 K€

Bourses Cifre

- CIFRE with SystemX, thesis of Xuan Zeng (Applying Information-Centric Networking Principles to Today's Networking Challenges), March 2015→March 2018; Funding : 39 K€
- CIFRE with Thales Communications & Security, thesis of Filippo Rebecchi (Device-to-Device Data Offloading : From Model to Implementation), September 2012→August 2015; Funding : 30 K€
- CIFRE with Alcatel-Lucent, thesis of Walid Benchaita (Stabilizing and Optimizing Content Delivery Networks), September 2012→August 2015; Funding : 30 K€
- CIFRE with Technicolor R&D, thesis of Stéphane Wustner (Automated Home Network Troubleshooting), February 2010→January 2015; Funding : 45 K€
- CIFRE with Thales Communications & Security, thesis of John Whitbeck (Mobile Opportunistic Networks : Visualization, Modeling, and Application to Data Offloading), April 2009→December 2013; Funding : 30 K€
- CIFRE with Thomson, thesis of Lucas Di Cioccio (Home Network Monitoring), September 2009→December 2013; Funding : 30 K€

Créations de laboratoires communs avec une / des entreprise(s)

- Founding member of LINCS (Laboratory of Information, Networking and Communication Sciences), co-founded by Inria, Institut Mines-Télécom, UPMC, and Nokia Bell Labs. Joined lately by IRT SystemX.

Création de réseaux ou d'unités mixtes technologiques

N/A

Créations d'entreprises, de start-up

N/A

7. Contrats de recherche financés par des institutions publiques ou caritatives

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

- H2020 FED4FIRE+ (Federation for FIRE Plus), January 2017→December 2021; Funding : 500 K€
- H2020 "RAWFIE Open Call" SAMANT (Semantic Aware Management of Federated Testbeds), September 2016→February 2019; Funding : 75 K€
- H2020 EMBERS (Enabling a Mobility Back-End as a Robust Service), December 2015→November 2018; Funding : 543 K€
- EU-China EXCITING (EU-China Study on IoT and 5G), November 2016→October 2018; Funding : 147 K€
- FP7 F-INTEROP (Platform for Online Interoperability and Performance Test), November 2015→October 2018; Funding : 495 K€
- FP7 ARMOUR (Large-Scale Experiments of IoT Security and Trust), February 2016→January 2018; Funding : 315 K€
- KIC-EIT Digital On Line (Education On Line), March 2017→December 2017; Funding : 175 K€
- KIC-EIT Digital Master School, March 2017→December 2017; Funding : 40 K€
- KIC-EIT Digital Master School, January 2010→December 2016; Funding : 59 K€
- KIC-EIT FITTING (Future Internet of Things), January 2010→December 2016; Funding : 55 K€
- FP7 FORGE (Forging Online Education through FIRE), October 2013→September 2016; Funding : 272 K€
- FP7 FED4FIRE (Federation for FIRE), October 2012→September 2016; Funding : 557 K€
- STIC-Amsud MOSAIC (Mobile Crowd Sensing and Data Offloading in Collaborative Networks), March 2014→March 2016; Funding : 39,5 K€
- FP7 FLEX (FIRE LTE Testbeds for Open Experimentation), April 2015→March 2016; Funding : 700 K€

- FP7 SmartFIRE (Enabling SDN Experimentation in Wireless Testbeds Exploiting Future Internet Infrastructure in South Korea and Europe), November 2013→December 2015 ; Funding : 100 K€
- FP7 FIGARO (Future Internet Gateway-Based Architecture of Residential Networks), October 2010→December 2015 ; Funding : 381 K€
- FP7 MOTO (Mobile Opportunistic Traffic Offloading), November 2012→October 2015 ; Funding : 375 K€
- FP7 SMART (Study on European Internet Traffic : Monitoring Tools and Analysis), June 2013→June 2015 ; Funding : 69 K€
- FP7 EINS (Network of Excellence in Internet Science), December 2011→May 2015 ; Funding : 160 K€
- FP7 CI-FIRE (Coordination and Integration of Future Internet Research Experimentation), October 2013→March 2015 ; Funding : 59 K€
- FP7 FIREWORKS (Future Internet Research and Experimentation – Strategy Works), April 2008→December 2014 ; Funding : 75 K€
- FP7 EU-BR FIBRE (Future Internet Testbeds/Experimentation between Brazil and Europe), June 2011→August 2014 ; Funding : 189 K€
- FP7 OPENLAB (Extending FIRE Testbeds and Tools), September 2011→August 2014 ; Funding : 636 K€
- FP7 COOPLAB (A Federated Environment for Experimentation on Wireless Cooperative Networks), July 2011→July 2014 ; Funding : 110 K€
- STIC-Amsud CUDEN (Collaborative Centric User-Device Networking) , March 2012→March 2014 ; Funding : 42 K€
- FP7 FIRESTATION (Future Internet Research and Experimentation Support Action), June 2011→May 2013 ; Funding : 173 K€
- FP7 NOVI (Networking Innovation over Virtualized Infrastructures), September 2010→May 2013 ; Funding : 100 K€

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

- Contract with Ministère de la Défense (Internet Cartography), September 2016→December 2021 ; Funding : 566 K€
- PEPS/CNRS BIP (Bitcoin Improvement Protocols), June 2016→December 2017 ; Funding : 19 K€(managed by IRISA)
- PEPS/CNRS CYBORG (Certified Yet Byzantine Resilient Robots in Groups), February 2017→December 2017 ; Funding : 18 K€(managed by LIRIS)
- ANR DataTweet (A Public Service for Opportunistic Communications), October 2013→September 2017 ; Funding : 206 K€
- LABEX SMART SMARTBAN (study of the body area networks), September 2013→September 2017 ; Funding : 291 K€
- ANR GIG-ARTS (Global Internet Governance : Actors, Regulations, Transactions, and Strategies), October 2015→March 2017 ; Funding : 30 K€
- ANR IDEFIX (Intelligent Design of Future Mobile Internet for Enhanced Experience), September 2013→February 2017 ; Funding : 74 K€
- FUI AIC 2.0 (Android in Cloud), December 2013→December 2016 ; Funding : 171 K€
- IUS/UPMC e-PATIENT (study of the body area networks), January→December 2015 ; Funding : 10 K€
- ANR IRIS (All IP Networks for the Future Internet of Smart Objects), January 2012→November 2015 ; Funding : 163 K€
- ANR F-LAB (Federating computing resources), November 2010→April 2014 ; Funding : 367 K€
- ANR RESCUE (Mobile Coordinated Substitution Network), December 2010→March 2014 ; Funding : 163 K€
- ANR LICORNE (Coexistence of Service Providers on Cognitive Radio Networks), December 2010→March 2014 ; Funding : 120 K€
- ANR CONNECT (Content-Oriented Networking : A New Experience for Content Transfer), December 2010→December 2013 ; Funding : 192 K€
- ANR FITTING (Future Internet (of Things) Facility), July 2011→December 2012 ; Funding : 60 K€

- ANR SCATTER (Scalable Naming in Information Centric Networks), July 2011→December 2012; Funding : 48 K€
- ANR SHAMAN (Self-organizing and Healing Architectures for Malicious and Adversarial Networks), December 2008→December 2012; Funding : 230 K€
- ANR SensLab (Very Large Scale Open Wireless Sensor Network Testbed), December 2007→June 2012; Funding : 52 K€
- ANR CROWD (Consumer-Generated Mobile Wireless Media), December 2008→April 2012; Funding : 212 K€
- ANR WINGS (Widening Interoperability for Networking Global Supply Chains), October 2009→March 2012; Funding : 60 K€

Contrats avec les collectivités territoriales

- SEPPE ONELAB3 (Experimental Infrastructures for the Internet of the Future), April 2009→April 2012; Funding : 220 K€
- Digiteo Pactole (Proof Automation and Certification Tools for Ubiquitous Large-Scale Environments), October 2009→December 2012; Funding : 110 K€

Contrats financés dans le cadre du PIA

- Equipex FIT (Futur Internet of Things), February 2011→December 2019; Funding : 682 K€

Contrats financés par des associations caritatives et des fondations (ARC, FMR, FRM, etc.)

N/A

8. Indices de reconnaissance

Prix

- “Étoiles de l’Europe” prize to Pr. Serge Fdida for the coordination of the FP7 OpenLab European project, December 2014.

Distinctions

- Equipex FIT is now recognized as a national research infrastructure by the Ministry of Research.
- Institut Universitaire de France : Sébastien Tixeuil (2010-2015)
- Primes d’Excellence Scientifique : Marcelo Dias de Amorim (CNRS)
- Prime d’Investissement en Recherche : Sébastien Tixeuil (UPMC)
- Distinguished TPC Member Award, IEEE Infocom (2015 and 2016)
- Best paper Award at SRDS 2015. Paper : A. Maurer, X. Défago, and S. Tixeuil, “Reliable Communication in a Dynamic Network in the Presence of Byzantine Faults”, *Proceedings of the IEEE International Symposium on Reliable Distributed Systems*, Montréal, Canada, September 2015.
- Best paper Award at AICT 2015. Paper : N. Malouch, “Integrating an Effective VoIP Service in a USRP/GNU Radio Testbed”, in AICT 2015, Bruxelles, Belgium, 2015, best Paper Award.
- Selected paper at ACM Chants 2014 for a fast track publication in *Computer Communications*. Paper : F. Rebecchi, M. Dias de Amorim, V. Conan, “Flooding Data in a Cell : Is Cellular Multicast Better than Device-to-Device Communications?”, ACM CHANTS, Hawaii, USA, September 2014.
- Best paper award at ASE/IEEE International Conference on Economic Computing 2013. Paper : G. Kesidis, F. Kocak, T.-M. Pham, and S. Fdida, “The Effect of Caching on a Model of Content and Access Provider Revenues in Information-centric Networks”, *ASE/IEEE International Conference on Economic Computing*, Washington, USA, September 2013.

Responsabilités dans des sociétés savantes

- Meryem Marzouki, Steering Committee member of the Standing Group on Internet and Politics of the European Consortium for Political Research

Contrats financés dans le cadre du PIA

- Equipex FIT (Future Internet of Things), funded in the context of PIA1, 2011→2019. Funding : 5,800 K€. FIT is an open large-scale testing infrastructure that allows remote access to various computer resources in the context of Internet of Things. FIT users can test performance, interoperability, and security with almost 3,000 sensors, mobile robots, cloud (OpenStack), and wireless.

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

Invitation to conferences :

- Serge Fdida, “Pushing the envelope of testbed services to accelerate the design of IoT technologies”, *Global Future Network Development Summit*, Nanjing, China, April 2017.
- Giovanni Pau, “Internet of Things in the Vehicle”, *IEEE/IFIP Cloudification of the Internet of Things*, Paris, France, November 2016.
- Sébastien Tixeuil, “Keynote : Benchmarking Self-stabilization”, *Simpósio Brasileiro de Redes de Computadores e Sistemas Distribuídos (SBRC)*, Salvador, Brazil, June 2016.
- Sébastien Tixeuil, “Keynote : Benchmarking self-stabilization with probabilistic model-checking and simulation”, *IEICE Workshop on the Theory of Computation*, Nara, Japan, April 2016
- Serge Fdida, “OneLab : A Testbed as a Service to support the critical design of emerging Cyber-Physical systems”, *China Future Network Development and Innovation Forum Agenda*, December 2015, Nanjing, China.
- Serge Fdida, “FIT : A Facility as a Service to support Experimentally-driven research in smart spaces”, *International Workshop “From Industry 4.0 to Smart cities”*, Paris, France, November 2015.
- Prométhée Spathis, “Large-Scale Networked Systems”, *PhD course*, University of Trento, July 2015, Trento, Italy.
- Giovanni Pau, “Mobile Sensing and Beyond in the Information Age : An Experimental Perspective”, *ACM MobileHealth*, Hangzhou, China, June 2015.
- Serge Fdida, “An Internet of testbeds”, *Workshop Verticals Internet*, Montevideo, Uruguay, March 2015.
- Serge Fdida, “Federation or How to build an Internet of testbeds”, *IoT Forum*, Taipei, Taiwan, December 2014.
- Prométhée Spathis, “Software-Defined Vehicular Backhaul”, *Workshop On Mobile Crowd Sensing and Data Offloading in Collaborative Networks*, Asuncion, Paraguay, October 2014.
- Giovanni Pau, “Will ICN ride Challenged Network Environments?”, *ACM Chants*, Maui, HI, USA, September 2014.
- Serge Fdida, “Smart City Initiatives in France” , *Fuseco Forum Asia*, Bali, Indonesia, June 2014.
- Sébastien Tixeuil, “Invited Talk : Performance evaluation of Self-stabilizing solutions for dynamic tasks”, *Fifth Workshop on Theoretical Aspects of Dynamic Distributed Systems (TADDS)*, joint with DISC, Jerusalem, Israel, October 2013.
- Serge Fdida, “Some developments about the Future Internet in Europe”, *International Conference on Future Internet Technologies*, Beijing, China, June 2013.
- Serge Fdida, “Data Aware Networking”, *International Conference on Future Internet Technologies*, Beijing, China, June 2013.
- Serge Fdida, “Federating experimental platforms as a playground for the future internet”, *International Conference on Future Internet Technologies*, Beijing, China, June 2013.
- Serge Fdida, “Federating experimental platforms as a playground for the future Internet”, *Chinese Academy of Science*, June 2013.
- Sébastien Tixeuil, “Invited Paper : Dependable information broadcast in sparsely connected networks”, *International Conference on Latin American Dependable Computing (LADC)*, Rio de Janeiro, Brasil, April 2013.

- Serge Fdida, “Federating experimental platforms as a playground for the future internet”, *International Conference on the Network of the Future*, Tunis, Tunisia, November 2012.
- Marcelo Dias de Amorim, “Who wanders around me ? And how to exchange large data on the move”, *WIDE Camp*, Nagano, Japan, September 2012.
- Serge Fdida, “Innovation in Education to address the Future Internet challenges”, *International Conference on Communications and Electronics*, Hué, Vietnam, August 2012.
- Serge Fdida, “International federation of testbeds”, *GENI Engineering Conference – NSF*, Boston, 9-11 July 2012
- Serge Fdida, “FIRE Future Internet Research and Experimentation”, *Future Internet*, Brasilia, Brazil, May 2012.
- Serge Fdida, “Open Platforms for Innovation”, *FIA Aalborg*, May 2012.
- Serge Fdida, “Connecting Names and Routes in Content Centric Networks”, *ICN Workshop*, MIT, December 2012.

Visits :

- Davide Pesavento, National Institute of Standards and Technology, eight months, November 2016–June 2017.
- Prométhée Spathis, New York University, four months, February–May 2017.
- Meryem Marzouki, Société Québécoise de Sciences Politiques, one week, May 2017.
- Anastasios Giovanidis, University of Athens, one week, May 2017.
- Giovanni Pau, University of Bologna, one week, May 2017.
- Marcelo Dias de Amorim, New York University Shanghai, one week, May 2017.
- Giovanni Pau, Macao Polytechnic Institute, several one-week visits in 2015, 2016, and 2017.
- Maria Potop-Butucaru, University Sapienza Rome, one week, April 2017.
- Meryem Marzouki, University of Salerno, one week, November 2016.
- Giovanni Pau, Chinese Academy of Sciences, one week, November 2016.
- Loïc Baron, Chinese Academy of Sciences, one week, September 2016.
- Marcelo Dias de Amorim, Universidade Federal do Rio de Janeiro, two weeks, November 2016.
- Giulio Grassi, Microsoft Research, three months, June 2016–August 2016.
- Sébastien Tixeul, Nara Institute of Science and Technology, five weeks, April 2016.
- Giovanni Pau, Asian Institute of Technology, one week, February 2016.
- Alexandre Ragaleux, Lund University, three months, October–December 2015.
- Benjamin Baron, Georgia Institute of Technology, four months, August–November 2015.
- Marcelo Dias de Amorim, Georgia Institute of Technology, one week, November 2015.
- Prométhée Spathis, Georgia Institute of Technology, one week, November 2015.
- Meryem Marzouki, Danish Institute for Human Rights, one week, October 2015.
- Prométhée Spathis, University of Trento, one week, July 2015.
- Olivier Fourmaux, Shibaura Intitute of Technology, one week, June 2015.
- Sébastien Tixeul, Universita di Roma “La Sapienza”, fourteen weeks, March-May 2015.
- Prométhée Spathis, New York University, four months, February–May 2015.
- Giovanni Pau, Hong Kong Polytechnic Institute, one week, March 2015.
- Maria Potop-Butucaru, Politechnica Bucarest, one week, December 2014.
- Marcelo Dias de Amorim, Universidade Federal do Rio de Janeiro, two weeks, November 2014.
- Sébastien Tixeul, Japan Institute of Science and Technology, one week, July 2014.
- Olivier Fourmaux, Shibaura Intitute of Technology, one week, December 2013.
- Sébastien Tixeul, Politechnica Bucharest, one week, July 2013.
- Maria Potop-Butucaru, Politechnica Bucarest, one week, June 2013.
- Marcelo Dias de Amorim, Keio University, one weeks, May 2013.
- Marcelo Dias de Amorim, Universidade Federal do Rio de Janeiro, two weeks, April 2013.
- Olivier Fourmaux, Shibaura Intitute of Technology, one week, December 2012.
- Marcelo Dias de Amorim, WIDE project, one week, September 2012.
- Prométhée Spathis, WIDE project, one week, September 2012.

Annexe 4 EQUIPE PHARE

Nom de l'équipe : PHARE

Acronyme : PHARE

Nom du responsable pour le contrat en cours : Guy Pujolle

Nom du responsable pour le contrat à venir : Guy Pujolle

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

Selection of top 20% publications in international journals.

- [PHARE-J-1] Ceselli, A., **Premoli, M., Secci, S.**, “Mobile Edge Cloud Network Design Optimization”. In : *IEEE/ACM Transactions on Networking* 25.3 (juin 2017), p. 1818–1831.
- [PHARE-J-2] **Hoteit, S.**, El Chamie, M., Saucez, D., **Secci, S.**, “On Fair Network Cache Allocation to Content Providers”. In : *Computer Networks* 103 (juil. 2016), p. 129–142.
- [PHARE-J-3] **Secci, S., Raad, P.**, Gallard, P., “Linking Virtual Machine Mobility to User Mobility”. In : *IEEE Transactions on Network and Service Management* 13.4 (2016), p. 927–940.
- [PHARE-J-4] **Langar, R., Secci, S.**, Boutaba, R., **Pujolle, G.**, “An Operations Research Game Approach for Resource and Power Allocation in Cooperative Femtocell Networks”. In : *IEEE Transactions on Mobile Computing* 14.4 (avr. 2015), p. 675–687.
- [PHARE-J-5] **Hoteit, S., Secci, S.**, Sobolevsky, S., Ratti, C., **Pujolle, G.**, “Estimating human trajectories and hotspots through mobile phone data”. In : *Computer Networks* 64 (mai 2014), p. 296–307.
- [PHARE-J-6] **Phung, C. D., Secci, S.**, Saucez, D., Iannone, L., “The OpenLISP control-plane architecture”. In : *IEEE Network* 28.2 (mar. 2014), p. 34–40.
- [PHARE-J-7] Saucez, D., **Secci, S.**, Barakat, C., “On the Incentives and Incremental Deployments of ICN technologies for OTT Services”. In : *IEEE Network* 28.3 (mai 2014), p. 20–25.
- [PHARE-J-8] **Secci, S., Pujolle, G.**, Nguyen, T.-M.-T., Nguyen, S. C., “Performance-Cost Trade-off Strategic Evaluation of Multipath TCP Communications”. In : *IEEE Transactions on Network and Service Management* 11.2 (juin 2014), p. 250–263.
- [PHARE-J-9] **Hoteit, S., Secci, S., Langar, R., Pujolle, G.**, “A Nucleolus-based Approach for Resource Allocation in OFDMA Wireless Mesh Networks”. In : *IEEE Transactions on Mobile Computing* 12.11 (nov. 2013), p. 2145–2154.
- [PHARE-J-10] **Achour, A.**, Haddadou, K., **Kervella, B., Pujolle, G.**, “A SIP-SHIM6-Based Solution Providing Interdomain Service Continuity in IMS-based Networks”. In : *IEEE Communications Magazine* 50.7 (juil. 2012), p. 109–119.

Articles de synthèse / revues bibliographiques

- [PHARE-S-1] **Del-Piccolo, V., Amamou, A., Haddadou, K., Pujolle, G.,** "A Survey of Network Isolation Solutions for Multi-Tenant Data Centers". In : *IEEE Communications Surveys & Tutorials* 18.4 (2016), p. 2787–2821.
- [PHARE-S-2] Li, M., Lukyanenko, A., OU, Z., Yla-Jaaski, A., Tarkoma, S., **Coudron, M., Secci, S.,** "Multipath Transmission for the Internet : A Survey". In : *Communications Surveys and Tutorials, IEEE Communications Society* 18.4 (2016), p. 2887–2925.
- [PHARE-S-3] **Jelassi, S., Rubino, G., Melvin, H., Youssef, H., Pujolle, G.,** "Quality of Experience of VoIP Service : A Survey of Assessment Approaches and Open Issues". In : *Communications Surveys and Tutorials, IEEE Communications Society* 14.2 (2012), p. 491–513.
- [PHARE-S-4] **Movahedi, Z., Ayari, M., Langar, R., Pujolle, G.,** "A survey of autonomic network architectures and evaluation criteria". In : *Communications Surveys and Tutorials, IEEE Communications Society* 14.2 (2012), p. 464–490.
- [PHARE-S-5] **Torres, J., Nogueira Lima, M., Pujolle, G.,** "A Survey on Identity Management for the Future Network". In : *Communications Surveys and Tutorials, IEEE Communications Society* 15.2 (2012), p. 787–802.

Autres articles (articles publiés dans des revues professionnelles ou techniques, etc.)

- A. Fenioux, F. Vincent, S. Secci, Extension de LAN, Multi-Systems and Internet Security Cookbook (MISC), Vol. 84, pp : 31-38, March/April, 2016.
- S. Secci, "Mobilité et nuages : un air de Roque ?" - "Cloud and Mobility : a Castling Move ?", Global Security Magazine, Avril 2012.

2. Ouvrages

Thèses publiées / éditées

- COUDRON Matthieu : "Nouvelles Approches pour les Communications Multi-Chemins", directeur Stefano SECCI, defense on 12/12/2016.
- BEN CHEIKH Ahlam : "Gestion de la mobilité dans les réseaux Femtocells", directeur Rami LANGAR, defense on 12/12/2016.
- BEN JEMAA Fatma : "Conception et optimisation des réseaux Wi-Fi "opérateur" de nouvelle génération", directeur Guy PUJOLLE, defense on 27/09/2016.
- KHALFALLAH Zakia : "Déploiement des Réseaux de Capteurs Sous-marins pour la Surveillance de la Pollution dans une Rivière", directeur Guy PUJOLLE, defense on 16/12/2015.
- STITI Oussama : "Étude de l'urbanisation des accès virtuels et stratégie de métamorphose de réseaux", directeur Guy PUJOLLE, defense on 15/12/2015.
- RAAD Patrick : "Protocoles et algorithmes pour les réseaux de centres de données distribués", directeur Stefano SECCI, defense on 14/12/2015.
- VILLAIN Benjamin : "Nouvelle génération de contrôleur d'accès réseau : une approche par réseaux logiciels", directeur Guy PUJOLLE, defense on 09/10/2015.
- AISSAOUI MEHREZ Hassane : "Sécurité pour les réseaux du futur : Gestion sécurisée des identités", directeur Guy PUJOLLE, defense on 10/07/2015.
- BELABED Dallah : "Conception et évaluation d'algorithmes d'optimisation pour les réseaux de centres de données", directeur Stefano SECCI, defense on 24/04/2015.
- ZANCANARO Mario Antonio : "Etude de la géo-localisation 3D des tags RFID", directeur Guy PUJOLLE, defense on 26/01/2015.
- BOU ABDO Jacques : "Efficient and Secure Mobile Cloud Networking", directeur Guy PUJOLLE, defense on 18/12/2014.
- AMOKRANE Ahmed : "Green et efficacité en énergie dans les réseaux d'accès et les infrastructures Cloud", directeur Guy PUJOLLE, defense on 08/12/2014.

- GUENANE Fouad : "Gestion de la sécurité des réseaux à l'aide d'un service innovant de Cloud Based Firewall", directeur Guy PUJOLLE, défense on 13/10/2014.
 - HOTEIT Sahar : "Gestion de Ressources et de Congestion dans les Réseaux Mobiles", directeur Guy PUJOLLE, défense on 19/09/2014.
 - HATOUM Rima : "Algorithmes d'Ordonnancement Inter-Couches avec Adaptation de Modulation et de Codage dans les Réseaux Hétérogènes LTE", directeur Guy PUJOLLE, défense on 26/06/2014.
 - VU Thuong Van : "Application du codage de réseau dans l'environnement sans fil : conditions de codage et contrôle de redondance adaptatif", directeur Thi-Mai-Trang NGUYEN, défense on 14/04/2014.
 - BENCHAIIB Yacine : "Virtualisation des réseaux fixes et mobiles", directeur Marcelo DIAS DE AMORIM, défense on 24/03/2014.
 - PALOMARES Daniel : "Etude mécanismes assurant la continuité de service IPsec/IKEv2", directeur Guy PUJOLLE, défense on 14/11/2013.
 - AMAMOU Ahmed : "Isolation réseau dans un datacenter virtualisé", directeur Guy PUJOLLE, défense on 26/09/2013.
 - TORRES Jenny : "Gestion d'identité pour l'Internet du futur", directeur Guy PUJOLLE, défense on 05/07/2013.
 - ORIOL David : "Dimensionnement et réalisation des réseaux de domicile", directeur Guy PUJOLLE, défense on 19/04/2013.
 - HATOUM Abbas Antoun : "Gestion des ressources dans les réseaux Femtocell", directeur Guy PUJOLLE, défense on 29/03/2013.
 - MHIRI Fadoua : "Gestion des ressources dans les réseaux Femtocellulaires", directeur Guy PUJOLLE, défense on 23/02/2013.
 - LE Phu Hung : "Protocole de Routage Multi-chemin pour des Réseaux Ad Hoc", directeur Guy PUJOLLE, défense on 28/09/2012.
 - FAJJARI Ilhem : "Algorithmes d'allocation de ressources pour les réseaux virtuels dans le réseau coeur du Cloud", directeur Guy PUJOLLE, défense on 12/09/2012.
 - TO Ba Lam : "Contrôle de Puissance et Routage dans les Réseaux Ad-hoc à Radio Cognitive", directeur Guy PUJOLLE, défense on 19/07/2012.
 - ACHOUR Amel : "Gestion de la mobilité pour les terminaux multi-homés dans un environnement sans-fil hétérogène", directeur Guy PUJOLLE, défense on 10/07/2012.
- Habilitations à Diriger des Recherches :
- BOUET Mathieu : "Software networks : orchestration, resilience, and programmability concerns", défense on 10/07/2017.
 - HADJI Makhlof : "Mathematical Optimization Methods for NFV and Cloud Resource Allocation Problems", défense on 3/03/2017.
 - AIT SAADI Nadjib : "From Sensors to Data Centers : Optimization of Deployment, Resource Allocation and Reliability", défense on 18/07/2016.
 - DIAZ Gladys : "Vers une personnalisation des services réseau à la demande", défense on 28/06/2016.
 - HASSAN Noura : "Adaptation of Cryptographic Algorithms according to the Applications Requirements and Limitations : Design, Analysis and Lessons Learned", défense on 27/06/2016.
 - ZONGHUA Zhang : "Network security, trust management, and data privacy", défense on 10/06/2015.
 - MEDDAHI Ahmed : "Les protocoles pour la VoIP", défense on 27/11/2014.
 - SECCI Stefano : "Modeling and Evaluating Novel Networked Communications Systems", défense on 22/09/2014.
 - COUPECHOUX Marceaux : "L'ingénierie des réseaux radio", défense on 26/05/2014.
 - LANGAR Rami : "Mobilité, Routage et gestion des ressources dans les réseaux sans-fil urbains", défense on 06/12/2013.
 - NGUYEN Thi-Mai-Trang : "Multihomed, Cognitive and Cooperative Future Internet", défense on 05/07/2012.

3. Colloques / congrès, séminaires de recherche

Éditions d'actes de colloques / congrès

- [PHARE-P-1] Prosper CHEMOUIL, Paulo SIMOES, Stefano SECCI, Gaspary LUCIANO, Edmundo MONTEIRO, Madeira EDMUNDO et Santos CARLOS, éd. *Proceedings of the 2017 IFIP/IEEE Symposium on Integrated Network and Service Management (IM) Conference*. Lisbon, Portugal, juil. 2017.
- [PHARE-P-2] Noel CRESPI, Antonio MANZALINI et Stefano SECCI, éd. *Proceedings of the 2017 20th Conference on Innovations in Clouds, Internet and Networks (ICIN 2017)*. Paris, France, avr. 2017.
- [PHARE-P-3] Stojanovic RADOVAN, Mario GERLA, Guy PUJOLLE et Keun-Woo LIM, éd. *Proceedings of the 2017 16th Annual Mediterranean Ad Hoc Networking Workshop*. Budva, Montenegro, juil. 2017.
- [PHARE-P-4] Stefano SECCI et Shughuang Robert CUI, éd. *Proceedings of the 2016 IEEE Globecom Workshops (GC Wkshps)*. Washington DC, United States, jan. 2017.
- [PHARE-P-5] Prosper CHEMOUIL, Achille PATTAVINA, Eric GOURDIN et Stefano SECCI, éd. *Proceedings of the 12th International Conference on the Design of Reliable Communication Networks, DRCN 2016*. Paris, France, avr. 2016.
- [PHARE-P-6] Marcelo Dias de AMORIM, Otto Carlos Muniz Bandeira DUARTE, Marcelo Gonçalves RUBINSTEIN et Stefano SECCI, éd. *Proceedings of the 7th International Conference on the Network of the Future (NOF)*. Buzios, Brazil, nov. 2016.
- [PHARE-P-7] Stefano SECCI et Xinbing WANG, éd. *Proceedings of the 10th International Workshop on Mobility in the Evolving Internet Architecture, MobiArch 2015*. France, oct. 2015.
- [PHARE-P-8] Guy PUJOLLE, Khaldoun AL AGHA, Brigitte KERVELLA, Steven MARTIN et Tara ALI YAHYA, éd. *Proceedings of the 2013 12th Annual Mediterranean Ad Hoc Networking Workshop (MED-HOC-NET 2013)*. Ajaccio, France, juil. 2013.
- [PHARE-P-9] Guy PUJOLLE, Raouf BOUTABA, Marcus BRUNNER et Stefano SECCI, éd. *Proceedings of the 1st IEEE International Conference on Cloud Networking, CLOUDNET 2012*. Paris, France, déc. 2012.

Articles publiés dans des actes de colloques / congrès

Selection of top 20% publications in international conference proceedings.

- [PHARE-C-1] Baccouch, H., Paul-Louis, A., TIZON, N., Boukhatem, N., **Nguyen, T.-M.-T.**, “Bounded Network Coding Redundancy for Multi-Layer Video Streaming”. In : *13th International Wireless Communications and Mobile Computing Conference (IWCMC 2017)*. Valencia, Spain, juin 2017.
- [PHARE-C-2] **Casazza, M.**, Fouilhoux, P., **Secci, S.**, “Securing Virtual Network Function Placement with High Availability Guarantees”. In : *IFIP Networking 2017*. IFIP Open Digital Library. Stockholm, Sweden, juin 2017.
- [PHARE-C-3] Fossati, F., Moretti, S., **Secci, S.**, “A Mood Value for Fair Resource Allocations”. In : *IFIP Networking 2017*. IFIP Open Digital Library. Stockholm, Sweden, juin 2017.
- [PHARE-C-4] **Ouali, K.**, Kassar, M., **Nguyen, T.-M.-T.**, Sethom, K., **Kervella, B.**, “Modeling D2D Handover Management in 5G Cellular Networks”. In : *13th International Wireless Communications and Mobile Computing Conference (IWCMC 2017)*. Valencia, Spain, juin 2017.
- [PHARE-C-5] **Azzouni, A.**, Braham, O., **Nguyen, T.-M.-T.**, **Pujolle, G.**, Boutaba, R., “Fingerprinting Open-Flow Controllers : The First Step to Attack an SDN Control Plane”. In : *59th annual IEEE Global Communications Conference (GLOBECOM 2016)*. Washington DC, United States : IEEE, déc. 2016, p. 1–6.

- [PHARE-C-6] Ben Jemaa, F., **Pujolle, G.**, Pariente, M., “Cloudlet- and NFV-based carrier Wi-Fi architecture for a wider range of services”. In : *Annals of Telecommunications - annales des télécommunications* 71.11 (2016), p. 617–624.
- [PHARE-C-7] **Del-Piccolo, V.**, **Amamou, A.**, Vidalenc, B., Bouet, M., Haddadou, K., “Design and Analysis of a TRILL - OpenFlow Bridge”. In : *2016 IEEE Global Communications Conference (GLOBECOM)*. Washington, DC, United States, déc. 2016.
- [PHARE-C-8] **Lyazidi, M. Y.**, Aitsaadi, N., **Langar, R.**, “Dynamic resource allocation for Cloud-RAN in LTE with real-time BBU/RRH assignment”. In : *IEEE International Conference on Communications (ICC 2016)*. Kuala Lumpur, Malaysia, mai 2016.
- [PHARE-C-9] Touihri, R., Turpault, N., **Raad, P.**, **Secci, S.**, Cachereul, F., “Unifying LISP and TRILL control-planes for distributed data-center networking”. In : *IEEE/IFIP Network Operations and Management Symposium (NOMS 2016)*. Istanbul, Turkey, avr. 2016.
- [PHARE-C-10] Addis, B., **Belabed, D.**, Bouet, M., **Secci, S.**, “Virtual Network Functions Placement and Routing Optimization”. In : *CloudNet 2015 - IEEE 4th International Conference on Cloud Networking*. Niagara Falls, ON, Canada : IEEE, oct. 2015, p. 171–177.
- [PHARE-C-11] Ben Cheikh, A., **Ayari, M.**, **Langar, R.**, **Pujolle, G.**, Azouz Saidane, L., “Optimized Handoff with Mobility Prediction Scheme Using HMM for femtocell networks”. In : *2015 IEEE International Conference on Communications (ICC)*. Londres, United Kingdom : IEEE, juin 2015, p. 3448–3453.
- [PHARE-C-12] Ceselli, A., **Premoli, M.**, **Secci, S.**, “Cloudlet Network Design Optimization”. In : *2015 IFIP Networking Conference*. Toulouse, France, mai 2015, p. 1–9.
- [PHARE-C-13] **Coudron, M.**, **Secci, S.**, **Pujolle, G.**, “Differentiated Pacing on Multiple Paths to Improve One Way Delay Estimations”. In : *2015 IFIP/IEEE International Symposium on Integrated Network Management (IM 2015)*. Ottawa, Canada : IEEE, mai 2015, p. 672–678.
- [PHARE-C-14] **Khalfallah, Z.**, Fajjari, I., Ait Saadi, N., **Langar, R.**, **Pujolle, G.**, “2D-UBDA : A novel 2-Dimensional underwater WSN barrier deployment algorithm”. In : *IFIP Networking Conference (IFIP Networking)*. Toulouse, France : IEEE, mai 2015, p. 1–8.
- [PHARE-C-15] **Raad, P.**, **Secci, S.**, **Phung, C. D.**, Gallard, P., “PACAO : Protocol Architecture for Cloud Access Optimization”. In : *IEEE 1st International Conference on Network Softwarization (IEEE NETSOFT 2015)*. London, United Kingdom, avr. 2015, p. 1–9.
- [PHARE-C-16] **Akré, J.-M.**, **Zhang, X.**, Baey, S., **Kervella, B.**, Fladenmuller, A., **Zancanaro, M.**, Fonseca, M., “Accurate 2-D localization of RFID tags using antenna transmission power control”. In : *IFIP Wireless Days 2014*. Rio de Janeiro, Brazil, nov. 2014, p. 1–6.
- [PHARE-C-17] **Belabed, D.**, **Secci, S.**, **Pujolle, G.**, Medhi, D., “Impact of virtual bridging on virtual machine placement in data center networking”. In : *26th International Teletraffic Congress (ITC 2014)*. Karlskrona, Sweden : IEEE, sept. 2014, p. 1–9.
- [PHARE-C-18] **Hoteit, S.**, **Secci, S.**, **Pujolle, G.**, Hoa La, V., Ziemlicki, C., Smoreda, Z., “Mobility-aware estimation of content consumption hotspots for urban cellular networks”. In : *IEEE/IFIP Network Operations and Management Symposium (NOMS 2014)*. Krakow, Poland : IEEE, mai 2014, p. 1–7.
- [PHARE-C-19] Souza Couto, R., **Secci, S.**, Elias Mitre Campista, M., Macial Kosmalski Costa, L. H., “Latency Versus Survivability in Geo-Distributed Data Center Design”. In : *2014 IEEE Global Communications Conference (IEEE GLOBECOM 2014)*. Austin, TX, United States : IEEE, déc. 2014, p. 1102–1107.
- [PHARE-C-20] **Vu, T. V.**, Boukhatem, N., **Nguyen, T.-M.-T.**, **Pujolle, G.**, “Dynamic Coding for TCP Transmission Reliability in Multi-hop Wireless Networks”. In : *WoWMoM 2014 - IEEE 15th International Symposium on a World of Wireless, Mobile and Multimedia Networks*. Sydney, Australia : IEEE, juin 2014, p. 1–6.

- [PHARE-C-21] **Zhang, X., Akre, J.-M.,** Baey, S., Fladenmuller, A., **Kervella, B., Zancanaro, M.,** Fonseca, M., "Towards localization of RFID tags based on experimental analysis of RSSI". In : *IFIP Wireless Days 2014*. Rio de Janeiro, Brazil : IEEE, nov. 2014, p. 1–4.
- [PHARE-C-22] **Raad, P.,** Colombo, G., **Phung, C. D., Secci, S.,** Cianfrani, A., Gallard, P., **Pujolle, G.,** "Achieving Sub-Second Downtimes in Internet-wide Virtual Machine Live Migrations in LISP Networks". In : *IFIP/IEEE International Symposium on Integrated Network Management (IM 2013)*. Ghent, Belgium : IEEE, mai 2013, p. 286–293.
- [PHARE-C-23] **Achour, A.,** Haddadou, K., **Kervella, B., Pujolle, G.,** "A SIP-SHIM6 Based Solution for Seamless Intra-Domain Mobility in IMS Networks". In : *Globecom 2012*. Anaheim, California, United States : IEEE, déc. 2012, p. 2030–2035.

4. Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs

- M. Coudron, S. Secci, "An implementation of Multipath TCP in ns3", *Computer Networks*, vol. 116, pp. 1-11, 2017.
- K. Phemius, M. Casazza, M. Bouet, S. Secci, "Availability-driven Virtual Network Functions Orchestration on OpenStack", école d'été RESCOM 2017, Le Croisic, Juin 2017.
- A. Zanni, S. Yu, S. Secci, R. Langar, P. Bellavista, D. Macedo, "Automated Offloading of Android Applications for Computation/Energy-usage Optimizations", IEEE Int. Conference on Computer Communications (INFOCOM), May 1-4, 2017, Atlanta, USA.
- M. Coudron, S. Secci, Per Node Clocks to Simulate Clock Desynchronization in ns-3, Workshop on Network Simulator 3 (WNS3 2016), June 15-16, 2016, Seattle, USA.
- S. Iskounen, T. Nguyen, S. Monnet, "WiFi-Direct Simulation for INET in OMNeT++", 3rd OMNeT++ Community Summit, Brno, Czech Republic, Sept. 2016.
- Y. Benchaib, S. Secci, C. Phung, Transparent Cloud Access Performance Augmentation via a MPTCP-LISP Connection Proxy, Proc. of 2015 ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS 2015), May 7-8, 2015, Oakland, CA, USA. Poster paper.
- M. Coudron, S. Secci, G. Pujolle, "Augmented Multipath TCP Communications", 2013 IEEE Int. Conference on Network Protocols (IEEE ICNP 2013), Poster session, 7-11 Oct. 2013, Gottingen, Germany.
- A. Cianfrani, G. Colombo, P. Raad, S. Secci, G. Pujolle, C. Phung, P. Gallard., "LISP-based Virtual Machine Mobility for Cloud Networks", 10th GTTI Italian Networking Workshop, 9-11 Jan., 2013, Bormio, Italy.
- P. Raad, G. Colombo, C. Phung, S. Secci, A. Cianfrani, P. Gallard, G. Pujolle, " Demonstrating LISP-based Virtual Machine Mobility for Cloud Networks", 2012 IEEE Int. Conference in Cloud Networking (IEEE CloudNet 2012), 28-30 Nov. 2012, Paris, France.

Plateformes et observatoires

- Plateforme LISP-LAB (management and coordination) : <http://www.lisp-lab.org>.

5. Produits et outils informatiques

Logiciels

- Open-source LIP6-LISP project : <https://github.com/lip6-lisp>.
- Open-source LIP6-MPTCP project : <https://github.com/lip6-mptcp>.
- Open-source Routing Games project : <https://routing-games.lip6.fr>.
- ULOOF (User-Level Online Offloading Framework) Android software project : <https://uloof.lip6.fr>.
- OMNeT++ WiFi Direct project : <https://www-phare.lip6.fr/~trnguyen/research/wifidirect>.

It is worth mentioning that S. Secci is the chair of the "Security and Performance Analysis brigade" of the ONOS (Open Network Operating System) project the team is strongly involved in, see : <https://wiki.onosproject.org/pages/viewpage.action?pageId=12422167>.

Outils d'aide à la décision

- HA-NFV (High Availability Network Functions Virtualisation) decision-making system : <https://ha-nfv.lip6.fr>.

6. Brevets, licences et déclarations d'invention

- International patent : Method, box, and system for accessing a computer service via a communication network, PCT/EP2013/076480, EP2944068 A1, 2013 (G. Pujolle).
- Filed patent in 2014 : "Procédé de discrimination de tags RFID en mouvement de tags statiques », FR3026876-A1. Demande internationale (EU et USA) N° PCT/FR2015/052653 filed on 02/10/2015 (B. Kervella).
- Filed patent in 2015 : Method for managing a squad of mobile robotic vehicles (G. Pujolle).
- Filed patent in 2016 : Procédé de routage d'au moins un flux de données dans un réseau de communication sans fil (G. Pujolle).
- Filed patent in 2016 : Procédé pour la minimisation de la consommation d'énergie globale dans un réseau de communication sans fil (G. Pujolle).
- Filed patent in 2017 : Virtual Machine Orchestration Authenticator (G. Pujolle, S. Secci).

7. Rapports d'expertises techniques, produits des instances de normalisation

IETF standardization documents :

- P. Urien, G. Pujolle, EAP Support in Smartcard, draft-urien-eap-smartcard, IETF, 2017.
- M. Boucadair, C. Jacquenet, O. Bonaventure, D. Behaghel, S. Secci, W. Henderickx, R. Skog, S. Vinapamula, S. Seo, W. Cloetens, U. Meyer, LM. Contreras, B. Peirens, Network-Assisted MPTCP : Use Cases, Deployment Scenarios and Operational Considerations, draft-nam-mptcp-deployment-considerations, IETF, 2016.
- M. Boucadair, C. Jacquenet, D. Behaghel, S. Secci, W. Henderickx, R. Skog, O. Bonaventure, S. Vinapamula, S. Seo, W. Cloetens, U. Meyer, LM. Contreras, An MPTCP Option for Network-Assisted MPTCP, draft-boucadair-mptcp-plain-mode, IETF, 2017.

8. Produits des activités didactiques

Ouvrages

- O. Duarte, G. Pujolle : Virtual Networks, Wiley, 2013.
- O. Duarte, G. Pujolle : Réseaux virtuels, Hermès, 2014
- G. Pujolle : Les réseaux, Eyrolles, 8th edition, Jan. 2018 (130 000 copies since 1st edition).
- G. Pujolle : Les réseaux logiciels, ISTE, July 2015.
- G. Pujolle : Software networks, Wiley-ISTE, July 2015.
- K. Al Agha, G. Pujolle, T. Yahiya : Mobile and wireless networks, Wiley-ISTE, August 2016.
- H. Perros, G. Pujolle : Telecommunication networks, Wiley-ISTE, December 2017.
- G. Pujolle : Les réseaux, Eyrolles, 9th edition, Jan. 2018 (170 000 copies since 1st edition).

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

G. Pujolle : Les réseaux, revue Canopé n° 1113 (le réseau de création et d'accompagnement pédagogique de l'enseignement secondaire).

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

Editor in chief :

— Springer Annals of Telecommunications (G. Pujolle).

Associate editor :

— IEEE Communications Surveys and Tutorials (S. Secci) ;

— Springer Journal of Network and Systems Management (S. Secci) ;

— Springer Annals of Telecommunications (S. Secci) ;

— Wiley International Journal of Network Management (G. Pujolle, S. Secci) ;

— Springer Telecommunication Systems Journal (G. Pujolle) ;

— ACM International Journal of Network Management (G. Pujolle).

Guest editor :

— IEEE Communications Magazine, 2015, FT Mobile Cloud Computing (S. Secci) ;

— Elsevier Computer Networks, 2014, SI Cloud Communications and Networking (S. Secci).

Direction de collections et de séries

— G. Pujolle director of the "Network and Telecommunications" series, ISTE-Wiley, since 2008.

— G. Pujolle director of the "Sciences pour le domaine réseau et communications" series, ISTE France, since 2017.

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

— Systematic, steering board of the Telecom section, since 2012 (G. Pujolle).

— NSERC, Canada, since 2012 (G. Pujolle).

Évaluation de projets de recherche

— ANR, since 2012 (G. Pujolle).

— COST Association, EU, SESA 2017 (S. Secci).

— ANRT, France, 2016 (S. Secci).

— CFQCU and FRQNT, Canada, 2016 (S. Secci).

— STIC-AMSUD, 2015, 2016 (S. Secci).

— Italian Ministry of Univ. and Research (MIUR) (S. Secci).

— Romanian National Council for Scientific Research (S. Secci).

3. Activités d'expertise scientifique

— Delphi expert panel on NFV/SDN, European Commission, 2016 (S. Secci).

— DGA, network virtualization, 2016 (S. Secci).

Participation à des instances d'expertises (type Anses) ou de normalisation

G. Pujolle, TMT. Nguyen and S. Secci have participated to the standardization efforts of the Internet Engineering Task Force (IETF).

4. Organisation de colloques / congrès

— as general chair : Med-Hoc-Net 2013, Software Networks 2015, NoF 2015, ACM MOBIARCH 2015, IEEE GLOBECOM 2016 Workshops, Med-Hoc-Net 2017, NoF 2017.

- as technical program chair : ATC 2013, ATC 2015, IEEE GLOBECOM 2014, IEEE CCNC 2015, IEEE WCNC 2016, DRCN 2016.

5. Post-doctorants et chercheurs accueillis

Visiting professors :

- 2017 : 2-month visit of professor Paolo Bellavista from the university of Bologna, Italy, awarded an official UPMC visiting professor position.
- 2017 : 1-month visit of professor Bijan Jabbari from George Mason University, USA, in the frame of the LIP6 invited professor program.
- 2017 : 1-week visits of professors José Marcos Nogueira, Daniel Macedo, Italo Cunha, from the Minas Gerais Federal University, Brazil, in the frame of the international exchange CNRS-FUP WINDS project.
- 2016-2017 : 7-month visit of professor Catherine Rosenberg from the University of Waterloo, Canada, in the frame of the FED4PMR investissement d'avenir project.
- 2014-2016 : 25 visits of chinese academics (professors, postdocs, Ph.D. students), going from 2 weeks to 5 months, from the university of Tsinghua, Fudan, Nanjing and BUPT, in the frame of the FP7-Marie-Curie MobileCloud project.
- 2016 : visit of professor Xiaoming Fu, of the University of Goettingen, Germany, in the frame of the FP7 MobileCloud project.
- 2012-2016 : 1-month visits of professors Guido Maier and Achille Pattavina in the frame of the CNRS PICS U2M3 exchange project and a teacher and researcher exchange agreement between Politecnico di Milano, Italy, and UPMC.
- 2014 : 1-month visit of professor Michele Nogueira from the Federal University of Parana, Brazil.
- 2014 : 1-month visit of professor Deep Medhi from the University of Missouri-Kansas City, USA.
- 2013, 2016 : two 1-month visits of professor Otto Duarte from the Federal University of Rio de Janeiro, Brazil.

Other postdoctoral researchers :

- Salma Ktari, since October 2015, working on reliability modelling in public-safety networks. Previous position : Assistant Professor in SupCom, Tunisia.
- Se-Young Yu, in 2016-2017, working on mobile computation offloading. Previous position : Ph.D. student in Auckland University, New Zealand. Now : postdoctoral associate at Northwestern University, USA.
- Sandesh Uppoor, in 2015-2017, working on mobile network data analytics. Previous position : postdoctoral associate at Orange Labs, France. Now Data Science at Orange, France..
- Keun-Woo Lim, in 2015-2016, working on mobile network data analytics. Previous position : PhD student at Ajou University, South Korea. Now Associate Professor at Télécom ParisTech.
- Marco Casazza, in 2015-2016, working on virtual network function orchestration. Previous position : PhD. student at University of Milan, Italy. Now Assistant Professor at the University of Milan, Italy.

6. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

- 2012-2013 : research contrat (CRE) with Orange Labs on mobile network security.
- 2013-2014 : research contrat (CRE) with Orange Labs on LTE network optimization.

Bourses Cifre

- 2015-2018 : Squad, doctoral project of Nikola Bozic.
- 2015-2018 : Kalray, doctoral project of Danilo Cerovic.
- 2014-2017 : Meteor, doctoral project of Fatma Ben Jemaa.
- 2014-2017 : Gandi, doctoral project of Valentin Del Piccolo.
- 2012-2015 : NSS, doctoral project of Patrick Raad.
- 2012-2015 : Ucopia, doctoral project of Benjamin Villain.

- 2014-2017 : VirtuoR : doctoral project of Tarek Rabia.
- 2013-2015 : VirtuoR : doctoral project of Oussama Stiti.
- 2010-2013 : Gandi, doctoral project of Ahmed Amamou.

Créations d'entreprises, de start-up

- Blue Communications, 2016, new start-up on drone networks.

7. Contrats de recherche financés par des institutions publiques ou caritatives

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

- FP7 SecFuNet.
- FP7 MobileCloud.
- EIT ICT-Labs SOFNETS.
- EIT Digital SDN@Edge.

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

- ANR : ABCD (coordinator), LISP-Lab (coordinator), Reflexion.
- FUI : RAVIR, GINTAO, CARP, PODIUM.
- BPI : CONCEP.

Contrats financés dans le cadre du PIA

- IA PSPC NU@GE.
- IA PSPC FED4PMR.

8. Indices de reconnaissance

Prix

- Grand prix Orange 2013 of the French Academy of Science to Guy Pujolle.
- Best paper award - ACM International Joint Conference on Pervasive and Ubiquitous Computing (Ubi-Comp), Heidelberg, Germany, September 2016 (A+ CORE)

Distinctions

- G. Pujolle member of the Institut Universitaire de France, 2009 to 2014.
- G. Pujolle member the Royal Academy of Lund, Sweden, since 2012.

Responsabilités dans des sociétés savantes

- French representative IFIP Technical Committee TC6 "Networking ? (G. Pujolle).
- Member of the Conseil National des Universités in section 27 since novembre 2015 (B. Kervella).
- Chair of the Internet Technical Committee of the IEEE Communications Society and the Internet Society (S. Secci).
- Responsible of the Special Interest Group on Internet Security of the IEEE ITC (S. Secci).
- Co-chairing of the transversal action on virtualization of the CNRS GdR RSD (S. Secci).

Contrats financés dans le cadre du PIA

- NU@GE, with REGAL team.
- FED4PMR.

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

- keynotes at : ISITCE 2012, HONET 2013, ACM LatinCloud 2013, WNetVirt 2013, COMNet 2014, NTMS 2015, NoF 2016, SCNS 2016.
- panels at : IEEE NETSOFT 2015, IEEE/IFIP IM 2017, IEEE ICC 2017, IEEE NETSOFT 2017.
- Visiting periods in research labs abroad :
 - 2017 : 3-month visit of Thi Mai Trang Nguyen at George Mason University, USA.
 - 2017 : 2-week visit of Stefano Secci at the University of Naples - Federico II, Italy.
 - 2016 : 1,5-month visit of Stefano Secci at the University Alexander T. of Thessaloniki, Greece.
 - 2016 : 2-week visit of Thi Mai Trang Nguyen at the Federal University of Minas Gerais, Brazil.
 - 2016 : 2-week visit of Rami Langar at the Federal University of Minas Gerais, Brazil.
 - 2015 : 1,5-month visit of Stefano Secci at the école polytechnique de Montréal, Canada.
 - 2015 : 2-week visit of Thi Mai Trang Nguyen at the University of Nanjing, China.
 - 2015 : 2-week visit of Thi Mai Trang Nguyen at the Federal University of Rio de Janeiro, Brazil.
 - 2014 : 1-month visit of Stefano Secci at the école polytechnique de Milan, Italy.
 - 2014 : 1-month visit of Rami Langar at BUPT, Beijing, China.
 - 2014 : 1-month visit of Stefano Secci at Tsinghua University, Beijing, China.
 - 2011-2013 : Guy Pujolle 'World Class University Distinguished visiting professor' at POSTECH, South Korea.
 - 2013-2017 : Guy Pujolle 'distinguished visiting professor' at the Federal University of Rio de Janeiro, Brazil.

Annexe 4 EQUIPE REGAL

Nom de l'équipe : REpartition et Gestion d'Applications à Large echelle

Acronyme : REGAL

Nom du responsable pour le contrat en cours : Pierre Sens

Nom du responsable pour le contrat à venir : Pierre Sens

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

- [REGAL-J-1] Altisen, K., Cournier, A., Devismes, S., Durand, A., **Petit, F.**, “Self-Stabilizing Leader Election in Polynomial Steps”. In : *Information and Computation* (2016).
- [REGAL-J-2] Bonakdarpour, B., Devismes, S., **Petit, F.**, “Snap-Stabilizing Committee Coordination”. In : *Journal of Parallel and Distributed Computing* 87 (jan. 2016), p. 26–42.
- [REGAL-J-3] Caron, E., Datta, A. K., Tedeschi, C., **Petit, F.**, “Self-Stabilizing Prefix Tree Based Overlay Networks”. In : *International Journal of Foundations of Computer Science* 27.5 (2016), p. 607–630.
- [REGAL-J-4] Hidalgo, N., **Arantes, L., Sens, P.**, Bonnaire, X., “ECHO : Efficient Complex Query over DHT overlays”. In : *Journal of Parallel and Distributed Computing* 88 (fév. 2016), p. 31–45.
- [REGAL-J-5] **Jeanneau, D.**, Rieutord, T., **Arantes, L., Sens, P.**, “Solving k-Set Agreement Using Failure Detectors in Unknown Dynamic Networks”. In : *IEEE Transactions on Parallel and Distributed Systems* (2016).
- [REGAL-J-6] Serrano, D., Bouchenak, S., Kouki, Y., Alvares De Oliveira Jr. F., Ledoux, T., **Lejeune, J., Sopena, J., Arantes, L., Sens, P.**, “SLA guarantees for cloud services”. In : *Future Generation Computer Systems* 54 (jan. 2016), p. 233–246.
- [REGAL-J-7] Alon, N., Attiya, H., Dolev, S., **Dubois, S.**, Potop-Butucaru, M., Tixeuil, S., “Practically stabilizing SWMR atomic memory in message passing systems”. In : *Journal of Computer and System Sciences* 81.4 (juin 2015), p. 692–701.
- [REGAL-J-8] **Dubois, S.**, Masuzawa, T., Tixeuil, S., “Maximum Metric Spanning Tree Made Byzantine Tolerant”. In : *Algorithmica* 73.1 (sept. 2015), p. 166–201.
- [REGAL-J-9] **Lejeune, J., Arantes, L., Sopena, J., Sens, P.**, “A fair starvation-free prioritized mutual exclusion algorithm for distributed systems”. In : *Journal of Parallel and Distributed Computing* 83 (sept. 2015), p. 13–29.
- [REGAL-J-10] Cournier, A., **Dubois, S.**, Lamani, A., **Petit, F.**, Villain, V., “Snap-stabilizing message forwarding algorithm on tree topologies”. In : *Theoretical Computer Science* 496 (2013), p. 89–112.
- [REGAL-J-11] Devismes, S., **Petit, F.**, Tixeuil, S., “Optimal probabilistic ring exploration by semi-synchronous oblivious robots”. In : *Theoretical Computer Science* 498 (août 2013), p. 10–27.
- [REGAL-J-12] Dieudonné, Y., Levé, F., **Petit, F.**, Villain, V., “Deterministic Geoleader Election in Disoriented Anonymous Systems”. In : *Theoretical Computer Science* (2013), p. 43–54.

- [REGAL-J-13] **Dubois, S.**, Masuzawa, T., Tixeuil, S., “Bounding the Impact of Unbounded Attacks in Stabilization”. In : *IEEE Transactions on Parallel and Distributed Systems* 23.3 (mar. 2012), p. 460–466.
- [REGAL-J-14] **Dubois, S.**, Potop-Butucaru, M., Nesterenko, M., Tixeuil, S., “Self-stabilizing byzantine asynchronous unison”. In : *Journal of Parallel and Distributed Computing* 72.7 (2012), p. 917–923.
- [REGAL-J-15] Greve, F., **Sens, P.**, **Arantes, L.**, Simon, V., “Eventually Strong Failure Detector with Unknown Membership”. In : *The Computer Journal* 55.12 (déc. 2012), p. 1507–1524.
- [REGAL-J-16] Legtchenko, S., **Monnet, S.**, **Sens, P.**, Muller, G., “RelaxDHT : A Churn Resilient for Peer-to-Peer Distributed Hash-Tables”. In : *ACM Transactions on Autonomous and Adaptive Systems* 7.2 (juil. 2012), p. 28.

Articles de synthèse / revues bibliographiques

Autres articles (articles publiés dans des revues professionnelles ou techniques, etc.)

2. Ouvrages

Monographies et ouvrages scientifiques, éditions critiques, traductions

Direction / édition scientifique

Chapitres d'ouvrage

Thèses

- [REGAL-T-1] **Cortés, R.** “Scalable Location-Temporal Range Query Processing for Structured Peer-to-Peer Networks”. Theses. Pierre et Marie Curie, Paris VI; LIP6 UMR 7606 UPMC Sorbonne Universités, France; équipe REGAL, avr. 2017.
- [REGAL-T-2] **Kaaouachi, M. H.** “A distributed approach to covering problems in highly dynamic systems”. Theses. UPMC - Paris 6 Sorbonne Universités, jan. 2016.
- [REGAL-T-3] **Najafzadeh, M.** “The Analysis and Co-design of Weakly-Consistent Applications”. Theses. Université Pierre et Marie Curie, avr. 2016.
- [REGAL-T-4] **Diaconu, R.** “Scalability for virtual worlds”. Theses. Université Pierre et Marie Curie - Paris VI, jan. 2015.
- [REGAL-T-5] **Monnet, S.** “Contributions to data replication in large-scale distributed systems”. Habilitation à diriger des recherches. UPMC Université Paris VI, nov. 2015.
- [REGAL-T-6] **Veron, M. P. A.** “Scalable services for massively multiplayer online games”. Theses. Université Pierre et Marie Curie - Paris VI, sept. 2015.
- [REGAL-T-7] **Ardekani, M. S.** “Ensuring consistency in partially replicated data stores”. Theses. Université Pierre et Marie Curie - Paris VI, sept. 2014.
- [REGAL-T-8] **Cincilla, P.** “Gargamel : boosting DBMS performance by parallelising writetransactions”. Theses. UPMC, sept. 2014.
- [REGAL-T-9] **Lejeune, J.** “Distributed mutual exclusion algorithmic : toward an efficient resource management”. Theses. Sept. 2014.
- [REGAL-T-10] **Hu, R.** “Epidemic dissemination algorithms in large-scale networks : comparison and adaptation to topologies”. avec la mention : TRÈS HONORABLE. Theses. Université Pierre et Marie Curie - Paris VI, déc. 2013.
- [REGAL-T-11] **Ndiaye, N. M.** “Technical fault management in grid computing”. Theses. Université Pierre et Marie Curie - Paris VI, sept. 2013.
- [REGAL-T-12] **Preud'Homme, T.** “Communication inter-cœurs optimisée pour le parallélisme de flux.” Theses. Université Pierre et Marie Curie - Paris VI, juin 2013.

- [REGAL-T-13] **Saha, S.** “Improving the Quality of Error-Handling Code in Systems Software using Function-Local Information”. Theses. Université Pierre et Marie Curie - Paris VI, mar. 2013.
- [REGAL-T-14] **Silvestre, G.** “Designing Adaptive Replication Schemes for Efficient Content Delivery in Edge Networks”. Theses. Université Pierre et Marie Curie - Paris VI, oct. 2013.

3. Colloques / congrès, séminaires de recherche

Éditions d'actes de colloques / congrès

- [REGAL-P-1] Borzoo BONAKDARPOUR et Franck PETIT, éd. *Stabilization, Safety, and Security of Distributed Systems - 18th International Symposium, SSS 2016, Lyon, France, November 7-10, 2016, Proceedings*. T. 10083. Lecture Notes in Computer Science. 2016. ISBN : 978-3-319-49258-2.
- [REGAL-P-2] Juan Carlos RUIZ et Pierre SENS, éd. *2015 11th European Dependable Computing Conference (EDCC 2015) Desc : Proceedings of a meeting held 7-11 September 2015, Paris, France, 2015, Proceedings*. IEEE. 2015. ISBN : 9781467392907.
- [REGAL-P-3] Pierre SENS et Philippe NAVAUX, éd. *IEEE 26th International Symposium on Computer Architecture and High Performance Computing, SBAC-PAD 2014, Paris, France, October 22-24, 2014, Proceedings*. IEEE - CPS. 2014. ISBN : 9781479969067.
- [REGAL-P-4] Marc SHAPIRO, Marcos Kawazoe AGUILERA et Leonardo QUERZONI, éd. *Principles of Distributed Systems, 18th Int. Conf. on (OPODIS 2014)*. T. 8878. Lecture Notes in Computer Science. Cortina d'Ampezzo, Italy : Springer-Verlag, déc. 2014.

Articles publiés dans des actes de colloques / congrès

- [REGAL-C-1] **Bournat, M., Dubois, S., Petit, F.**, “Computability of Perpetual Exploration in Highly Dynamic Rings”. In : *The 37th IEEE International Conference on Distributed Computing Systems (ICDCS 2017)*. Atlanta, United States, juin 2017.
- [REGAL-C-2] Sun, W., Simon, V., **Monnet, S.**, Robert, P., **Sens, P.**, “Analysis of a Stochastic Model of Replication in Large Distributed Storage Systems : A Mean-Field Approach”. In : *ACM Sigmetrics 2017- International Conference on Measurement and Modeling of Computer Systems*. Urbana-Champaign, United States, juin 2017.
- [REGAL-C-3] **Voron, G.**, Thomas, G., Quema, V., **Sens, P.**, “An interface to implement NUMA policies in the Xen hypervisor”. In : *Twelfth European Conference on Computer Systems, EuroSys 2017*. Belgrade, Serbia, avr. 2017, p. 15.
- [REGAL-C-4] Akkoorath, D. D., **Tomsic, A.**, Bravo, M., Li, Z., Crain, T., Bieniusa, A., Preguiça, N., **Shapiro, M.**, “Cure : Strong semantics meets high availability and low latency”. In : *Int. Conf. on Distributed Computing Systems (ICDCS 2016)*. Nara, Japan : IEEE, juin 2016, p. 405–414.
- [REGAL-C-5] Attiya, H., Burckhardt, S., Gotsman, A., Morrison, A., Yang, H., **Zawirski, M.**, “Specification and Complexity of Collaborative Text Editing”. In : *Int. Symp. on Principles of Distributed Computing (PODC) 2016*. Sous la dir. d'ACM. T. PODC 2016. Int. Symp. on Principles of Distributed Computing (PODC) 2016. Chicago, IL, United States, juil. 2016, p. 10.
- [REGAL-C-6] Blin, A., Courtaud, C., **Sopena, J.**, Lawall, J., Muller, G., “Maximizing Parallelism without Exploding Deadlines in a Mixed Criticality Embedded System”. In : *28th EUROMICRO Conference on Real-Time Systems (ECRTS'16)*. Toulouse, France, juil. 2016.
- [REGAL-C-7] Bosilca, G., Bouteiller, A., Guermouche, A., Hérault, T., Robert, Y., **Sens, P.**, Dongarra, J., “Failure Detection and Propagation in HPC systems”. In : *SC 2016 - The International Conference for High Performance Computing, Networking, Storage and Analysis*. Salt Lake City, United States, nov. 2016.
- [REGAL-C-8] **Shapiro, M.**, Saeida Ardekani, M., Petri, G., “Consistency in 3D”. In : *Int. Conf. on Concurrency Theory (CONCUR) 2016*. Sous la dir. de LIPICS. T. CONCUR 2016. Int. Conf. on Concurrency Theory (CONCUR) 2016. Québec, Canada, août 2016, p. 15.

- [REGAL-C-9] **Arantes, L.**, Friedman, R., Marin, O., **Sens, P.**, “Probabilistic Byzantine Tolerance for Cloud Computing”. In : *34th International Symposium on Reliable Distributed Systems (SRDS 2015)*. Montreal, Canada : IEEE, sept. 2015, p. 1–10.
- [REGAL-C-10] Balegas, V., Duarte, S., Ferreira, C., Rodrigues, R., Preguiça, N., **Najafzadeh, M.**, **Shapiro, M.**, “Putting Consistency back into Eventual Consistency”. In : *European Conference on Computer Systems (EuroSys)*. ACM Sigops / EuroSys. Bordeaux, France : ACM, avr. 2015, 6 :1–6 :16.
- [REGAL-C-11] **Cortés, R.**, Marin, O., Bonnaire, X., **Arantes, L.**, **Sens, P.**, “A Scalable Architecture for Spatio-Temporal Range Queries over Big Location Data”. In : *14th IEEE International Symposium on Network Computing and Applications - IEEE NCA’15*. Cambridge, MA, United States, sept. 2015.
- [REGAL-C-12] **Dubois, S.**, Guerraoui, R., Kuznetsov, P., **Petit, F.**, **Sens, P.**, “The Weakest Failure Detector for Eventual Consistency”. In : *34th Annual ACM Symposium on Principles of Distributed Computing (PODC-2015)*, Donostia-San Sebastián, Spain. Donostia-San Sebastián, Spain, juil. 2015, p. 375–384.
- [REGAL-C-13] **Gidra, L.**, Thomas, G., **Sopena, J.**, **Shapiro, M.**, Nguyen, N., “NumaGiC : a Garbage Collector for Big Data on Big NUMA Machines”. In : *20th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*. ACM SIGOPS, ACM SIGPLAN, ACM SIGARCH. Istanbul, Turkey : ACM, mar. 2015, p. 661–673.
- [REGAL-C-14] **Lejeune, J.**, **Arantes, L.**, **Sopena, J.**, **Sens, P.**, “Reducing synchronization cost in distributed multi-resource allocation problem”. In : *ICPP 2015 - 44th International Conference on Parallel Processing*. Beijing, China : IEEE, sept. 2015, p. 540–549.
- [REGAL-C-15] **Lorrillere, M.**, **Sopena, J.**, **Monnet, S.**, **Sens, P.**, “Puma : pooling unused memory in virtual machines for I/O intensive applications”. In : *SYSTOR’15 - 8th ACM International Systems and Storage Conference*. Haifa, Israel : ACM, mai 2015, 1 :1–1 :11.
- [REGAL-C-16] **Tomsic, A. Z.**, **Sens, P.**, Coelho Garcia, J., **Arantes, L.**, **Sopena, J.**, “2W-FD : A Failure Detector Algorithm with QoS”. In : *IPDPS 2015 - The 29th IEEE International Parallel and Distributed Processing Symposium*. Hyderabad, India : IEEE, mai 2015, p. 885–893.
- [REGAL-C-17] **Zawirski, M.**, Preguiça, N., Duarte, S., Bieniusa, A., Balegas, V., **Shapiro, M.**, “Write Fast, Read in the Past : Causal Consistency for Client-side Applications”. In : *Int. Conf. on Middleware (MIDDLEWARE)*. Sous la dir. d’ACM/IFIP/USENIX. Vancouver, BC, Canada : ACM, déc. 2015, p. 75–87.
- [REGAL-C-18] Burckhardt, S., Gotsman, A., Yang, H., **Zawirski, M.**, “Replicated Data Types : Specification, Verification, Optimality”. In : *POPL 2014 : 41st ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*. San Diego, CA, United States : ACM, jan. 2014, p. 271–284.
- [REGAL-C-20] Datta, A. K., Lamani, A., Larmore, L. L., **Petit, F.**, “Ring Exploration by Oblivious Agents with Local Vision”. In : *33rd International Conference on Distributed Computing (ICDCS)*. Philadelphia, United States, juil. 2013, p. 347–356.
- [REGAL-C-21] **Gidra, L.**, Thomas, G., **Sopena, J.**, **Shapiro, M.**, “A study of the scalability of stop-the-world garbage collectors on multicores”. In : *ASPLOS 13 - Proceedings of the eighteenth international conference on Architectural support for programming languages and operating systems*. ACM. Houston, United States : ACM, mar. 2013, p. 229–240.
- [REGAL-C-22] Saeida Ardekani, M., Sutra, P., **Shapiro, M.**, “Non-Monotonic Snapshot Isolation : scalable and strong consistency for geo-replicated transactional systems”. In : *SRDS 2013 -IEEE 32nd International Symposium on Reliable Distributed Systems*. Braga, Portugal : IEEE Computer Society, sept. 2013, p. 163–172.

[REGAL-C-23] **Hu, R., Sopena, J., Arantes, L., Sens, P.,** Demeure, I., “Fair Comparison of Gossip Algorithms over Large-Scale Random Topologies”. In : *31th IEEE International Symposium on Reliable Distributed Systems (SRDS'12)*. Irvine, California, United States : IEEE Computer Society Press, oct. 2012, p. 331–340.

Autres produits présentés dans des colloques / congrès et des séminaires de recherche

4. Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs

Plateformes et observatoires

...

5. Produits et outils informatiques

Logiciels

Puma distributed VM memory pooling PUMA is a system that is based on a kernel-level remote caching mechanism that provides the ability to pool VMs memory at the scale of a data center. An important property while lending memory to another VM, is the ability to quickly retrieve memory in case of need. Our approach aims at lending memory only for clean cache pages : in case of need, the VM which lent the memory can retrieve it easily. We use the system page cache to store remote pages such that : (i) if local processes allocate memory the borrowed memory can be retrieved immediately ; and (ii) if they need cache the remote pages have a lower priority than the local ones.

- Audience : A-3 (ambitious software, usable by people outside the team).
- Software originality : SO-3 (original software reusing known ideas and introducing new ideas).
- Software maturity : SM-2 (basic usage works, terse documentation).
- Evolution and maintenance : EM-1 (no real future plans).
- Software distribution and licensing : SDL-4 (public source or binary distribution on the Web). Web site : <https://github.com/mlorrillere/puma>.

NumaGiC Java garbage collector for big-data applications NumaGiC is a version of the HotSpot garbage collector (GC) adapted to many-core computers with very large main memories. In order to maximise GC throughput, it manages the trade-off between memory locality (local scans) and parallelism (work stealing) in a self-balancing manner. Furthermore, the collector features several memory placement heuristics that improve locality.

- Audience : A-3 (ambitious software, usable by people outside the team).
- Software originality : SO-3 (original software reusing known ideas and introducing new ideas).
- Software maturity : SM-1 (demos work, loose documentation).
- Evolution and maintenance : EM-1 (no real future plans).
- Software distribution and licensing : SDL-4 (public source or binary distribution on the Web). Web site : <https://scm.gforge.inria.fr/anonscm/git/transgc/>.

Antidote better-than-AP database Web-scale applications rely on a geo-replicated database. Current offerings are divided between CP/SQL-style databases (MySQL, Spanner) providing strong programming guarantees but are inherently slow and unavailable under failure, and AP/NoSQL ones (Cassandra, Riak) that scale well but are bug-prone for application programmers.

Antidote is a *better-than-AP* database : it has AP scalability, stronger guarantees, and (associated to the CISE tool, page NETSYS-Annexe4-REGAL-6) provable absence of toxic concurrency.

It supports the strongest possible consistency level that can tolerate slow, unreliable networks and servers, called Causal Highly-Available Transactions. It guarantees a much higher level of correctness than existing AP/NoSQL approaches, and a much higher availability and performance, for cheaper, than is possible with CP.

Self-assessment :

- Audience : A-3 (ambitious software, usable by people outside the team).

- Software originality : SO-4 (original software implementing a fair number of original ideas).
- Software maturity : SM-3 (well-developed software, good documentation, reasonable software engineering).
- Evolution and maintenance : EM-4 (well-defined and implemented plans for future maintenance and evolution) : continuation H2020 project LightKone accepted ; requested support from InriaHub to productize Antidote.
- Software distribution and licensing : SDL-4 (public source or binary distribution on the Web). Web site : <https://github.com/SyncFree/antidote>.

CISE Tool verifier for weakly-consistent applications The CISE tool ensures that a distributed application running over causal consistency correctly maintains the database’s invariants.

Consider for instance an application for managing train reservations. Most operations are correct under weak consistency semantics, for instance, cancelling a reservation, adding a new car to the train, etc. To avoid overbooking, making a reservation needs strong consistency but only when the train is almost full.

To assist developers, our CISE Tool systematically explores all pairs of updates that the Antidote scheduler may execute concurrently, and flags those that would violate an invariant specified by the developer. For instance, in the train-reservation example, the invariant is “no overbooking.” Our tools would allow concurrently adding a car, but would flag concurrent reservations as unsafe and propose alternatives. The developer has the option of changing the specification (e.g., allowing overbooking), the implementation (using a Bounded Counter), or to synchronise (at the cost of unavailability), using the tool again to validate the modified system.

Self-assessment :

- Audience : A-2 (used by people in the team or close to the team).
- Software originality : SO-4 (original software implementing a fair number of original ideas).
- Software maturity : SM-2 (basic usage works, terse documentation).
- Evolution and maintenance : EM-3 (good quality middle-term maintenance). Development to be continued in new ANR project RainbowFS, new H2020 project LightKone, requested InriaHub engineering support.
- Software distribution and licensing : SDL-4 (public source or binary distribution on the Web). Web site : <https://github.com/SyncFree/cise>.

SwiftCloud client-oriented cloud database Our CRDT platform SwiftCloud aims to scale to millions of clients was developed in the ConcoRDanT project (page NETSYS-Annexe4-REGAL-13). It is the first to provide fast reads and writes via a causally-consistent client-side local cache backed by the cloud. More information can be found on page ??.

Self-assessment :

- Audience : A-3 (ambitious software, usable by people outside the team).
- Software originality : SO-4 (original software implementing a fair number of original ideas).
- Software maturity : SM-2 (basic usage works, terse documentation).
- Evolution and maintenance : EM-1 (no real future plans). Testbed for some of the ideas used in the SyncFree and LightKone projects.
- Software distribution and licensing : SDL-4 (public source or binary distribution on the Web).

G-DUR platform for consistency protocol development G-DUR is a platform for quickly developing and experimenting with different consistency protocols. G-DUR allows developers to implement various transactional protocols under 600 lines of code, understand the behaviour and bottlenecks of a protocol, and ensures a fair, apples-to-apples comparison between protocols.

Self-assessment :

- Audience : A-4 (large audience, used by people outside the team).
- Software originality : SO-4 (original software implementing a fair number of original ideas).
- Software maturity : SM-2 (basic usage works, terse documentation).
- Evolution and maintenance : EM-1 (no real future plans).
- Software distribution and licensing : SDL-4 (public source or binary distribution on the Web).

Bases de données / cohortes**Outils présentés dans le cadre de compétitions de solveurs****Outils d'aide à la décision****6. Brevets, licences et déclarations d'invention****7. Rapports d'expertises techniques, produits des instances de normalisation****8. Produits des activités didactiques****Ouvrages****E-learning, moocs, cours multimedia, etc.****9. Produits destinés au grand public****Émissions radio, TV, presse écrite****Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.**

“The CISE safety tool,” general-audience video demonstrating the tool. Marc Shapiro, Mahsa Najafzadeh.

Produits de médiation scientifique

- Science festival (“*fête de la science*”). REGAL proposes each year activities around distributed algorithms during the science festival at UPMC. Two member of the team (S. Monnet and J. Lejeune) were the coordinator for the LIP6 in 2015 and 2017.
- “Bringing the cloud closer to users,” general-audience article, Marc Shapiro.
- SyncFree, general-audience website presenting the EU FP7 project, Flavio Salvatore Pileggi sync-free.lip6.fr.

Débats science et société**10. Autres produits propres à une discipline****Créations artistiques théorisées**

Not applicable

Mises en scènes

Not applicable

Films

Not applicable

...

Not applicable

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE**1. Activités éditoriales****Participation à des comités éditoriaux (revues, collections)****Editorial Board of International Journals :**

- Associate editor of International Journal of High Performance Computing and Networking (IJHPCN), P. Sens.

Editorship :

- Special Issues
 - Journal of Theoretical Computer Science. Special Issue on Distributed Computing, 2013, F. Petit.
 - Journal of Theoretical Computer Science. Special Issue on Stabilization, Safety, and Security of Distributed Systems, 2013, F. Petit.
- Proceedings of international conferences
 - Int. Conf. on Principles of Distributed Systems (OPODIS), Cortina d'Ampezzo, Italy, Dec. 2014, M. Shapiro.
 - co-organizer, Dagstuhl Seminar on Consistency in Distributed Systems. 2013, M. Shapiro.

Program committee of international conferences and workshops : Since 2012, members of the team have participated in more than 50 PCs of international conferences and workshops included ASPLOS, PODC, PoPP, Middleware, IPDPS, DISC, CCGrid, ICPP, ISSRE, SSS, NCA.

- PODC 2017 (36th ACM Symposium on Principles of Distributed Computing)
- APDCM 2017 (Workshop on Advances in Parallel and Distributed Computational Models)
- APDCM 2016 (Workshop on Advances in Parallel and Distributed Computational Models)
- 3PGCIC 2015 (10th International on P2P, Parallel, Grid, Cloud and Internet Computing)
- AMRS-CC 2014, (W. on Adaptive Resource Management and Scheduling for Cloud Computing)
- ASPLOS 2016, (Int. Conf. on Architectural Support for Programming Languages and Systems)
- CCA 2014 (1st International Symposium on Cloud Computing)
- CCGrid 2016 (16th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing)
- CloudDP 2014, W. on Cloud Data and Platforms, Marc Shapiro
- C&C4WF 2013, W. on Context and Cloud Computing for Workflows), Marc Shapiro
- DISC 2016 (International Symposium on Distributed Computing)
- DMTM 2014, (Joint Euro-TM/MEDIAN Workshop on Dependable Multicore and Transactional Memory Systems)
- EDCC 2012, 2016, 2017 (European Dependable Computing Conference)
- DAIS 2012, 2015,2016 (IFIP International Conference on Distributed Applications and Interoperable Systems)
- ERCC 2016, (Enterprise Research Challenge Contest at SSS)
- Euro-par 2015
- IPDPS 2016, 2014, 2013 (IEEE International Parallel & Distributed Processing Symposium)
- ICDCN 2012, (32nd International Conference on Distributed Computing and Networking),
- ICDCS 2012 (IEEE 32nd International Conference on Distributed Computing Systems)
- ISSRE 2015, 2016, 2017 (IEEE International Symposium on Software Reliability Engineering)
- LADC 2016,2013 (Latin American Symposium on Dependable Computing)
- MAROC 2013 (International Workshop on Models and Algorithms for Reliable and Open Computing), S. Dubois
- Middleware, 2014, 2015
- NCA 2014, 2015, 2016 (IEEE International Symposium on Network Computing and Applications)
- NCCA 2014, 2015 (IEEE Symposium on Network Cloud Computing and Applications)
- NETYS 2016, (4th International Conference on Networked Systems)
- OPODIS 2016, (Int. Conf. on Principles of Distributed Systems)
- PODC 2017, (The 36th ACM Symposium on Principles of Distributed Computing)
- PPOPP 2014, External review committee, (Int. Symp. on Principles and Practice of Parallel Prog.)
- Radiance 2016 (International Workshop on Recent Advances in the Dependability Assessment of Complex System)
- NetGames 2015 (14th workshop on Network and Systems Support for Games)
- SBAC-PAD 2015, 2016 (Symposium on Computer Architecture and High Performance Computing)
- SAC 2015,2016 (Operating Systems track – ACM/SIGAPP Symposia On Applied Computing)
- SSS 2012,2015,2016 (International Symposium on Stabilization, Safety, and Security of Distributed Systems)

- W-PSDS 2015, 2016, (Workshop on Planet-Scale Distributed Systems)

Direction de collections et de séries

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

- Pierre Sens, since 2016 : Member of Section 6 of the national committee for scientific research CoNRS
- Marc Shapiro, since 2009 : Member of Scientific Advisory Board of the Center of Informatics and Information Technology (CITI), then Lab. for Informatics and Comp. Sc. (NOVA-LINCS) Universidade Nova de Lisboa, Portugal.
- Marc Shapiro, since 2012 : Member ERC (European Research Council) Consolidator Grants panel PE6.
- Marc Shapiro, since 2013 : member of the board of *Société Informatique de France*. Vice-Chair for Research since 2016.
- Marc Shapiro, since 2016 : Member of Advisory Board of IEEE Computer Society Special Technical Community on Operating Systems (STCOS).
- Marc Shapiro, 2009–2015 : Member of ACM Europe Council.

Évaluation d'articles et d'ouvrages scientifiques

Évaluation de laboratoires (type Hceres)

- HCERES Committee Institut Charles Delaunay, CNRS-UTT Troyes 2016. F. Petit
- AERES Committee LIP, CNRS-ENS Lyon 2014. P. Sens

Évaluation de projets de recherche

- Pierre Sens was review for SNF project (Swiss National Foundation) 2013.

3. Activités d'expertise scientifique

Activités de consultant

Participation à des instances d'expertises (type Anses) ou de normalisation

Expertise juridique

4. Organisation de colloques / congrès

Organisation of international conferences :

- General Chair of SSS 2016
- Chair of track on Distributed Systems and Network of SBAC-PAD 2016
- Organization committee and Publicity chair of DISC 2016 (International Symposium on Distributed Computing)
- Organization committee of SSS 2016 (International Symposium on Stabilization, Safety, and Security of Distributed Systems)
- General chair of EDCC 2015 conference (11th European dependable computing conference)
- Finance chair and local chair for the EDCC 2015 conference
- co general chair of SBAC-PAD 2014 (26th International Symposium on Computer Architecture and High Performance Computing)
- Workshop chair for the SBAC-PAD 2014 conference
- local chair for the SBAC-PAD 2014 conference
- Co-organizer of the DGDC workshop (First Workshop on Dynamic Graphs in Distributed Computing)
- Vice Chair for the Special Journal Issue of the Distributed Computing Track in ICDCN 2013
- steering committee of SBAC-PAD
- PC co-chair, Int. Conf. on Principles of Distributed Systems (OPODIS), Cortina d'Ampezzo, Italy, Dec. 2014

- co-organizer, Dagstuhl Seminar on Consistency in Distributed Systems, 2013

5. Post-doctorants et chercheurs accueillis

6. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

- Amazon Web Services grant for USD 18,000 in kind, 2014, 2016
- Microsoft Azure Grant for USD 40,000 in kind, 2014
-
- Google Research Award, USD 55,000, 2014
- Google European Fellowship in Distributed Computing, USD 168,000, 2011–2014.

Bourses Cifre

- “CRDTs for Large-Scale Storage Systems,” Joint industrial PhD (CIFRE) with Scality, 2014 - present
- “Data sharing in mobile networks,” Joint industrial PhD (CIFRE) with Magency - 2014 - present
- “Automatic resizing of shared I/O caches,” Joint industrial PhD (CIFRE) with Magency - 2015 - present
- “Scheduling in multicore platforms for real-time embedded systems,” Joint industrial PhD (CIFRE) with Renault and Whisper team - 2013 - 2017
- “Scalability for Virtual Worlds,” Joint industrial PhD (CIFRE) with Orange Labs, 2011 - 2014
- “Designing Adaptive Replication Schemes for Efficient Content Delivery in Edge Networks,” Joint industrial PhD (CIFRE) with Orange Labs, 2010 - 2013
- “Designing of an Adaptive Recommendation Engine”, Joint industrial PhD (CIFRE) with P. Gallinari (LiP6 Team MLIA) and MAKAZI, 2014 - 2017

Créations de laboratoires communs avec une / des entreprise(s)

Two members of the team are involved in the CLEAR (Center for Learning and Retrieval) Lab. a joint team of LIP6 and Thales.

Création de réseaux ou d'unités mixtes technologiques

Créations d'entreprises, de start-up

7. Contrats de recherche financés par des institutions publiques ou caritatives

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

LightKone

- Title : LightKone : Lightweight computation for networks at the edge
- Programme : H2020
- Duration : three years, planned to start end 2016 or beginning 2017.
- Coordinator : Peter Van Roy, Université Catholique de Louvain
- Partners : Université Catholique de Louvain (Belgium), 360 Treasury Systems AG (Germany), Inria Regal, Technische Universität Kaiserslautern (Germany), Faculdade de Ciencias e Tecnologia da Universidade Nova de Lisboa (Portugal), Scality SA (France), Gluk Advice BV (the Netherlands), Universidad Politècnica de Catalunya (Spain).
- Inria contact : Marc Shapiro
- The goal of LightKone is to develop a scientifically sound and industrially validated model for programming edge networks. An edge network consists of a large set of heterogeneous, loosely coupled computing nodes situated at the logical extreme of a network. Common examples are networks of Internet of Things, mobile devices, personal computers, and points of presence including Mobile Edge Computing. Internet applications are increasingly running on edge networks, to reduce latency, increase scalability and resilience, and permit local decision making. However, today's state of the art, the gossip and peer-to-peer models, give no solution for defining general-purpose computations on edge

networks, i.e., computation with shared mutable state. LightKone will solve this problem by combining two recent advances in distributed computing, namely synchronisation-free programming and hybrid gossip algorithms, both of which are successfully used separately in industry. Together, they are a natural combination for edge computing. We will cover edge networks both with and without data center nodes, and applications focused on collaboration, computation, or both. Project results will be new programming models and algorithms that advance scientific understanding, implemented in new industrial applications and a startup company, and evaluated in large-scale realistic settings.

LightKone is a follow-up project of SyncFree. As of writing (August 2016), the project is approved by the EC, but contract negotiation has not started. We expect the project to start end of 2016 or beginning of 2017.

SyncFree

- Title : Large-scale computation without synchronisation
- Programme : FP7
- Duration : October 2013 - December 2016
- Coordinator : Inria
- Partners : Basho Technologies (United Kingdom), Faculdade de Ciencias e Tecnologia da Universidade Nova de Lisboa (Portugal), Koç University (Turkey), Rovio Entertainment Oy (Finland), Trifork As (Denmark), Université Catholique de Louvain (Belgium), Technische Universitaet Kaiserslautern (Germany), Erlang Solutions Limited (UK and Hungary).
- Inria contact : Marc Shapiro
- Web site : <http://syncfree.lip6.fr/>
- The goal of SyncFree is to enable large-scale distributed applications without global synchronisation. Classically, geo-replicated databases are highly available but bug-prone for applications, as they offer very weak guarantees. SyncFree is researching a number of approaches that boost availability, scalability, programmability and trustworthiness of geo-replicated databases by providing high-level guarantees. The baseline is the concept of Conflict-free Replicated Data Types (CRDTs). CRDTs allow unsynchronised concurrent updates, yet ensure data convergence. The SyncFree Antidote CRDT database, designed for high concurrency and partial replication, additionally provides transactions (with strong semantics locally) and causal order guarantees. The SyncFree Just-Right Consistency analysis tools verify that an application verifies its structural invariants, and if not, suggest solutions. The SyncFree programming language LASP combines the power of CRDTs and dataflows. The SyncFree Legion framework extends the guarantees to in-browser computation connected by diffusion trees, supporting local cooperation. The revolutionary approach of SyncFree maximises responsiveness and availability; it enables locating data near its users, in decentralised clouds.

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

1 National initiatives

ANR Project ESTATE (2016–2020)

- *Members* : INRIA Regal, project leader ; LaBRI (Univ. de Bordeaux) ; Verimag (Univ. de Grenoble).
- *Funding* : Total ANR contribution : 615 000 €, of which 234 000€ for Inria Regal.
- *Objectives* : The core of ESTATE consists in laying the foundations of a new algorithmic framework for enabling Autonomic Computing in distributed and highly dynamic systems and networks. We plan to design a model that includes the minimal algorithmic basis allowing the emergence of dynamic distributed systems with self-* capabilities, *e.g.*, self-organization, self-healing, self-configuration, self-management, self-optimization, self-adaptiveness, or self-repair. In order to do this, we consider three main research streams :
 - (i) building the theoretical foundations of autonomic computing in dynamic systems,
 - (ii) enhancing the safety in some cases by establishing the minimum requirements in terms of amount or type of dynamics to allow some strong safety guarantees,
 - (iii) providing additional formal guarantees by proposing a general framework based on the Coq proof assistant to (semi-)automatically construct certified proofs.
 The project started in October 2016.

ANR Project RainbowFS (2016–2020)

- *Members* : INRIA Regal, project leader ; Scality SA ; CNRS-LIG ; Télécom Sud-Paris.
 - *Funding* : Total ANR contribution : 919 534€, of which 359 554€ for Inria Regal.
 - *Objectives* : RainbowFS proposes a “just-right” approach to storage and consistency, for developing distributed, cloud-scale applications. Existing approaches shoehorn the application design to some pre-defined consistency model, but no single model is appropriate for all uses. Instead, we propose tools to co-design the application and its consistency protocol. Our approach reconciles the conflicting requirements of availability and performance vs. safety : common-case operations are designed to be asynchronous ; synchronisation is used only when strictly necessary to satisfy the application’s integrity invariants. Furthermore, we deconstruct classical consistency models into orthogonal primitives that the developer can compose efficiently, and provide a number of tools for quick, efficient and correct cloud-scale deployment and execution. Using this methodology, we will develop an enterprise-grade, highly-scalable file system, exploring the rainbow of possible semantics, and we demonstrate it in a massive experiment.
- The project started in October 2016.

Labex SMART - (2012–2017)

- *Members* : ISIR (UPMC/CNRS), LIP6, LIB (UPMC/INSERM), LJLL (UPMC/CNRS), LTCI (Institut Mines-Télécom/CNRS), CHArt-LUTIN (Univ. Paris 8/EPHE), L2E (UPMC), STMS (IRCAM/CNRS).
- *Funding* : The project involved two PhD grants (200 000 euros).
- *Description* : The SMART Labex project aims globally to enhancing the quality of life in our digital societies by building the foundational bases for facilitating the inclusion of intelligent artifacts in our daily life for service and assistance. The project addresses underlying scientific questions raised by the development of Human-centered digital systems and artifacts in a comprehensive way. The research program is organized along five axes and Regal is responsible of the axe “Autonomic Distributed Environments for Mobility.”

InfraJVM - (2012–2015)

- *Members* : LIP6 (Regal, Whisper), Ecole des Mines de Nantes (Constraint), IRISA (Diverse), LaBRI (LSR).
- *Funding* : ANR Infra. The coordinator of InfraJVM is Gaël Thomas, who left the team in 2014. InfraJVM brings a grant of 202 000 euros from the ANR to Regal over three years.
- *Objectives* : The design of the Java Virtual Machine (JVM) was last revised in 1999, at a time when a single program running on a uniprocessor desktop machine was the norm. Today’s computing environment, however, is radically different, being characterized by many different kinds of computing devices, which are often mobile and which need to interact within the context of a single application. Supporting such applications, involving multiple mutually untrusted devices, requires resource management and scheduling strategies that were not planned for in the 1999 JVM design. The goal of InfraJVM is to design strategies that can meet the needs of such applications and that provide the good performance that is required in a Managed Run-time Environments (MREs, a.k.a. language-level virtual machines)

Nuage - (2012–2014)

- *Members* : Non Stop Systems (NSS), Oodrive, Alphaslink (Init SYS), CELESTE, DotRiver, NewGeneration, LIP6 (Regal et Phare)
 - *Funding* : Fond National pour la Société Numérique, CDC
 - *Objectives* : The Nuage project aims at designing and building an open source, energy-aware, cloud based on OpenStack. In this project, the Regal group contributes on the storage axis. In clouds, virtualization forms the basis to ensure flexibility, portability and isolation. However, the price to pay for flexibility and isolation is memory fragmentation. We thus propose to pool unused memory by allowing nodes to use memory of other nodes to extend their cache, at the kernel level.
- It involves a grant of 153 000 euros over 2,5 years.

ODISEA - (2011–2014)

- *Members* : Orange, LIP6 (Regal), UbiStorage, Technicolor, Institut Telecom
- *Funding* : FUI project, Ile de France Region
- *Objectives* : ODISEA aims at designing new on-line data storage and data sharing solutions. Current solutions rely on large data centers, which induce many drawbacks : (i) a high cost, (ii) proprietary solutions, (iii) inefficiency (one single location, not necessarily close to the user). The goal is to tackle these issues by designing a distributed/decentralized solution that leverage edge resources like set-top boxes.

It involves a grant of 159 000 euros from Region Ile de France over three years.

Richelieu - (2012–2014)

- *Members* : LIP6 (Regal), Scilab Entreprise, Silkan, OCaml Pro, INRIA Saclay, Arcelor Mittal, CNES, Dassault Aviation.
- *Funding* : FUI.
- *Objectives* : The goal of Richelieu is to design a new runtime for the Scilab language based on VMKit. Scilab is a scientific language and its runtime relies on a costly interpretation loop. In the Richelieu project, we propose to replace the interpretation loop by VMKit, which provides both an efficient Just In Time Compiler and advanced memory management techniques.

It involves a grant of 135 000 euros from Region Ile de France over two years.

MyCloud (2011–2014)

- *Members* : INRIA Rhones-Alpes (SARDES), LIP6 (REGAL), EMN, WeAreCloud, Elastic Cloud.
- *Funding* : MyCloud project is funded by ANR Arpège.
- *Objectives* : Cloud Computing is a paradigm for enabling remote, on-demand access to a set of configurable computing resources. The objective of the MyCloud project is to define and implement a novel cloud model : SLAaaS (SLA aware Service). Novel models, control laws, distributed algorithms and languages will be proposed for automated provisioning, configuration and deployment of cloud services to meet SLA requirements, while tackling scalability and dynamics issues. It involves a grant of 155 000 euros from ANR to LIP6 over three years.

ConcoRDanT (2010–2014)

- *Members* : INRIA Regal, project leader ; LORIA, Université de Nantes, Universidade Nova de Lisboa.
- *Funding* : ConcoRDanT is funded by ANR Blanc. ConcoRDanT involves a grant of 192 637 euros from ANR to INRIA over three and a half years.
- *Objectives* : CRDTs for consistency without concurrency control in Cloud and Peer-To-Peer systems. Massive computing systems and their applications suffer from a fundamental tension between scalability and data consistency. Avoiding the synchronisation bottleneck requires highly skilled programmers, makes applications complex and brittle, and is error-prone. The ConcoRDanT project investigated a promising new approach that is simple, scales indefinitely, and provably ensures eventual consistency. We have shown in the past that CRDTs can replace existing techniques in a number of tasks where distributed users can update concurrently, such as co-operative editing, wikis, and version control. The ConcoRDanT project engaged in a systematic and principled study of CRDTs, to discover their power and limitations, both theoretical and practical.

ConcoRDanT developed significant technology to support distributed applications using CRDTs deployed in clients at the edge, a radical simplification of software, elegantly reconciling scalability and consistency : the SwiftCloud.

STREAMS (2010–2014)

- *Members* : LORIA (Score, Cassis), INRIA (Regal, ASAP), Xwiki.
- *Funding* : Streams is funded by ANR Arpège. It involves a grant of 57 000 euros from ANR to INRIA over three and a half years.
- *Objectives* : The project aims to advance the state of the art on peer-to-peer networks for social and real-time applications. One of the most challenging issues in social applications is how to balance collaboration with access control to shared objects. Interaction is aimed at making shared objects available

to all who need them, whereas access control seeks to ensure this availability only to users with proper authorization. STREAMS project aims at providing theoretical solutions to these challenges as well as practical experimentation.

Contrats avec les collectivités territoriales

Contrats financés dans le cadre du PIA

- NUAGE project with PHARE team

Contrats financés par des associations caritatives et des fondations (ARC, FMR, FRM, etc.)

8. Indices de reconnaissance

Prix

Distinctions

- Marc Shapiro, since 2013 : ACM Distinguished Speaker.
- Marc Shapiro, since 2009 : ACM Senior Member.

Responsabilités dans des sociétés savantes

- Marc Shapiro, since 2012 : Member ERC (European Research Council) Consolidator Grants panel PE6.
- Marc Shapiro, since 2013 : member of the board of *Société Informatique de France*. Vice-Chair for Research since 2016.
- Marc Shapiro, since 2016 : Member of Advisory Board of IEEE Computer Society Special Technical Community on Operating Systems (STCOS).

Contrats financés dans le cadre du PIA

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

Invited talks

1. Franck Petit. “Ring Exploration by Myopic Oblivious Robots”, Invited talk at ETH Zürich Seminar, Feb. 2015.
2. Pierre Sens. “Probabilistic Byzantine Tolerance for Cloud Computing”, Invited talk at ICL Innovative Computing Laboratory - University of Tennessee, USA, Oct. 2015
3. Pierre Sens. “Probabilistic Byzantine Tolerance for Hybrid cloud Computing”, Invited talk at Maimonide seminar; Herzilya, Israel, Nov. 2015
4. Marc Shapiro. “Consistency in 3D”. Invited talk at Int. Conf. on Concurrency Theory (CONCUR), Québec, Canada, Aug. 2016.
5. Marc Shapiro. “Just-Right Consistency : Static analysis for minimal synchronisation.” Technical talk at Critéo, Paris, France, March 2016.
6. Marc Shapiro. Keynote Speech at Laboratoire d’Informatique de Grenoble. “Just-Right Consistency : Static analysis for minimal synchronisation.” March 2016.
7. Marc Shapiro, “Reconciling performance and safety in the Antidote widely-geo-replicated database,” invited talk at GDR RSD and ASF Winter School 2016, le Pleyne les Sept Laux, France, March 2016.
8. Marc Shapiro. Invited talk at Inria/EPFL Workshop “Consistency in three dimensions (It’s the invariants, stupid).” Rennes, Jan. 2016.
9. Marc Shapiro. “CRDTs six years later.” Invited talk at Int. W. on Large-Scale Distributed Systems and Middleware (LADIS), Monterey, CA, USA, Oct. 2015.
10. Marc Shapiro, “Encapsulating replication, high concurrency and consistency with CRDTs.” Invited tutorial at CurryOn/ECOOP, Prague, July 2015.

11. Marc Shapiro. “Decomposing Consistency.” Invited talk at Royal Holloway U. London. May 2015.
12. Marc Shapiro. “Decomposing Consistency.” Invited talk at W. on the Chemistry of Concurrent and Distributed Programming II, Agadir, Morocco, May 2015.
13. Marc Shapiro. “Decomposing consistency.” Invited presentation at Dagstuhl Seminar 15072 on Distributed Cloud Computing.
14. Marc Shapiro. Invited presentation at MASCOTS, Paris, Sept. 2014.
15. Marc Shapiro. “High Concurrency, and Correctness Too, or, How I Stopped Worrying about Eventual Consistency.” ACM Distinguished Speaker Programme talk at workshop of Council of European Chapter Leaders, Athens, Greece, Sept. 2014.
16. Marc Shapiro. “A principled approach to the performance-vs.-programmability trade-off in large-scale distributed data stores.” Invited talk at W. Workshop on Adaptive Resource Management and Scheduling for Cloud Computing (ARMS-CC), Paris, France, July 2014.
17. Marc Shapiro. “Write Fast, Read in the Past : Scalable Consistency all the way to the client.” Technical Talk, IBM Research Centre Haifa, June 2014.
18. Marc Shapiro. “SwiftCloud— Write Fast, Read in the Past - Scalable Consistency all the Way to Clients.” Invited talk and ACM Distinguished Speaker Programme talk at Technion Systems Day, Haifa, Israel, June 2014.
19. Marc Shapiro. “A principled approach to the performance-vs.-programmability trade-off in large-scale distributed data stores.” Invited talk and ACM Distinguished Speaker Programme talk at Technion Colloquium, June 2014.
20. Marc Shapiro. “Replication and Consistency in Distributed Systems.” Invited talk at CSD&M, Nov. 2014.
21. Marc Shapiro. “Extending the cloud all the way to your machine with Conflict-free Replicated Data Types.” Invited talk at Darmstadt Technical University, MAKI Distinguished Lecture Series, June 2013.
22. Marc Shapiro. Invited talk at (EC)², the Int. W. on Exploiting Concurrency Efficiently and Correctly, co-located with CAV 2013.
23. Marc Shapiro. “Geo-replication, all the way to the edge.” Invited talk at EPFL, Lausanne, Switzerland, Dec. 2012.
24. Marc Shapiro. “Extreme scalability.” Invited talk, Summer Event of Erasmus Mundus Master on Distributed Computing (EMDC), Fejan, Sweden, Sept. 2012.

Annexe 4 EQUIPE WHISPER

Nom de l'équipe : Well Honed Infrastructure Software for Programming Environments and Run-times

Acronyme : WHISPER

Nom du responsable pour le contrat en cours : Gilles Muller

Nom du responsable pour le contrat à venir : Gilles Muller

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

- [Whisper-J-1] **Pierre-Evariste Dagand**. “The essence of ornaments”. In: *Journal of Functional Programming* 27 (Jan. 2017).
- [Whisper-J-2] Jean-Pierre Lozi, **Florian David**, Gaël Thomas, **Julia Lawall**, and **Gilles Muller**. “Fast and Portable Locking for Multicore Architectures”. In: *ACM Transactions on Computer Systems* (Jan. 2016).
- [Whisper-J-3] Tegawendé F. Bissyandé, Laurent Réveillère, **Julia Lawall**, and **Gilles Muller**. “Ahead of Time Static Analysis for Automatic Generation of Debugging Interfaces to the Linux Kernel”. In: *Automated Software Engineering* (May 2014), pp. 1–39.
- [Whisper-J-4] Fabien Hermenier, **Julia Lawall**, and **Gilles Muller**. “BtrPlace: A Flexible Consolidation Manager for Highly Available Applications”. In: *IEEE Transactions on Dependable and Secure Computing* 10.5 (2013), pp. 273–286.
- [Whisper-J-5] **Julia Lawall**, Julien Brunel, Nicolas Palix, René Rydhof Hansen, Henrik Stuart, and **Gilles Muller**. “WYSIWIB: exploiting fine-grained program structure in a scriptable API-usage protocol-finding process”. In: *Software: Practice and Experience* 43.1 (Jan. 2013), pp. 67–92.
- [Whisper-Regal-J-1] Nicolas Palix, Gaël Thomas, **Suman Saha**, **Christophe Calvès**, **Gilles Muller**, and **Julia Lawall**. “Faults in Linux 2.6”. In: *ACM Transactions on Computer Systems* 32.2 (June 2014), pp. 1–40.

Articles de synthèse / revues bibliographiques

Not applicable

Autres articles (articles publiés dans des revues professionnelles ou techniques, etc.)

Not applicable

2. Ouvrages

Monographies et ouvrages scientifiques, éditions critiques, traductions

Not applicable

Direction / édition scientifique

Not applicable

Chapitres d'ouvrage

Not applicable

Thèses publiées / éditées

- [Whisper-T-1] **Florian David**. “Continuous and Efficient Lock Profiling for Java on Multicore Architectures”. Theses. Université Pierre et Marie Curie - Paris VI, July 2015.
- [Whisper-T-2] **Jean-Pierre Lozi**. “Towards more scalable mutual exclusion for multicore architectures”. Theses. Université Pierre et Marie Curie - Paris VI, July 2014.
- [Whisper-T-3] **Kouthair Attouchi**. “Managing Resource Sharing Conflicts in an Open Embedded Software Environment”. Theses. Université Pierre et Marie Curie, July 2014.
- [Whisper-T-4] **Lisong Guo**. “Boost the Reliability of the Linux Kernel: Debugging Kernel Ooops”. Theses. UPMC, Paris Sorbonne, Dec. 2014.
- [Whisper-T-5] **Suman Saha**. “Improving the Quality of Error-Handling Code in Systems Software using Function-Local Information”. Theses. Université Pierre et Marie Curie - Paris VI, Mar. 2013.

3. Colloques / congrès, séminaires de recherche**Éditions d'actes de colloques / congrès**

Not applicable

Articles publiés dans des actes de colloques / congrès

- [Whisper-C-1] Timothy Bourke, Lélío Brun, **Pierre-Evariste Dagand**, Xavier Leroy, Marc Pouzet, and Lionel Rieg. “A Formally Verified Compiler for Lustre”. In: *PLDI 2017 - 38th ACM SIGPLAN Conference on Programming Language Design and Implementation*. ACM. Barcelone, Spain, June 2017.
- [Whisper-C-2] **Julia Lawall**, **Derek Palinski**, **Lukas Gnirke**, and **Gilles Muller**. “Fast and Precise Retrieval of Forward and Back Porting Information for Linux Device Drivers”. In: *2017 USENIX Annual Technical Conference*. Santa Clara, CA, United States, July 2017.
- [Whisper-C-3] **Julia Lawall** and **Gilles Muller**. “JMake: Dependable Compilation for Kernel Janitors”. In: *The 47th IEEE/IFIP International Conference on Dependable Systems and Networks*. IEEE/IFIP. Denver, Colorado, United States, June 2017.
- [Whisper-C-4] **Arthur Blot**, **Pierre-Évariste Dagand**, and **Julia Lawall**. “From Sets to Bits in Coq”. In: *FLOPS 2016*. Kochi, Japan, Mar. 2016.
- [Whisper-C-5] **Pierre-Evariste Dagand**, Nicolas Tabareau, and Éric Tanter. “Partial Type Equivalences for Verified Dependent Interoperability”. In: *21st ACM SIGPLAN International Conference on Functional Programming*. Nara, Japan, Sept. 2016.
- [Whisper-C-6] Ferdian Thung, David Lo, and **Julia Lawall**. “Recommending Code Changes for Automatic Backporting of Linux Device Drivers”. In: *ICSME 2016*. Portland, Oregon, United States: IEEE, Oct. 2016.
- [Whisper-C-7] Luis R. Rodriguez and **Julia Lawall**. “Increasing Automation in the Backporting of Linux Drivers Using Coccinelle”. In: *11th European Dependable Computing Conference - Dependability in Practice*. 11th European Dependable Computing Conference - Dependability in Practice. Paris, France, Nov. 2015.

- [Whisper-C-8] **Florian David**, Gaël Thomas, **Julia Lawall**, and **Gilles Muller**. “Continuously Measuring Critical Section Pressure with the Free-Lunch Profiler”. In: *OOPSLA 2014*. Portland, Oregon, United States: ACM, Oct. 2014.
- [Whisper-C-9] Ripon K. Saha, **Julia Lawall**, Sarfraz Khurshid, and Dewayne E. Perry. “On the Effectiveness of Information Retrieval Based Bug Localization for C Programs”. In: *ICSME 2014 - 30th International Conference on Software Maintenance and Evolution*. IEEE. Victoria, Canada, Sept. 2014, pp. 161–170.
- [Whisper-C-10] Tegawendé F. Bissyandé, Laurent Réveillère, **Julia Lawall**, and **Gilles Muller**. “Diagnosys: Automatic Generation of a Debugging Interface to the Linux Kernel”. In: *27th IEEE/ACM International Conference on Automated Software Engineering*. Best Paper award. Essen, Germany: ACM, Sept. 2012, pp. 60–69.
- [Whisper-Regal-C-1] Baptiste Lepers, Willy Zwaenepoel, Jean-Pierre Lozi, Nicolas Palix, **Redha Gouicem**, **Julien Sopena**, **Julia Lawall**, and **Gilles Muller**. “Towards Proving Optimistic Multi-core Schedulers”. In: *16th Workshop on Hot Topics in Operating Systems*. ACM SIGOPS. Whistler, British Columbia, Canada, May 2017.
- [Whisper-Regal-C-2] **Antoine Blin**, **Cédric Courtaud**, Sopena, Julien, **Julia Lawall**, and **Gilles Muller**. “Maximizing Parallelism without Exploding Deadlines in a Mixed Criticality Embedded System”. In: *28th EUROMICRO Conference on Real-Time Systems (ECRTS’16)*. Toulouse, France, July 2016.
- [Whisper-Regal-C-3] **Suman Saha**, **Jean-Pierre Lozi**, Thomas, Gaël, **Julia Lawall**, and **Gilles Muller**. “Hector: Detecting resource-release omission faults in error-handling code for systems software”. In: *DSN 2013 - 43rd Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN)*. IEEE/IFIP. Budapest, Hungary: IEEE Computer Society, June 2013, pp. 1–12.
- [Whisper-Regal-C-4] **Jean-Pierre Lozi**, **Florian David**, Gaël Thomas, **Julia Lawall**, and **Gilles Muller**. “Remote Core Locking: Migrating Critical-Section Execution to Improve the Performance of Multithreaded Applications”. In: *Usenix Annual Technical Conference 2012*. Boston, United States: ACM, June 2012, pp. 65–76.

Autres produits présentés dans des colloques / congrès et des séminaires de recherche

- [Whisper-IC-1] **Julia Lawall**. “Coccinelle: reducing the barriers to modularization in a large C code base”. In: *13th International Conference on Modularity, MODULARITY ’14*. Ed. by Walter Binder, Erik Ernst, Achille Peternier, and Robert Hirschfeld. ACM. Lugano, Switzerland, Apr. 2014, pp. 5–6.

4. Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs

Not applicable

Plateformes et observatoires

Not applicable

...

Not applicable

5. Produits et outils informatiques

Logiciels

Coccinelle Coccinelle is a program matching and transformation tool for C code. Its primary target is evolution and bug finding in the Linux kernel, but it has been used for other software projects including Wine, Python, Systemd, and Qemu. Since 2007, over 4500 patches have been accepted into the Linux kernel based on the use of Coccinelle, including around 3000 by over 500 developers from outside our research group.

- Audience: A-4 (large audience, used by people outside the team).
- Software originality: SO-4 (original software implementing a fair number of original ideas).
- Software maturity: SM-3 (well-developed software, some documentation, reasonable software engineering).
- Evolution and maintenance: EM-3 (good quality middle-term maintenance).
- Software distribution and licensing: SDL-5 (external packaging and distribution, as part of a popular open source distribution or a commercially-distributed product).

Hector Hector is a tool for detecting resource release omission faults in C infrastructure software code. It was first developed as part of the a PhD thesis, which showed that the approach could find many faults with a low rate of false positives. It has subsequently been redeveloped in a more robust and maintainable manner during the 2-year ADT (young engineer position) of Quentin Lambert.

Self-assessment:

- Audience: A-3 (ambitious software, usable by people outside the team).
- Software originality: SO-4 (original software implementing a fair number of original ideas).
- Software maturity: SM-4 (major software project, strong software engineering).
- Evolution and maintenance: EM-3 (good quality middle-term maintenance).
- Software distribution and licensing: SDL-4 (public source or binary distribution on the Web, <http://btrlinux.inria.fr>).

JMake JMake targets the difficulties that developers may face when using compilation to check the validity of their changes to the Linux kernel. Indeed, the Linux kernel is a highly configurable system, and it is often not clear what configuration options will cause a particular file to be compiled, or whether particular changed lines within a file will be subjected to the compiler. JMake particularly targets the needs of janitors, i.e., developers who work in a breadth first fashion across the code base to fix bugs and enforce coding style conventions, as such developers may not have in-depth knowledge of the configuration constraints on specific subsystems.

Self-assessment:

- Audience: A-2 (used by people in the team or close to the team).
- Software originality: SO-3 (original software reusing known ideas and introducing new ideas).
- Software maturity: SM-2 (basic usage works, terse documentation).
- Evolution and maintenance: EM-2 (basic maintenance to keep the software alive).
- Software distribution and licensing: SDL-4 (public source or binary distribution on the Web, <http://jmake-release.gforge.inria.fr/>).

Prequel Prequel is a tool for performing complex searches in software commit histories. It represents an important stepping stone towards our goal of automatic porting of device drivers across Linux kernel versions. It is also potentially useful for eliminating uses of deprecated functions, understanding common bug types, and detecting inconsistent evolutions. Prequel primarily targets the Linux kernel developer community.

Self-assessment:

- Audience: A-3 (ambitious software, usable by people outside the team).
- Software originality: SO-4 (original software implementing a fair number of original ideas).
- Software maturity: SM-2 (basic usage works, terse documentation).
- Evolution and maintenance: EM-3 (good quality middle-term maintenance).
- Software distribution and licensing: SDL-4 (public source or binary distribution on the Web, <http://prequel-pql.gforge.inria.fr/>).

Ipanema Ipanema is a domain-specific language for developing multicore process scheduling policies for the Linux kernel. Novel features include verification of scheduling properties using the Leon theorem prover and abstraction for reasoning about load balancing. Ipanema is being developed in collaboration with researchers at EPFL, the University of Nice, and the University of Grenoble.

Self-assessment:

- Audience: A-1 (internal prototype).
- Software originality: SO-4 (original software implementing a fair number of original ideas).
- Software maturity: SM-1 (demos work, loose documentation).
- Evolution and maintenance: EM-3 (good quality middle-term maintenance).
- Software distribution and licensing: SDL-1 (none).

ssrbit ssrbit is a Coq library offering an efficient formalization of bit vectors, a refinement framework for abstractly reasoning about bitsets, and a trustworthy extraction of bit vectors to OCaml integers. Initially developed by Whisper members (Pierre-Évariste Dagand, Julia Lawall), the development has attracted an external contributor (Emilio Jesús Gallego Arias, postdoctoral researcher in CRI Mines-ParisTech), which led to significant improvements. We plan to improve the overall support and documentation so as to provide a full-featured library.

Self-assessment:

- Audience: A-2 (used by people in the team or close to the team).
- Software originality: SO-4 (original software implementing a fair number of original ideas).
- Software maturity: SM-2 (basic usage works, terse documentation).
- Evolution and maintenance: EM-3 (good quality middle-term maintenance).
- Software distribution and licensing: SDL-4 (public source or binary distribution on the Web, <https://github.com/ejgallego/ssrbit/>).

Bases de données / cohortes

Not applicable

Outils présentés dans le cadre de compétitions de solveurs

Not applicable

Outils d'aide à la décision

Not applicable

6. Brevets, licences et déclarations d'invention

Not applicable

7. Rapports d'expertises techniques, produits des instances de normalisation

Not applicable

8. Produits des activités didactiques

Ouvrages

Not applicable

E-learning, moocs, cours multimedia, etc.

Not applicable

9. Produits destinés au grand public

Émissions radio, TV, presse écrite

Not applicable

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

Not applicable

Produits de médiation scientifique

Not applicable

Débats science et société

Not applicable

10. Autres produits propres à une discipline

Créations artistiques théorisées

Not applicable

Mises en scènes

Not applicable

Films

Not applicable

...

Not applicable

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

Not applicable

Editorial Board of International Journals

- Julia Lawall: Editorial board of Science of Computer Programing (2008 - present).

Program committee of international conferences and workshops

- Bertil Folliot: VEE 2017, ISPC 2014 program co-chair, ISPDC 2013 PC, HPCS 2013 PC, ISPDC 2012 PC.
- Pierre-Évariste Dagand: TyDe 2016, EuroSys 2015 Shadow PC, PLOS 2015 PC, WGP 2014.
- Julia Lawall: PLOS 2017 (chair), ASE 2017 demo track, FLOPS 2016 PC, PLDI 2016 EPC, LCTES 2016 PC, OOPSLA 2016 PC, ASE 2016 ERP, Middleware 2016 PC, GPCE 2016 PC, SLE 2016 PC, ICSME 2016 ERA, ASE 2015 PC, EuroSys 2015 PC, ICDCS 2015 PC, ICSME 2016 ERA, OOPSLA 2015 PC, Modularity 2014 PC, ICDCS 2014 PC, OOPSLA 2013 PC, ASE 2013 ERC, GPCE 2013 PC.
- Gilles Muller: R. Needham award (Eurosys best PhD prize) (2015, 2014), DSN 2017 PC, Usenix ATC 2017 PC, Systor 2017 PC, EDCC 2016 PC, OPODIS 2016 PC, DSN 2016 PC, ASPLOS 2016 PC, TRIOS 2015 PC, EDCC 2015 PC, DSN 2015 PC, TRIOS 2014 PC, APSYS 2014 PC, VEE 2014 PC, DSN 2013 PC, EuroSys 2013 PC, ICDCN 2013 PC, DSN 2012 Poster chair, Systor 2012 PC, ICDCS 2012 Distributed OS and Middleware track co-chair, EuroSys 2012 Poster chair.

Direction de collections et de séries

Not applicable

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

- Julia Lawall: Inria evaluation committees: PhD stipends (2013, 2014), Young engineer positions (2015).
Inria hiring committees: Inria Paris (CR2, 2014, 2016), Lille (CR2, 2014), Rennes (CR2, 2013)
Other hiring committees: IUT Nantes (MdC, 2014), University of Copenhagen (Adjunkt, 2015), UPMC (Prof, 2015, 2017), Bordeaux (MdC, 2016), CNAM (MdC, 2016)
Jury for Inria prizes (2015).
- Gilles Muller: representative of Inria in Sorbonne University's advisory committee for research, member of the project committee board of the Inria Paris Center, member of the Paris committee for allocating post-docs, PhD stipends and sabbaticals.
Hiring committees: Grenoble (MdC, 2017)

Évaluation d'articles et d'ouvrages scientifiques

Not applicable

Évaluation de laboratoires (type Hceres)

Not applicable

Évaluation de projets de recherche

Gilles Muller was a reviewer for the ANR in 2015, for the Swiss National Science foundation in 2015 and for the ERC in 2015 and 2016.

3. Activités d'expertise scientifique

Activités de consultant

Not applicable

Participation à des instances d'expertises (type Anses) ou de normalisation

Not applicable

Expertise juridique

Not applicable

4. Organisation de colloques / congrès

- Pierre-Évariste Dagand: European Symposium on Security and Privacy 2017 (affiliated events chair)
- Julia Lawall: EuroSys 2015 (publicity co-chair)
- Gilles Muller: PLOS Workshop (2013, 2015) co-organizer, EuroSys 2015 (Wine chair, Sponsor co-chair, Grant co-chair)

5. Post-doctorants et chercheurs accueillis

Van-Anh Nguyen is working as a Postdoc from June 2017 to September 2018 on the ANR ITrans.

We collaborate with Luis Rodriguez of Suse and Greg Kroah Hartman of the Linux Foundation. Rodriguez spent 2 months with us in 2013, which led to a publication in EDCC 2015, and Greg Kroah Hartman spent 2 months with us in 2015. Inria has subsequently signed a MOU with the Linux Foundation, and Kroah Hartman is spending one year in Whisper starting since Fall 2016 as part of this collaboration.

6. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

- DGA, 2014-2015, 60 000 euros. The purpose of this contract was the development of methodologies based on genes for aiding in the development of new drivers, the porting of drivers from one operating system to another, the backporting of drivers to older versions of the same operating system, and finding and fixing bugs. The PhD of Peter Senna Tschudin was supported as part of this contract, which was stopped due the decision of Senna Tschudin to cancel his PhD.
- Metaware, 2014-2015, 30 000 euros. Metaware is a small company located in Paris specializing in code modernization. The purpose of the contract was the extension of Coccinelle with features relevant to Metaware.
- OSADL, 2016-2017, development of the Prequel patch query language, 20 000 euros. OSADL is an organization headquartered in Germany that promotes and supports the use of open source software in the automation and machine industry. The project is in the context of the OSADL project SIL2LinuxMP bringing together various companies in automotive and embedded systems with the goal of developing methodologies for certifying the basic components of a GNU/Linux-based RTOS.
- Orange Labs, 2016-2017, 60 000 euros. The purpose of this contract is to apply the techniques developed in the context of the PhD of Antoine Blin to the domain of Software Defined Networks where network functions are run using virtual machines on commodity multicore machines.

Bourses Cifre

The PhD of Koutheir Attouchi was supported by a CIFRE PhD fellowship from Orange Labs. The PhD of Antoine Blin was supported by a CIFRE PhD fellowship from Renault. The PhD of Cédric Courtaud is supported by a CIFRE PhD fellowship from Thales TRT.

Créations de laboratoires communs avec une / des entreprise(s)

Not applicable

Création de réseaux ou d'unités mixtes technologiques

Not applicable

Créations d'entreprises, de start-up

Not applicable

7. Contrats de recherche financés par des institutions publiques ou caritatives

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

COST Action IC1001, Euro-TM

- *Duration:* 2011 - 2014
- *Coordinator:* Paolo Romano (INESC)
- *Whisper member:* Gilles Muller, leader of the working group on Hardware and Operating Systems Supports
- *Other partners:* Austria, Czech Republic, Denmark, France, Germany, Greece, Israel, Italy, Norway, Poland, Portugal, Serbia, Spain, Sweden, Switzerland, Turkey, United Kingdom.
- *Goals:* Parallel programming used to be an area once confined to a few niches, such as scientific and high-performance computing applications. However, with the proliferation of multicore processors, and the emergence of new, inherently parallel and distributed deployment platforms, such as those provided by cloud computing, parallel programming has become a mainstream concern. Transactional Memories (TMs) answer the need to find a better programming model for parallel programming, capable of boosting developer productivity and allowing ordinary programmers to unleash the power of parallel and distributed architectures, avoiding the pitfalls of manual, lock based synchronization. It is therefore no surprise that TM has been subject to intense research in the last years. This Action aims at consolidating European research in this important field, by coordinating the European research groups working on the development of complementary, interdisciplinary aspects of Transactional Memories, including theoretical foundations, algorithms, hardware and operating system support, language integration and development tools, and applications.

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

InfraJVM - (2012–2015)

- *Members:* LIP6 (Regal, Whisper), Ecole des Mines de Nantes (Constraint), IRISA (Diverse), LaBRI (LSR).

Infra-JVM brought a grant of 202 000 euros from the ANR to LIP6 over three years.

- *Goals:* The design of the Java Virtual Machine (JVM) was last revised in 1999, at a time when a single program running on a uniprocessor desktop machine was the norm. Today's computing environment, however, is radically different, being characterized by many different kinds of computing devices, which are often mobile and which need to interact within the context of a single application. Supporting such applications, involving multiple mutually untrusted devices, requires resource management and scheduling strategies that were not planned for in the 1999 JVM design. The goal of InfraJVM was to design strategies that can meet the needs of such applications and that provide the good performance that is required in an Managed Runtime Environment. The PhD of Florian David was partly supported by Infra-JVM.

Chronos network, Time and Events in Computer Science, Control Theory, Signal Processing, Computer Music, and Computational Neurosciences and Biology

- *Coordinator:* Gerard Berry
- *Whisper member:* Gilles Muller
- *Funding:* ANR 2014, *Défi Société de l'information et de la communication*
- *Goals:* The Chronos interdisciplinary network aims at placing in close contact and cooperation researchers of a variety of scientific fields: computer science, control theory, signal processing, computer music, neurosciences, and computational biology. The scientific object of study is the understanding, modeling, and handling of time- and event-based computation across the fields. Chronos works by organizing a regular global seminar on subjects ranging from open questions to concrete solutions in the research fields, workshops gathering subsets of the Chronos researchers to address specific issues more deeply, a final public symposium presenting the main contributions and results, and an associated compendium.

ITrans - (2017–2020)

- *Coordinator:* Julia Lawall
- *Whisper members:* Julia Lawall, Gilles Muller
- *Funding:* ANR PRCI 2016, 287 000 euros
- *Goals:* Large, real-world software must continually change, to keep up with evolving requirements, fix bugs, and improve performance, maintainability, and security. For example, a new release of the Linux kernel appears every 2-3 months, with each release resulting from 10-13K patches. This rate of change can pose difficulties for clients, whose code cannot always evolve at the same rate. This situation leads to the need for backporting, where services developed for more modern kernel versions are transformed to be compatible with an older one. Ultimately, there is often a need for forward porting of client-specific code, when relying on a old kernel version is no longer viable. The goal of the ITrans project is to provide automated solutions to address these problems. Specifically, we will focus on back porting and forward porting of Linux device drivers. A key technology to be developed is an approach to inferring transformation rules from a collection of relevant examples.

Contrats avec les collectivités territoriales

- City of Paris, 2016-2019, 100 000 euros. As part of the “Émergence - young team” program the city of Paris is supporting part of our work on the domain-specific language topic.

Contrats financés dans le cadre du PIA

Not applicable

Contrats financés par des associations caritatives et des fondations (ARC, FMR, FRM, etc.)

Not applicable

8. Indices de reconnaissance

Prix

Not applicable

Distinctions

- We received the best paper award at ASE 2012 for our work on *Diagnosys : Automatic Generation of a Debugging Interface to the Linux Kernel*.
- Suman Saha received the William C. Carter Award from DSN 2013. The award recognizes an outstanding paper based on a graduate dissertation.
- Our foundational work providing high-level abstractions in DSLs for low-level software received a best paper award at FLOPS in 2016.

Responsabilités dans des sociétés savantes

- Julia Lawall: SIGPLAN executive committee (2012-2015), IFIP TC secretary (2012 - present), founding member of IFIP WG 2.11.
- Gilles Muller: EuroSys steering committee (2013-2016), elected member of IFIP WG 10.4 (Dependability).
- Bertil Folliot: Elected member of the IFIP WG10.3 working group (Concurrent systems)

Contrats financés dans le cadre du PIA

Not applicable

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

Invited talks

- Julia Lawall: Modularity 2014, SCAM 2015, CurryOn 2015, PPL workshop (Japan) 2016, Linux Security Summit 2016, SPLASH 2016 Programming Languages Mentoring Workshop, IFIP WG 2.4 (December 2016), Dagstuhl seminar on automated program repair (January 2017), FOSD workshop (March 2017).
- Gilles Muller: NICTA Summer School 2014 and 2015.

Visits

- Pierre-Évariste Dagand: University of Cape Coast, Ghana (July 2015).
- Julia Lawall: Singapore Management University, Singapore (May 2017)

Annexe 4 DEPARTEMENT SOC

Annexe 4 EQUIPE **ALSOC**

Nom de l'équipe : Architecture et Logiciels pour Systèmes Embarqués sur Puce Acronyme : ALSOC
Nom du responsable pour le contrat en cours : Lionel Lacassagne Nom du responsable pour le
contrat à venir : Lionel Lacassagne

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

1. F. Lemaitre, B. Couturier, L. Lacassagne. "Cholesky Factorization on SIMD multi-core architectures". *Journal of Systems Architecture*. 2017 (in Press).
2. C. Dévigne, J.-B. Bréjon, Q. L. Meunier, F. Wajsbürt. "Executing secured virtual machines within a manycore architecture, *Microprocessors and Microsystems*, vol. 48 pp. 21-35, 2017.
3. Thomas Hujsa, Jean-Marc Delosme, and Alix Munier Kordon, "On liveness and reversibility of equal-conflict petri nets", *Fundam. Inform.*, 146(1) :83–119, 2016.
4. L. Cabaret, L. Lacassagne, D. Etiemble. "Parallel Light Speed Labeling : an efficient connected component algorithm for labeling and analysis on multi-core processors" *Journal of Real Time Image Processing (JRTIP)*. doi :10.1007/s11554-016-0574-2. 2016.
5. Bruno Bodin, Alix Munier Kordon, and Benoît Dupont de Dinechin. "Optimal and fast throughput evaluation of CSDF", *Proceedings of the 53rd Annual Design Automation Conference, DAC 2016, Austin, TX, USA, June 5-9, 2016, pages 160 :1–160 :6. ACM, 2016.*
6. A.Drebes, A.Pop, K.Heydemann, A.Cohen, N.Drach : "Topology-Aware and Dependence-Aware Scheduling and Memory Allocation for Task-Parallel Languages", *ACM Transactions on Architecture and Code Optimization*, vol 11, issue 3, number 30, 2014 - Presented at HIPEAC 2015, best presentation award.
7. . N. Moro, K. Heydemann, E. Encrenaz, B. Robisson. "Formal verification of a software countermeasure against instruction skip attacks". *Journal of Cryptographic Engineering*, vol. 4 (3), 2014.
8. D. Genius, A. Munier-Kordon, Kh. Zine El Abidine : "Space Optimal Data reordering in Streaming Applications on NoC based MPSoC, *Journal of Systems Architecture*, vol. 59 (7) pp. 455-467, 2013.

2. Ouvrages

Thèses soutenues

1. Mohamed Benazouz, "Dimensionnement des mémoires pour les applications de traitement de flux de données", direction Alix Munier-Kordon, 2012.
2. Oussama Gamoudi, "Optimisation adaptative appliquée au préchargement de données", direction Nathalie Drach-Temam, 2012.
3. Geoffrey Plouviez, "Etude, spécification, vérification formelle de mécanismes de virtualisation sécurisés pour architecture many-cores", direction Alain Greiner, 2012.
4. Bruno Bodin, "Analyse d'applications flot de données pour la compilation multiprocesseur", direction Alix Munier-Kordon, 2013.

5. Syed Hussein Syed Alwi, "Vérification compositionnelle pour la conception sûre de systèmes embarqués", direction Emmanuelle Encrenaz, 2013.
6. Hermann Gioja, "Techniques de modélisation transactionnelle en temps distribué avec synchronisation relâchée pour la simulation parallèle d'architectures many-core", direction Alain Greiner, 2013.
7. Aline Vieira De Mello, "Tlmdt : une stratégie de modélisation basée sur temps distribué pour la simulation parallèle de systèmes multi-processeurs intégrés sur puce", direction Alain Greiner, 2013.
8. Eric Guthmuller, "Architecture adaptative de mémoire cache exploitant les techniques d'empilement tridimensionnel dans le contexte des multiprocesseurs intégrés sur puce", direction Alain Greiner, 2013.
9. Ghassan Almaless, "Méthode de prototypage virtuel permettant l'évaluation précoce de la consommation énergétique dans les systèmes intégrés sur puce", direction Alain Greiner, 2014-02-27.
10. Khouloud Zine Elabidine, "Méthode de prototypage virtuel permettant l'évaluation précoce de la consommation énergétique dans les systèmes intégrés sur puce", direction Alain Greiner, 2014-10-16.
11. Thomas Hujsa, "Contribution à l'étude des réseaux de Petri généralisés", direction Alix Munier-Kordon, Jean-Marc Delosme, 2014-10-29.
12. Nicolas Moro, "Sécurisation de programmes assembleur face aux attaques visant les processeurs embarqués", direction Emmanuelle Encrenaz, Bruno Robisson, 2014-11-13
13. Andi Drebes, "Dynamic optimization of data-flow task-parallel applications for large-scale NUMA systems", direction Nathalie Drach-Temam, Karine Heydemann, 2015-06-25.
14. César Fuguet Tortolero, "Introduction de mécanismes de tolérance aux pannes franches dans les architectures de processeur « many-core » à mémoire partagée cohérente", direction Alain Greiner, 2015-11-25.
15. Hao Liu, "Protocoles scalables de cohérence des caches pour processeurs manycore à espace d'adressage partagé visant la basse consommation", direction Alain Greiner, Franck Wajsbürt, 2016-01-27
16. Aurélien Carlier, "Optimisation d'un éco-système de transport multimodal pour les grandes agglomérations urbaines", direction Alix Munier-Kordon, 2016-06-27.
17. Mohamed Lamine Karaoui "Système de fichiers scalable pour architectures many-cores à faible empreinte énergétique", direction Alain Greiner, Franck Wajsbürt, 2016-06-28.
18. Youen Lesparre, "Extension des CSDF pour l'exécution d'applications de flux", direction Alix Munier-Kordon, 2017-03-02.
19. Clément Devigne, "Exécution sécurisée de plusieurs machines virtuelles sur une plateforme Manycore", direction Alain Greiner, Franck Wajsbürt et Quentin Meunier, 2017-07-06.

External to ALSOC/LIP6/UPMC, PhD thesis done at University Paris-Sud.

1. Tarik Saidani, "Optimisation multi-niveau d'une application de traitement d'images sur machines parallèles", direction Alain Méritot et Lionel Lacassagne, 2012-11-06.
2. Antoine Pédron, "Développement d'algorithmes d'imagerie et de reconstruction sur architectures à unités de traitements parallèles pour des applications en contrôle non destructif", direction Lionel Lacassagne, 2013-05-03.
3. Florence Laguzet, "Etude et optimisation d'algorithmes pour le suivi d'objets couleur", direction Daniel Etiemble, Michèle Gouiffès et Lionel Lacassagne, 2013-09-27.
4. Andrés Romero Mier y Teran, "Real-time multi-target tracking : a study on color-texture covariance matrices and descriptor/operator switching", direction Lionel Lacassagne, 2013-12-03.
5. Haixiong Ye, "Impact des transformations algorithmiques sur la synthèse de haut niveau : application au traitement du signal et des images", direction Lionel Lacassagne, 2014-05-20.
6. Jason Lambert, "Parallélisation de simulations interactives de champs ultrasonores pour le contrôle non destructif", direction Lionel Lacassagne, 2015-07-03.
7. Laurent Cabaret, "Algorithmes d'étiquetage en composantes connexes efficaces pour architectures hautes performances", direction Lionel Lacassagne, 2016-09-28.

3. Colloques / congrès, séminaires de recherche

Articles publiés dans des actes de colloques / congrès

1. D. Genius, L. Li, L. Apvrille : "Model-Driven Performance Evaluation and Formal Verification for Multi-Level Embedded System Design", 5th International Conference on Model-Driven Engineering and Software Development, Porto, Portugal (2017, best paper award). Describes an integrated tool for assessing HW/SW partitioning choices during software design.
2. A. Drebes, A. Pop, K. Heydemann, A. Cohen, N. Drach : "Scalable Task Parallelism for NUMA : A Uniform Abstraction for Coordinated Scheduling and Memory Management", PACT : ACM/IEEE International Conference on Parallel Architectures and Compilation, Haifa, Israel, pp.125-137, 2016. Best paper award.
3. L. Lacassagne, L. Cabaret, D. Etiemble, F. Hebache, A. Petreto, "A new SIMD iterative connected component labeling algorithm", PPOPP/WPMVP (ACM International Workshop on Programming Models for SIMD/Vector Principles and Practice of Parallel Programming Conference), 2016.
4. M. Karaoui, P. Péneau, Quentin L. Meunier, F. Wajsbürt, A. Greiner, "Exploiting Large Memory using 32-bit Energy-Efficient Manycore Architectures", in MCSoc'16, 2016, Lyon, France
5. A. Drebes, A. Pop, K. Heydemann, A. Cohen : "Interactive Visualization of Cross-Layer Performance Anomalies in Dynamic Task-Parallel Applications and Systems", IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS), Upsaala, Sweden, pp.274-283, 2016.
6. H. Liu, C. Dévigne, L. Garcia, Q. L. Meunier, F. Wajsbürt, A. Greiner, "RWT : Suppressing Write-Through Cost When Coherence is Not Needed" International Symposium on VLSI (ISVLSI), IEEE, 2015.
7. L. Goubet, K. Heydemann, E. Encrenaz, R. De Keulaener : "Efficient Design and Evaluation of Countermeasures against Fault Attack with Formal Verification", 14th Smart Card Research and Advanced Applications Conference (CARDIS), Novembre 2015.
8. L. Lacassagne, D. Etiemble, A. Dominguez, P. Vezolle, "High Level Transforms for SIMD and Low-Level Computer Vision Algorithms", PPOPP/WPMVP (ACM International Workshop on Programming Models for SIMD/Vector Principles and Practice of Parallel Programming Conference) 2014.
9. N. Moro, A. Dehbaoui, K. Heydemann, B. Robisson, E. Encrenaz : "Electromagnetic Fault Injection : towards a Fault Model on a 32-bit Microcontroller", International Workshop on Fault Diagnostic and Tolerance in Cryptography (FDTC), IEEE, 2013.

4. Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs

- A 16-core **TSAR ASIC** (2×2 clusters of 4 cores) has been fabricated by STM and CEA LETI, and makes the validation and the deployment of applications a reality. A 96-core version (4×4 clusters of 4 cores) is under fabrication.
- Prototype of a **secure** manycore architecture simulator with virtualization extensions, able to isolate two different operating systems simultaneously running on the same architecture. Site : <https://www.tsunami.fr>

Plateformes et observatoires

- **TSAR** : a scalable manycore architecture with shared memory and hardware cache coherence <https://www-soc.lip6.fr/trac/tsar>
- **SoCLib** is an open platform for virtual prototyping of multi-processors system on chip (MP-SoC). The core of the platform is a library of SystemC simulation models for virtual components (IP cores). The main concern is true interoperability between the SoCLib IP cores. There are two types of models available for each IP-core : *CABA (Cycle Accurate / Bit Accurate)* and *TLM-DT (Transaction Level Modeling with Distributed Time)*. All simulation models and most associated tools are distributed as free software. <http://www.soclib.fr>.

5. Produits et outils informatiques

Logiciels

1. **ALMOS-MK** : a decentralized multi-kernel operating system based on ALMOS, which allows a better memory management for large memory address spaces [2013-2017] <https://www-soc.lip6.fr/trac/almos-mk>.
2. Library for batch **Cholesky Factorization on SIMD** multi-core architecture. Support for SSE, AVX2, AVX512, Neon and AltiVec ISAs. This library is optimized for tiny matrices (from 3×3 up to 16×16) and outperforms existing libraries by a factor greater than $10\times$. 2016.
3. **Giet-VM** : Prototype operating system with a high degree of control over code, data, page table and tasks placement, which allows to measure the costs of different strategies, before their automation in Almos and Almos-MK. [2013-...] <https://www-soc.lip6.fr/trac/giet-vm>.
4. Library for **Connected Component Labeling and Analysis**. The library implements a dozen of the latest and fastest connected component labeling algorithms and the Light Speed Labeling (LSL) that is the only efficient and parallel algorithm that scales on multi-core and multi-processor architectures. 2016.
5. **Aftermath** : a graphical tool for performance analysis and debugging of parallel programs and runtime systems. <http://www.openstream.info/aftermath> [2013-2016].
6. Contribution to **TTool** of Telecom ParisTech (LabSoC team) - Generator for SoCLib-based MP-SoC platforms, performance evaluation tools, 2016 ttool.telecom-paristech.fr.
7. Contribution to **Openstream** : a stream programming language allowing to express arbitrary dependence patterns between tasks in the form of task-level data flow dependences. <http://www.openstream.info> [2014-2015].
8. **RobustA** : prototype of a formal verifier of the robustness of assembly code named RobustA. APP deposit on December 30th 2015, identity number IDDN.FR.001.540011.000.S.P.2015.000.20600.
9. **Turbine** : a powerful generator of random live Synchronous Data Flow Graphs and Cyclo-Static Data Flow Graphs, Turbine, was developed to test the scalability of all the optimization methods, 2014.
10. **ALMOS** (Advanced Locality Management Operating System), a scalable general purpose operating system dedicated for manycore architectures. Site : www.almos.fr [2008-2014].

Previously developed :

1. **myNRC 2.0** - Smart memory allocator for image processing. University Paris-Sud/LRI, APP depot 2014.

6. Brevets, licences et déclarations d'invention

- The ALSOC team has ongoing french patent submission on a software protection scheme against fault attacks shared with the CEA in the context of the ANR PROSECCO project. The submission has been performed the 11th April 2017 and received the number FR1753175. The authors are : Thierno Barry, Damien Couroussé and Karine Heydemann.

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

2. Activités d'évaluation

Évaluation d'articles et d'ouvrages scientifiques

International journals :

- Journal of Real Time Image Processing (JRTIP)
- Journal of Signal Processing Systems

- ACM Transactions on Embedded Computing Systems
 - IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)
- International conferences :
- Conference on Design and Architectures for Signal and Image Processing (IEEE DASIP)

3. Activités d'expertise scientifique

- ANRT (Association Nationale de la Recherche et de la Technologie), in charge of PhD funding for selected private/commercial companies.

4. Organisation de colloques / congrès

Organization Committee :

1. CARDIS 2014.

Program Committee :

1. PPOPP/WPMVP (Symposium on Principles and Practice of Parallel Programming / Workshop on Programming Models for SIMD/Vector Processing) [2014-2017]
2. DASIP (International Conference on Design of Architecture for Signal and Image Processing [2012-2017])
3. ICPP/EMS (International Conference on Parallel Programming / International Workshop on Embedded Multicore Systems 2013)
4. PLC (Workshop on Programming Models, Languages and Compilers Workshop for Manycore and Heterogeneous Architectures) 2014
5. SBAC-PAD (International Symposium on Computer Architecture and High Performance Computing) 2015
6. SPRO (Workshop on Software Protection co-located with ACM CCS) 2016
7. PROOFS : Security Proofs for Embedded Systems (Workshop co-located with CHES)) [2013-2017]
8. International Workshop on the Reliability of Intelligent Environments 2017

5. Post-doctorants et chercheurs accueillis

- Ronald De Keulenaer, PhD from Ghent University. July-September 2015. Funded by The Research Foundation - Flanders (FWO).

6. Interactions avec les acteurs socio-économiques

Bourses Cifre

1. CEA 2015-2018 : parallelization and vectorization of ONDO/Echo library for multicore SIMD processors and GPUs.
2. TrustedLABs 2015-2018 : methodology and tool based on a compositional symbolic dynamic execution approach for the verification of security properties.
3. ISSM 2016-2019 : compiler-assisted code hardening.
4. CIFRE-DGA 2016-2019 : optimisation (speed, accuracy, power-consumption) of a computer-vision application for a hyper-spectral camera.

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

- Projet TSUNAMY (ANR-13-INSE-002) : <https://www.tsunamy.fr>
- Projet PROSECCO (ANR-15-AAP-001) : <https://www.lip6.fr/prosecco>

8. Indices de reconnaissance

Prix

- Best paper Award, ModelsWard 2017,
- Best paper Award, PACT 2017,
- Best presentation Award, HIPEAC 2016.

Annexe 4 EQUIPE CIAN

Nom de l'équipe : Circuits Intégrés Analogiques et Numériques - (Analog and Digital IC design)
Acronyme : CIAN

Nom du responsable pour le contrat en cours : Habib Mehrez

Nom du responsable pour le contrat à venir : Habib Mehrez

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

Publications citées dans les faits marquants

- [CIAN-FM-1] E. Zianbetov, D. Galayko, F. Anceau, M. Javidan, C. Shan, O. Billoint, A. Korniienko, E. Colinet, G. Scorletti, J. M. Akre, J. Juillard, "Distributed clock generator for synchronous SoC using ADPLL network" IEEE Custom Integrated Circuits Conference (CICC), 2013, San José, CA, December 2013.
- [CIAN-FM-2] Emna Amouri, Habib Mehrez, Zied Marrakchi, "Impact of Dual Placement and Routing on WDDL Netlist Security in FPGA", International Journal of Reconfigurable Computing, Hindawi Publishing Corporation, 2013, pp.24.
- [CIAN-FM-3] A. Ashry and H. Aboushady, "A 4th order 3.6GS/s RF Sigma-Delta ADC with a FoM of 1pJ/bit", IEEE Transactions on Circuits and Systems I, TCAS-I, Vol.60, No. 10, pp 2606 - 2617, October 2013.

Articles scientifiques

- [CIAN-J-1] D. Galayko, A. Dudka, A. Karami, E. O'Riordan, E. Blokhina, O. Feely, P. Basset, : "A Capacitive Energy Conversion with Circuits Implementing a Rectangular Charge-Voltage Cycle. Part 1 : Analysis of the Electrical Domain", IEEE Transactions on Circuits On System, Vol. 62, issue 11, sept. 2015, pp. 2652-2663.
- [CIAN-J-2] E. O'Riordan, A. Dudka, D. Galayko, P. Basset, O. Feely, Elena Blokhina, "Capacitive Energy Conversion with Circuits Implementing a Rectangular Charge-Voltage Cycle. Part 2 : Electromechanical and Nonlinear Analysis.", IEEE Transactions on Circuits On System, Vol. 62, issue 11, September 2015, pp. 2664-2673.
- [CIAN-J-3] Vinod Pangracious, Emna Amouri, Zied Marrakchi, Habib Mehrez, "Architecture level optimization of 3-dimensional tree-based FPGA", Microelectronics Journal, 45(4), p 355-366, April 2014.
- [CIAN-J-4] A. Ahmadi,H.-G. Stratigopoulos,K. Huang, A. Nahar, B. Orr, M. Pas, J. M. Carulli Jr., Y. Makris, "Yield Forecasting Across Semiconductor Fabrication Plants and Design Generations", IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 2017.
- [CIAN-J-5] M. Andraud, H.-G. Stratigopoulos, E. Simeu, "One-Shot Non-Intrusive Calibration Against Process Variations for Analog/RF Circuits," IEEE Transactions on Circuits and Systems I : Regular Papers, vol. 63, no. 11, pp. 2022-2035, 2016.

- [CIAN-J-6] M. Barragan, R. Alhakim, H.-G. Stratigopoulos, M. Dubois, S. Mir, H. Le Gall, N. Bhargava, and A. Bal, "A Fully-Digital BIST Wrapper Based on Ternary Test Stimuli for the Dynamic Test of a 40nm CMOS 18-bit Stereo Audio Sigma-Delta ADC," *IEEE Transactions on Circuits and Systems I : Regular Papers*, vol. 63, no. 11, pp. 1876-1888, 2016.
- [CIAN-J-7] A. Ashry, D. Belfort and H. Aboushady, "Phase Noise Effect on Sine-Shaped Feedback DACs Used in Continuous-Time Sigma-Delta ADCs", *IEEE Transactions on Circuits and Systems I, TCAS-I*, Vol.62, No. 3, pp 717 - 724, March 2015.
- [CIAN-J-8] M. Torres-Miranda, A. Petritz, A. Fian, C. Prietl, H. Gold, H. Aboushady, Y. Bonnassieux, and B. Stadlober "High-Speed Plastic Integrated Circuits : Process Integration, Design, and Test", *IEEE Journal on Emerging and Selected Topics in Circuits and Systems*, JETCAS, March 2017.
- [CIAN-J-9] K. Abdellatif, R. Chotin-Avot, H. Mehrez, "Authenticated Encryption on FPGAs from the Static Part to the Reconfigurable Part", *Microprocessors and Microsystems : Embedded Hardware Design (MICRO)*, Elsevier, 2014, 38 (6), pp.526-538.
- [CIAN-J-10] S. Belloeil-Dupuis, R. Chotin-Avot, H. Mehrez, "Exploring redundant arithmetics in computer-aided design of arithmetic datapaths", *Integration, the VLSI Journal*, Elsevier, 2013, 46 (2), pp.104-118.
- [CIAN-J-11] Lécuyer, C., Ueyama, T., "The Logics of Materials Innovation : The Case of Gallium Nitride and Blue Light Emitting Diodes", *Historical Studies in the Natural Sciences*, 43-3, 2013, p. 243-280.
- [CIAN-J-12] Brock, D., Lécuyer, C., "Digital Foundations : The Making of Silicon-Gate Manufacturing Technology," *Technology and Culture*, 53, 2012, p. 561-597.
- [CIAN-J-13] M. Barnasconi, M. Dietrich, K. Einwich, Th. Vörtler, J.-P. Chaput, M.-M. Louërat, F. Pêcheux, Zh. Wang, Ph. Cuenot, I. Neumann, Th. Nguyen, R. Lucas, E. Vaumourin : "UVM-SystemC-AMS Framework for System-Level Verification and Validation of Automotive Use Cases", *IEEE Design & Test*, pp. 76-86, (ISBN : 2168-2356), 2015.

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- [CIAN-AA-1] Lécuyer, C., Choi, H., "Les secrets de la Silicon Valley ou les entreprises américaines de micro-électronique face à l'incertitude technique," *La Revue d'Histoire Moderne et Contemporaine*, 59-3, 2012, p. 48-69.

2. Ouvrages

Monographies et ouvrages scientifiques, éditions critiques, traductions

- [CIAN-B-1] Vinod Pangracious, Zied Marrakchi, Habib Mehrez, "Three-Dimensional Design Methodologies for Tree-based FPGA Architecture Springer, 226, 2015, Lecture Notes in Electrical Engineering.
- [CIAN-B-2] Umer Farooq, Zied Marrakchi, Habib Mehrez, "Tree Based Heterogeneous FPGA Architectures, Application Specific Exploration and Optimization", Springer, 188, 2012.
- [CIAN-B-3] Philippe Basset, Elena Blokhina, Dimitri Galayko, "Electrostatic kinetic energy harvesting", Wiley-ISTE, 2016, 214 pages, ISBN : 978-1-84821-716-4.

Direction / édition scientifique

- [CIAN-E-1] Elena Blokhina, Abdelali El Aroudi, Eduard Alarcon, Dimitri Galayko (Eds.). (2016). "Nonlinearity in Energy Harvesting Systems : Micro-and Nanoscale Applications", Springer, ISBN 978-3-319-20355-3
- [CIAN-E-2] M.-M. Louërat, T. Maehne(Eds.), "Languages, Design Methods, and Tools for Electronic System Design : Selected Contributions from FDL 2013", vol. 311, Lecture Notes in Electrical Engineering (LNEE), (Springer), (ISBN : 978-3-319-06316-4) (2015)

Chapitres d'ouvrage

- [CIAN-Ch-1] Elena Blokhina, Abdelali El Aroudi, Eduard Alarcon, Dimitri Galayko, "Chapter 1 : Introduction to Vibration Energy Harvesting", in Elena Blokhina, Abdelali El Aroudi, Eduard Alarcon, Dimitri Galayko (Eds.), *Nonlinearity in Energy Harvesting Systems : Micro-and Nanoscale Applications*. Springer, ISBN 978-3-319-20355-3, 2016.
- [CIAN-Ch-2] E. Blokhina and D. Galayko, "Chapter 3 : Oscillators for Energy Harvesting", in Elena Blokhina, Abdelali El Aroudi, Eduard Alarcon, Dimitri Galayko (Eds.), *Nonlinearity in Energy Harvesting Systems : Micro-and Nanoscale Applications*. Springer, ISBN 978-3-319-20355-3, 2016.
- [CIAN-Ch-3] E. Blokhina, A. El Aroudi, D. Galayko "Chapter 4 : TransducersforEnergyHarvesting", in Elena Blokhina, Abdelali El Aroudi, Eduard Alarcon, Dimitri Galayko (Eds.), *Nonlinearity in Energy Harvesting Systems : Micro-and Nanoscale Applications*. Springer, ISBN 978-3-319-20355-3, 2016.
- [CIAN-Ch-4] D. Galayko, "Chapter 8 : Conditioning Circuits for Capacitive Energy Harvesters", in Elena Blokhina, Abdelali El Aroudi, Eduard Alarcon, Dimitri Galayko (Eds.), *Nonlinearity in Energy Harvesting Systems : Micro-and Nanoscale Applications*. Springer, ISBN 978-3-319-20355-3, 2016.
- [CIAN-Ch-5] Peter Harte, Dimitri Galayko, Orla Feely, Elena Blokhina, "Chapitre 9 : Analysis and Modelling of Nonlinearities in Vibration Energy Harvesters", in Elena Blokhina, Abdelali El Aroudi, Eduard Alarcon, Dimitri Galayko (Eds.), *Nonlinearity in Energy Harvesting Systems : Micro-and Nanoscale Applications*. Springer, ISBN 978-3-319-20355-3, 2016.
- [CIAN-Ch-6] H.-G. Stratigopoulos, B. Kaminska, "Analog and Mixed-Signal Test", in *Electronic Design Automation for Integrated Circuits Handbook*, Edited by G. Martin, L. Lavagno, and I. Markov, CRC Press, 2016.
- [CIAN-Ch-7] D. Maliuk, H.-G. Stratigopoulos, Y. Makris, "Machine Learning-Based BIST in Analog/RF ICs", in *Mixed-Signal Circuits*, Edited by M. Soma and T. Noulis, CRC Press, 2015.
- [CIAN-Ch-8] M. Dubois, H.-G. Stratigopoulos, S. Mir, M. J. Barragan, "Statistical evaluation of digital techniques for Sigma-Delta ADC BIST", *VLSI-SoC : Internet of Things Foundations*, Edited by L. Claesen, M.-T. Sanz-Pascual, R. Reis, and A. Sarmiento-Reye, Springer, pp. 129-148, 2015.
- [CIAN-Ch-9] H.-G. Stratigopoulos, Y. Makris, "Checkers for On-line Self-Testing of Analog Circuits," in *Advanced Circuits for Emerging Technologies*, Edited by K. Iniewski, John Wiley & Sons, Inc., 2012.
- [CIAN-Ch-10] Christophe Lécuyer, "Des savoir-faire industriels aux sciences de l'ingénieur : L'électrotechnique au Massachusetts Institute of Technology," in Marcela Efmertova et André Grelon (dir.), *Des ingénieurs pour un monde nouveau : histoire des enseignements électrotechniques (Europe, Amériques) - XIXe-XXe siècle*, Bruxelles, P.I.E. Peter Lang (2016), p. 457-472.
- [CIAN-Ch-11] Lécuyer, C., "Manager l'innovation," in Dominique Pestre (dir.), *Histoire des sciences et des savoirs*, Paris, Le Seuil (2015), p. 422-439.
- [CIAN-Ch-12] Lécuyer, C., "Semiconductor Innovation and Entrepreneurship at Three University of California Campuses" in Martin Kenney et David Mowery (dir.), *Public Universities and Regional Development : Insights from the University of California*, Stanford, Stanford University Press (2014), p. 22-65.
- [CIAN-Ch-13] Lécuyer, C., "Hautes Technologies et Techniques de Production aux États-Unis," in Patrick Fridenson et Pascal Griset (dir.), *Entreprises de haute Technologie, États et souveraineté*, Paris, Comité pour l'histoire économique et financière de la France, 2013, p. 317-324.
- [CIAN-Ch-14] Y. Li, R. Iskander, F. Javid, M.-M. Louërat : "A Design and Verification Methodology for Mixed-Signal Systems Using SystemC-AMS", chapter in *Models, Methods, and Tools for Complex Chip Design*, vol. 265, *Lecture Notes in Electrical Engineering*, J. Haase (Ed.), pp. 89-108, (Springer), (ISBN : 978-3-319-01417-3) (2014).

Thèses publiées / éditées

- [CIAN-Th-1] Hao Zou : "Méthodologie pour la Modélisation des Parasites de Substrat en Technologie MOS de puissance HV/HT - Application à l'Industrie Automobile", direction de recherche Marie-Minerve Louërat, soutenance 12/12/2016.

- [CIAN-Th-2] Alhassan Sayed : "Récepteur radio-fréquence pour la radio cognitive", direction de recherche Hassan Aboushady, soutenance 01/07/2016.
- [CIAN-Th-3] Benoit Vernay : "Modélisation et simulation haut-niveau de dispositifs MEMS pour le prototypage virtuel multi-physique en SystemC AMS", direction de recherche François Pêcheux, co-direction Marie-Minerve Louërat, soutenance 16/06/2016.
- [CIAN-Th-4] Martin Andraud, Grenoble INP, EEATS, "Solutions for the Self-Adaptation of Wireless Systems", direction de recherche Haralampos Stratigopoulos, soutenue 14/6/2016
- [CIAN-Th-5] Yasser Moursy : "Une méthodologie de conception pour l'immunisation des circuits intégrés HV/HT contre les couplages de substrat pour les applications automobiles", direction de recherche Marie-Minerve Louërat, soutenance 20/05/2016.
- [CIAN-Th-6] Athanassios Dimakos, Grenoble INP, EEATS, "Built-In Test in Wireless Systems Using Non-Intrusive Sensors", direction de recherche Haralampos Stratigopoulos, soutenue 19/3/2016
- [CIAN-Th-7] Liliana Andrade : "Principes et réalisation d'une interface de synchronisation interoperable entre modèles de calcul SystemC AMS pour le prototypage virtuel optimisé de systèmes multi-disciplines", direction de recherche François Pêcheux, co-direction Marie-Minerve Louërat, soutenance 12/01/2016.
- [CIAN-Th-8] Adrien Blanchardon : "Synthèse d'architectures de circuits FPGA tolérants aux défauts", direction de recherche Habib Mehrez, soutenance 15/09/2015.
- [CIAN-Th-9] Delaram Haghighitalab : "Modélisation, conception et simulation d'un SoC pour les réseaux de capteurs sans fil", direction de recherche Hassan Aboushady, soutenance 09/09/2015.
- [CIAN-Th-10] Miguel Angel Torres Miranda : "Conception de Circuits Analogiques et Numériques avec des Transistors Organiques Flexibles", direction de recherche Hassan Aboushady, soutenance 01/09/2015.
- [CIAN-Th-11] Yao Li : "Proposition d'extension à SystemC-AMS pour la modélisation, la conception et la vérification de systèmes AMS", direction de recherche Marie-Minerve Louërat, soutenance 17/06/2015.
- [CIAN-Th-12] Mootaz Allam : "Convertisseur Analogique Numérique Sigma Delta large bande", direction de recherche Hassan Aboushady, soutenance 12/06/2015.
- [CIAN-Th-13] Qingshan Tang : "Méthodologie de Génération de Plateforme de Prototypage à base de Multi-FPGA", direction de recherche Habib Mehrez, soutenance 13/01/2015.
- [CIAN-Th-14] Vinod Pangracious : "Haute Performance tridimensionnelle a base de FPGA Arborescents Architecture à l'aide de la technologie 3D processus", direction de recherche Habib Mehrez, soutenance 24/11/2014.
- [CIAN-Th-15] Chuan Shan : "Génération d'horloge distribuée pour Systèmes sur Puce", direction de recherche François Anceau, soutenance 14/11/2014.
- [CIAN-Th-16] Karim Moussa Ali Abdellatif : "Chiffrement authentifié sur FPGA de la partie reconfigurable à la partie statique", direction de recherche Habib Mehrez, soutenance 07/10/2014.
- [CIAN-Th-17] Mariem Turki : "Techniques de multiplexage pour un système d'émulation et de prototypage rapide à base de FPGA", direction de recherche Habib Mehrez, soutenance 17/09/2014.
- [CIAN-Th-18] Jung Kyu Chae : "Plateforme de spécification pour le développement de bibliothèques de cellules et d'IPs", direction de recherche Habib Mehrez, soutenance 09/07/2014.
- [CIAN-Th-19] Boukary Ouattara : "Prévision des effets de vieillissement par électromigration dans les bibliothèques et les systèmes sur puces CMOS", direction de recherche Habib Mehrez, soutenance 08/07/2014.
- [CIAN-Th-20] Andrii Dudka : "Étude, optimisation et implémentation en silicium du circuit de conditionnement intelligent haute-tension pour le système de récupération électrostatique d'énergie vibratoire", direction de recherche Dimitri Galayko, soutenance 18/02/2014.
- [CIAN-Th-21] Hussein Adel : "Autocalibration d'un convertisseur Analogique-numérique Pipeline", direction de recherche Marie-Minerve Louërat, soutenance 12/12/2013.
- [CIAN-Th-22] Alp Kilic : "Étude d'une architecture dynamiquement reconfigurable pour les telecommunications", direction de recherche Habib Mehrez, soutenance 18/11/2013.

- [CIAN-Th-23] Farakh Javid : "Synthèse structurée des circuits analogiques intégrés capitalisant la connaissance du concepteur : vers une perspective industrielle", direction de recherche Habib Mehrez, soutenance 04/10/2013.
- [CIAN-Th-24] Raouf Khaili Ayad : "Système de calibration des défauts d'appariement d'un convertisseur analogique-numérique à entrelacement temporel opérant en ligne", direction de recherche Habib Mehrez, soutenance 16/09/2013.
- [CIAN-Th-25] Asma Laraba, Grenoble INP, EEATS, "Built-In Self-Test of Pipeline ADCs", direction de recherche Haralampos Stratigopoulos, soutenue 20/9/2013
- [CIAN-Th-26] Eldar Zianbetov : "Horlogerie distribuée pour les SoCs synchrones", direction de recherche François Anceau, soutenance 25/03/2013.
- [CIAN-Th-27] Stéphanie Youssef : "Conception d'une bibliothèque de cellules analogiques", direction de recherche Habib Mehrez, soutenance 03/12/2012.
- [CIAN-Th-28] Diomadson Rodrigues Belfort : "Modulateurs Sigma Delta LC Monobloc d'Ordre Élevé", direction de recherche Hassan Aboushady, soutenance 26/11/2012.
- [CIAN-Th-29] Michel Valislevski : "Environnement de conception multi-niveaux unifié appliqué aux systèmes mixtes", direction de recherche Hassan Aboushady soutenance 04/10/2012.
- [CIAN-Th-30] Louay Abdallah, Grenoble INP, EEATS, "Non-Intrusive Sensors for Built-in-Test of RF Circuits", direction de recherche Haralampos Stratigopoulos, soutenue 22/10/2012
- [CIAN-Th-31] Ahmed Ashry : "Récepteur RF pour la radio logicielle basé sur un convertisseur analogique-numérique Sigma-Delta passe-bande", direction de recherche Hassan Aboushady, soutenance 13/01/2012.

3. Colloques / congrès, séminaires de recherche

Éditions d'actes de colloques / congrès

Non applicable

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- [CIAN-C-1] E. Blokhina, D. O'Connell, D. Andrade-Miceli, S. Gorreta-Marine, J. Pons-Nin, M. Dominguez-Pumar, O. Feely, D. Galayko, "Understanding Complexity in Multiphysics Systems-on-a-Chip : Modern Approaches for Design", in. Proc. of IEEE International Symposium on Circuits and Systems (ISCAS) 2015, Lisbon, Portugal, May 2015.
- [CIAN-C-2] C. Shan, D. Galayko, F. Anceau, E. Zianbetov, "A reconfigurable distributed architecture for clock generation in large many-core SoC", In Reconfigurable and Communication-Centric Systems-on-Chip (ReCoSoC), 2014 9th International Symposium on (pp. 1-8), may 2014.
- [CIAN-C-3] D. Galayko, E. Blokhina, E. Zianbetov, A. Dudka, F. Anceau, E. Colinet, A. Kornienko, J. Juillard, P. Basset, "Complexity in heterogeneous systems on chip : design and analysis challenges", IEEE International Symposium on Circuits and Systems (ISCAS) 2014, Melbourne, Australia, June, 2014, Introduction paper to the special session "Complex Systems on Chip".
- [CIAN-C-4] Andrii Dudka, Dimitri Galayko, Elena Blokhina, Philippe Basset, "Smart Integrated Conditioning Electronics for Electrostatic Vibration Energy Harvesters", IEEE International Symposium on Circuits and Systems (ISCAS) 2014, Melbourne, Australia, June, 2014, Introduction paper to the special session "Nonlinearities in Energy Harvesting Systems : Analysis & Applications Session".
- [CIAN-C-5] D. Galayko, E. Blokhina, "Nonlinear effects in electrostatic vibration energy harvesters : Current progress and perspectives." Circuits and Systems (ISCAS), 2013 IEEE International Symposium on. IEEE, Beijing, China, may 2013.
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- [CIAN-C-10] A. Ahmadi, H.-G. Stratigopoulos, A. Nahar, B. Orr, M. Pas, Y. Makris, "Harnessing Fabrication Process Signature for Predicting Yield Across Designs," IEEE International Symposium on Circuits and Systems, Montreal, Canada, May 2016.
- [CIAN-C-11] A. Dimakos, H.-G. Stratigopoulos, A. Siligaris, S. Mir, E. De Foucauld, "Built-in Test Paradigm for Millimeter-Wave Circuits Based on Non-Intrusive Sensors," Design, Automation and Test in Europe Conference, Dresden, Germany, March 2016.
- [CIAN-C-12] Ahmadi, H.-G. Stratigopoulos, A. Nahar, B. Orr, M. Pas, Y. Makris, "Yield Forecasting in Fab-to-Fab Production Migration Based on Bayesian Model Fusion," IEEE/ACM International Conference on Computer-Aided Design, Austin, TX, USA, November 2015.
- [CIAN-C-13] H.-G. Stratigopoulos, M. J. Barragan, S. Mir, H. Le Gall, N. Bhargava, A. Bal, "Evaluation of Low-Cost Mixed-Signal Test Techniques for Circuits with Long Simulation Times," IEEE International Test Conference, Anaheim, CA, USA, October 2015.
- [CIAN-C-14] H. Le Gall, R. Alhakim, M. Valka, S. Mir, H.-G. Stratigopoulos, E. Simeu, "High Frequency Jitter Estimator for SoC," IEEE European Test Symposium, Cluj-Napoca, Romania, May 2015.
- [CIAN-C-15] J. Liaperdos, H.-G. Stratigopoulos, L. Abdallah, Y. Tsiatouhas, A. Arapoyanni, X. Li, "Fast Deployment of Alternate Analog Test Using Bayesian Model Fusion," Design, Automation and Test in Europe Conference, Grenoble, France, March 2015.
- [CIAN-C-16] A. Serhan, L. Abdallah, H.-G. Stratigopoulos, S. Mir, "Low-cost EVM built-in test of RF transceivers," IEEE International Design & Test Symposium, Algiers, Algeria, December 2014.
- [CIAN-C-17] M. Dubois, H.-G. Stratigopoulos, S. Mir, M. J. Barragan, "Evaluation of Digital Ternary Stimuli for Dynamic Test of Sigma-Delta ADCs," 22nd IFIP/IEEE International Conference on Very Large Scale Integration (VLSI-SoC), Playa del Carmen, Mexico, September 2014.
- [CIAN-C-18] J. Altet, E. Aldrete-Vidrio, F. Reverter, D. Gomez, J.-L. Gonzalez, M. Onabajo, J. Silva-Martinez, B. Martineau, X. Perpina, L. Abdallah, H.-G. Stratigopoulos, X. Aragones, X. Jorda, M. Vellvehi, S. Dilhaire, S. Mir, D. Mateo, "Review of temperature sensors as monitors for RF-MMW built-in testing and self-calibration schemes", IEEE 57th International Midwest Symposium on Circuits and Systems, College Station, TX, USA, August 2014.
- [CIAN-C-19] M. Andraud, A. Deluthault, M. Dieng, F. Azais, S. Bernard, P. Cauvet, M. Comte, T. Kervaon, V. Kerzerho, S. Mir, P.-H. Pugliesi-Conti, M. Renovell, F. Soulier, E. Simeu, H.-G. Stratigopoulos, "Solutions for the self-adaptation of communicating systems in operation," IEEE International On-Line Testing Symposium, Platja d'Aro, Spain, July 2014.
- [CIAN-C-20] M. Andraud, H.-G. Stratigopoulos, E. Simeu, "One-Shot Calibration of RF Circuits Based on Non-Intrusive Sensors," Design Automation Conference, San Francisco, CA, USA, June 2014.
- [CIAN-C-21] H.-G. Stratigopoulos, S. Sunter, "Efficient Monte Carlo-Based Analog Parametric Fault Modeling," IEEE VLSI Test Symposium, Napa, CA, USA, April 2014.
- [CIAN-C-22] A. Kilic, D. Haghghitalab, H. Mehrez, H. Aboushady, "Low-power comb decimation filter for RF Sigma-Delta ADCs" IEEE International Symposium on Circuits and Systems, ISCAS'14, pp. 1596 - 1599, Melbourne, Australia, June 2014.
- [CIAN-C-23] A. Espinoza-Rhoton, L. Gonzalez-Perez, J. Ponce, B. Hector, C. Lennin, R. Parra-Michel, H. Aboushady, "An FPGA-based all-digital 802.11b and 802.15.4 receiver for the Software Defined Radio paradigm" IEEE International Conference on ReConfigurable Computing and FPGAs, ReConFig'14, pp. 1 - 6, Cancun, Mexico, Dec. 2014.

- [CIAN-C-24] A. Lévêque, F. Pêcheux, M.M. Louerat, H. Aboushady, F. Cenni, S. Scotti, A. Massouri, L. Clavier, "Holistic modeling of embedded systems with multi-discipline feedback : Application to a Precollision Mitigation Braking System", IEEE Design Automation Conference, DATE'12, March 2012.
- [CIAN-C-25] H. Zou, Y. Moursy, R. Iskander, J.-P. Chaput, M.-M. Louërat : "An Adaptive Mesh Refinement Strategy of Substrate Modeling for Smart Power ICs", IEEE International Symposium on Circuits and Systems (ISCAS 2016), Montreal, Canada, pp. 2358-2361 (2016)
- [CIAN-C-26] L. Andrade, T. Maehne, A. Vachoux, C. Ben Aoun, F. Pêcheux, M.-M. Louërat : "Pre-Simulation Symbolic Analysis of Synchronization Issues between Discrete Event and Timed Data Flow Models of Computation", Proceedings of the 2015 Design, Automation & Test in Europe Conference & Exhibition, DATE 2015, Grenoble, France, pp. 1671-1676 (2015)

Autres produits présentés dans des colloques / congrès et des séminaires de recherche

- [CIAN-AC-1] M. Torres, A. Al-Mutairi, H. Aboushady, Y. Bonnassieux, "Highly Reliable Fabrication & Modeling Process of Pentacene TFT for Analog Circuit Design", International Conference on Organic Electronics, ICOE 2013.
- [CIAN-AC-2] M. Torres, A. Al-Mutairi, H. Aboushady, Y. Bonnassieux, "Fabrication and Parameter Extraction of High Performing PMMA-Pentacene TFTs for Circuit Design", International Conference on Organic Electronics, ICOE 2014.
- [CIAN-AC-3] M. Torres, F. Wajsburt, H. Aboushady, Y. Bonnassieux, "Full Customized Layout Design Environment for Integrated Systems with TFTs", International Conference on Organic Electronics, ICOE 2014.
- [CIAN-AC-4] H. Zou, Y. Moursy, R. Iskander, J.-P. Chaput, M.-M. Louërat, C. Stefanucci, P. Buccella, M. Kayal, J.-M. Sallese, Th. Gneiting, H. Alius, A. Steinmair, Eh. Seebacher : "A CAD integrated solution of substrate modeling for industrial IC design", 2015 20th International Mixed-Signal Testing Workshop (IMSTW), Paris, France (2015)
- [CIAN-AC-5] Y. Moursy, R. Iskander, M.-M. Louërat : "Automated triangular wave generator design with process corners compensation", IMSTW'15 - 20th International Mixed-Signal Testing Workshop, Paris, France, pp. 1-6, (IEEE) (2015)
- [CIAN-AC-6] H. Zou, Y. Moursy, R. Iskander, M.-M. Louërat, J.-P. Chaput : "A novel CAD framework for substrate modeling", 10th Conference on Ph.D Research in Microelectronics and electronics, Grenoble, France, pp. 1-4, (IEEE) (2014)
- [CIAN-AC-7] Th. Vörtler, Th. Klotz, K. Einwich, Y. Li, Zh. Wang, M.-M. Louërat, J.-P. Chaput, F. Pêcheux, R. Iskander, M. Barnasconi : "Enriching UVM in SystemC with AMS extensions for randomization and coverage", Design and Verification Conference and Exhibition (DVCON Europe), Munich, Germany (2014)
- [CIAN-AC-8] R. Lucas, E. Vaumorin, Ph. Cuenot, Y. Li, Zh. Wang, M.-M. Louërat, J.-P. Chaput, F. Pêcheux, R. Iskander, M. Barnasconi, Th. Vörtler, K. Einwich : "Generation of UVM compliant Test Benches for Automotive Systems using IP-XACT with UVM-SystemC and SystemC AMS extensions", Design and Verification Conference and Exhibition (DVCON Europe), Munich, Germany (2014)
- [CIAN-AC-9] Y. Li, Zh. Wang, M.-M. Louërat, F. Pêcheux, R. Iskander, Ph. Cuenot, M. Barnasconi, Th. Vörtler, K. Einwich : "Virtual Prototyping, Verification and Validation Framework for Automotive Using SystemC, SystemC-AMS and SystemC-UVM", Embedded Real Time Software and Systems (ERTS2), Toulouse, France, pp. 1-10 (2014)

4. Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs

Analog design Design, fabrication and measurement of 10 RF and analog circuits in CMOS 130 nm and 65 nm technologies :

- First design and fabrication of a RF multi-standard programmable receiver in 1.5 à 3.0GHz bandwidth for WiFi, Bluetooth, ZigBee, LTE-1.8G, LTE-2.6G [CIAN-FM-3, CIAN-J-7, CIAN-Th-12, CIAN-C-22]
- First design and fabrication of a tunable band-pass RF Sigma-Delta Analog-to-Digital converter for signals ranging from 7 to 9 GHz [CIAN-Th-2]
- One-shot post-monitoring calibration of RF circuits. Demonstration on 65nm 2.4GHz PA [CIAN-J-5]
- Built-in self-test of switched-capacitor $\Sigma\Delta$ ADCs. Demonstration on 55nm IP by STMicroelectronics [CIAN-J-7]

FPGA design Design, fabrication and measurement of a novel FPGA secured against DPA attacks [CIAN-FM-2]

Digital design Design, fabrication and measurement of a PLL network for system synchronization [CIAN-FM-1]

Plateformes et observatoires

The CIAN team has participated in building the Electronics and Computer Science platform at LIP6. Since December 2016, the platform is directed by Amine Rhouni who is working in close cooperation with CIAN team members.

5. Produits et outils informatiques

Logiciels

Coriolis Place and Route for integrated CMOS circuits and systems : <https://soc-extras.lip6.fr/en/coriolis/coriolis2-users-guide/>

ArithLib library Library of synthesized arithmetic operators in VHDL/Verilog : <http://www-soc.lip6.fr/cian/projets/and-donnees-arithmetiques/arithlib/>

HiTas Static timing analyzer for integrated CMOS digital circuits : <https://soc-extras.lip6.fr/en/tasyag-abstract-en/>

Oceane Library of analog IP at transistor level : <https://soc-extras.lip6.fr/fr/analog-tools/oceane/>

Bases de données / cohortes

Non applicable

Outils présentés dans le cadre de compétitions de solveurs

Non applicable

Outils d'aide à la décision

Non applicable

6. Brevets, licences et déclarations d'invention

1. S. Mir, H.-G. Stratigopoulos, M. Dubois, "Sigma-Delta ADC with test circuitry", US Patent 8,830,098, 2014
2. H. Aboushady, D. Belfort, A. Ashry and N. Beilleau, "Sigma-Delta RF Modulator having capacitive coupling, Analog-to-Digital Converter and Apparatus including such a modulator",
 - France : FR2996387, 28 September 2012.
 - Europe : PCT/EP2013/070379, 30 September 2013.
 - United States : US-20150280733-A1, 26 March 2015, US-9306594 06 April 2016.
3. H. Aboushady, A. Sayed and T. Badran, "An Efficient Implementation of a Tunable RF SD ADC", Europe : EP16305763, 23 June 2016.

4. Ramy Iskander, Marie-Minerve Louërat, Farak Javid, Andreas Kaiser. "Method for automated assistance to design nonlinear analog circuit with transient solver", Université Pierre et Marie Curie, Lab. LIP6, Paris, June 2012. patent WO 2013/190147 A1. European Application N0 13727558.0 - 1954.
5. Ramy Iskander, Farakh Javid, Marie-Minerve Louërat. "Procédé de détermination du dimensionnement des transistors d'un circuit analogique", Université Pierre et Marie Curie, Lab. LIP6, Paris, 2013. international FR2014/051956.

7. Rapports d'expertises techniques, produits des instances de normalisation

Non applicable

8. Produits des activités didactiques

Ouvrages

Non applicable

E-learning, moocs, cours multimedia, etc.

Non applicable

9. Produits destinés au grand public

Émissions radio, TV, presse écrite

Non applicable

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

Non applicable

Produits de médiation scientifique

Non applicable

Débats science et société

Non applicable

10. Autres produits propres à une discipline

Créations artistiques théorisées

Non applicable

Mises en scènes

Non applicable

Films

Non applicable

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

- Associate Editor IEEE Transactions on Circuits and Systems II : Express Brief, depuis 1 janvier 2016 (Dimitri Galayko)
- Springer Journal of Electronic Testing : Theory & Applications (JETTA), Guest Editor of Special Issue on "Analog, Mixed-Signal, RF, and MEMS Testing" Date of publication : February 2011 (Haralampos Stratigopoulos)
- Springer Journal of Electronic Testing : Theory & Applications (JETTA), Associate Editor since January 2012, (Haralampos Stratigopoulos)
- IEEE Design & Test of Computers, Guest Editor of Special Issue on "Digitally Enhanced Wireless Transceivers", Date of publication : November/December 2012, (Haralampos Stratigopoulos)
- IEEE Design & Test of Computers, Associate Editor since December 2011, (Haralampos Stratigopoulos)
- IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, Associate Editor since October 2012, (Haralampos Stratigopoulos)
- Associate Editor IEEE Transactions on Circuits and Systems-II (Hassan Aboushady)

Direction de collections et de séries

Non applicable

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

Member of CNU (National Evaluation Committee) 63 (Marie-Minerve Louerat, since October 2015))

Évaluation d'articles et d'ouvrages scientifiques

Technical Program Committee Member of international conferences :

- IEEE International On-Line Testing Symposium (IOLTS '12-'17), (Haralampos Stratigopoulos)
- Design, Automation and Test in Europe Conference (DATE '12-'17), (Haralampos Stratigopoulos, Marie-Minerve Louërat)
- IFIP/IEEE International Conference on Very Large Scale Integration (VLSI-SoC '12-'14), (Haralampos Stratigopoulos)
- IEEE International Conference on Computer-Aided Design (ICCAD '12-'14), (Haralampos Stratigopoulos)
- IEEE VLSI Test Symposium (VTS '13-'17), (Haralampos Stratigopoulos)
- IEEE Great Lakes Symposium on VLSI (GLSVLSI '13-'14), (Haralampos Stratigopoulos)
- European Workshop on CMOS Variability (VARI '14-'16), (Haralampos Stratigopoulos)
- International Design & Test Symposium (IDT '14-'15), (Haralampos Stratigopoulos, Marie-Minerve Louërat)
- International Conference on Design & Technology of Integrated Systems in Nanoscale Era (DTIS '14-'15), (Haralampos Stratigopoulos)
- IEEE International Test Conference (ITC '15-'17), (Haralampos Stratigopoulos)
- Frontiers on Analog CAD (FAC '15), (Haralampos Stratigopoulos)
- IEEE International Workshop on Test and Validation of High Speed Analog Circuits (TVHSAC '15), (Haralampos Stratigopoulos)
- IEEE Latin-American Test Symposium (LATS '16-'17), (Haralampos Stratigopoulos)
- IEEE North Atlantic Test Workshop (NATW '16-'17), (Haralampos Stratigopoulos)
- IEEE International Mixed-Signals Test Workshop (IMSTW '16-'17), (Haralampos Stratigopoulos)

- International Conference on Synthesis, Modeling, Analysis and Simulation Methods and Applications to Circuit Design (SMACD '17), (Haralampos Stratigopoulos, Marie-Minerve Louërat)
- IEEE ISCAS, (Hassan Aboushady, Marie-Minerve Louërat)
- Conference on PhD Research in Microelectronics and Electronics (PRIME'15-'16-'17), (Marie-Minerve Louërat)

Technical Referee in additional journals and conferences :

- IEEE Transactions on Very Large Scale Integration (VLSI) Systems (TVLSI), (Haralampos Stratigopoulos)
- IEEE Transactions on Circuits and Systems I (TCAS-I), (Haralampos Stratigopoulos, Marie-Minerve Louërat, Hassan Aboushady)
- IEEE Transactions on Circuits and Systems II (TCAS-II), (Haralampos Stratigopoulos, Marie-Minerve Louërat, Hassan Aboushady)
- ASP Journal of Low Power Electronics (JOLPE), (Haralampos Stratigopoulos, Roselyne Chotin-Avot)
- Wiley International Journal of Circuit Theory and Application, (Haralampos Stratigopoulos)
- IEEE Asian Test Symposium (ATS), (Haralampos Stratigopoulos)
- IET Circuits, Devices & Systems, 2013-2016, (Roselyne Chotin-Avot)
- NEW Circuits And Systems conference (NEWCAS), 2015, (Roselyne Chotin-Avot, Marie-Minerve Louërat)
- European Symposium on Reliability of Electron Devices, Failure Physics and Analysis (ESREF), 2016-2017, (Roselyne Chotin-Avot)
- IEEE International Conference on Electronics, Circuits and Systems (ICECS), 2015, (Roselyne Chotin-Avot, Marie-Minerve Louërat)
- Journal of Solid State Circuits, (Christophe Lécuyer)
- Historical Studies in the Natural Sciences, (Christophe Lécuyer)
- Technology and Culture, (Christophe Lécuyer)
- IEEE Annals of the History of Computing, (Christophe Lécuyer)
- Research Policy, (Christophe Lécuyer)
- Revue d'Anthropologie des Connaissances, (Christophe Lécuyer)
- Integration, the VLSI Journal (Elsevier), (Marie-Minerve Louërat)
- IEEE Design & Test, (Marie-Minerve Louërat)
- IEEE Transactions on Very Large Scale Integration (VLSI) Systems (TVLSI), (Hassan Aboushady)

Évaluation de laboratoires (type Hceres)

Non applicable

Évaluation de projets de recherche

1. Program CNRS / CEFIPRA India, 2016 (Habib Mehrez)
2. ANR-ASTRID 2016 (Habib Mehrez)
3. ANR PRCE 2015 (Habib Mehrez)
4. ANR AAP 2014 (Habib Mehrez)
5. STIC-AMSUD STIC AmSud Program 2014 (Habib Mehrez)
6. ANR BLANC PROGRAMME 2013 TRANSNATIONAL COLLABORATION (Habib Mehrez)
7. EURIAS (Christophe Lécuyer)
8. National Science Foundation (Christophe Lécuyer)
9. Programme Emergence(s) de la ville de Paris (Christophe Lécuyer)

3. Activités d'expertise scientifique

Activités de consultant

ANRT Thèses CIFRE, (Roselyne Chotin-Avot, Marie-Minerve Louërat)

Projet Fulbright (Marie-Minerve Louërat)

Participation à des instances d'expertises (type Anses) ou de normalisation

Non applicable

Expertise juridique

Non applicable

4. Organisation de colloques / congrès

PowerMEMS'2016 The 16th International Conference on Micro and Nanotechnology for Power Generation and Energy Conversion Applications (December 2016, Paris), <https://www.powermems2016.org> (Dimitri Galayko)

IoT for E-health '2016 Internet des objets pour applications biomédicales, 10 novembre 2016, Paris, <http://www.federation-electronique.upmc.fr/fr/manifestations-passees/er-colloque-de-la-federation-d-electronique.html>, (Dimitri Galayko)

GDR SOC-SIP 6 novembre 2014, <http://www-soc.lip6.fr/users/dimitri-galayko/synchronisation/>, (Dimitri Galayko)

TVHSAC'13 EEE International Workshop on Test and Validation of High Speed Analog Circuits - Program Chair, (Haralampos Stratigopoulos)

DATE'14 Design, Automation and Test in Europe Conference - Topic Chair, (Haralampos Stratigopoulos)

DATE'13, '15 Design, Automation and Test in Europe Conference - Topic Co-Chair, (Haralampos Stratigopoulos)

IMSTW '15 IEEE International Mixed-Signals Test Workshop - General Chair, (Haralampos Stratigopoulos)

ETS'17 IEEE European Test Symposium - Program Chair, (Haralampos Stratigopoulos)

Computing and the Environment "Computing and the Environment", UPMC, laboratoire Arago, octobre 2014, (Christophe Lécuyer)

FDL'2013 Forum on Specification and Design Languages, Septembre 2013, Paris, (Marie-Minerve Louërat)

5. Post-doctorants et chercheurs accueillis

Umer Farook Post Doc project "Wasga Server" 2 ans sept-2015 to august 2017

Moazem Azeem Post Doc project "Wasga Server" 2 ans Nov-2015 to Nov 2017

Zouha Cherif Post Doc project "Wasga Server" 6 months sept-2015 to feb- 2016

Maminionja Ravoson Researcher project "Wasga Server" 18 months Mar-2016 to Sept- 2017

Mootaz Allam ATER, 12 mois 2015-2016

Diomadson Rodrigues-Belfort Post Doc project, 12 mois 2012-2013

Michel Vasilevski Post Doc project, 4 mois 2015

Pr. Elena Blokhina invited Professor, UCD (Irlande), 1 mois, juin 2014

Pr. Luca Gammaitoni invited Professor, NIPS Lab, Univ. de Perugia, 1 mois, juin 2015

Pr. Boris Murmann invited Professor, Stanford University, USA, 1 mois, 2015.

Pr. Khaled Salama invited Professor, KAUST, KSA, 1 mois, 2015.

Pr. Luis Gonzalez invited Professor, ITESM, Mexico, 1 mois, 2012.

Pr. Naohiko Shimizu Japan, 2014 (sabbatical), invited Professor 2015, 2016, 2017

6. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

amsAG Contrat de recherche avec ams AG en Autriche, "Adaptive Test of Semiconductor Devices," mai '16 - '17

CEA DAM "chiffrement authentifié", 2012-2014

amsAG Contrat de recherche avec amsAG en Autriche "Proof of Concept of Power MOSFET driver", mai 2016-mai 2017

Bourses Cifre

St Microelectronics J. K. Chae, "Plateforme de conception et de vérification" 2011-2014

St Microelectronics Boukary Ouattara, "Electromigration analysis" 2011-2014

FlexRas technologies Qingshan Tang "Multi-FPGA systems Platform" 2011-2014

COVENTOR Benoît Vernay, 2013-2016

Valeo Vanessa Tran, 2015-2018

Créations de laboratoires communs avec une / des entreprise(s)

Non applicable

Création de réseaux ou d'unités mixtes technologiques

Non applicable

Créations d'entreprises, de start-up

FLEXRAS created in 2009 by Hayder Mrabet (PhD CIAN) and sold in 2015 to Mentor Graphics

INTENTO Design created in 2015 by Ramy Iskander (Associate Professor CIAN)

SEAMLESSWAVES created in 2016 by Hassan Aboushady (Associate Professor CIAN)

7. Contrats de recherche financés par des institutions publiques ou caritatives

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

Penta HADES "Hierarchy-Aware and secure embedded test infrastructure for Dependability and performance Enhancement of integrated Systems," avril '17-'20

ANR Internationale Franco-Mexicain ASTECAS, 2009-2013

ANR Internationale Franco-Mexicain TOLTECA, 2016-2020

Projet INPE Instituto Nacional de Pesquisas Espaciais, Brazil, 2011-2015

Eureka/Catrene H-INCEPTION <https://www-soc.lip6.fr/trac/hinception>

FP7 VERDI <https://wiki.eas.iis.fraunhofer.de/verdi/index.php/Public> :Abstract

FP7 AUTOMICS <https://www.automics.eu>

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

PPR, IDF programme FEDER, 2010-2012

RobustFPGA, ANR 2011-2015

Wasga Server, FUI BPI France 2015-2018

Sorbonne-Universités Information and environnement 2013-2014

Sorbonne-Universités ITR2-SU, 2015-2016, Programme de soutien à l'innovation et au transfert des résultats de la recherche de Sorbonne Universités,
SATT-LUTECH Programme de maturation, SATT-LUTECH, 2013-2014
RAPID FLEXyRADIO Ministère de la défense, 2017-2020

Contrats avec les collectivités territoriales

Non applicable

Contrats financés dans le cadre du PIA

Non applicable

Contrats financés par des associations caritatives et des fondations (ARC, FMR, FRM, etc.)

Non applicable

8. Indices de reconnaissance

Prix

- [CIAN-D-1] C. Lécuyer, "Eugene S. Ferguson Prize de la Society for the History of Technology pour Makers of the Microchip : A Documentary History of Fairchild Semiconductor", octobre 2013 :
- [CIAN-D-2] H.-G. Stratigopoulos, Best Paper Award, 2015 IEEE European Test Symposium
- [CIAN-D-3] H.-G. Stratigopoulos, Best Paper Award, 2012 IEEE European Test Symposium

Distinctions

Non applicable
Non applicable

Contrats financés dans le cadre du PIA

Non applicable

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

- H. Aboushady, IEEE Distinguished Lecturer, "RF Sigma-Delta ADC : Realizing the Cognitive Radio Dream", Workshop on RF and Microwave Technology, Federal University of Santa Catarina, Nov. 2015.
- H. Aboushady, Visiting Professor, ITSEM Mexico, 2013.
- H. Aboushady, Visiting Professor, UFRN Brésil, 2015.
- H. Aboushady, Special Session on Decimation Filters for Sigma-Delta Converters, ISCAS 2014, Melbourne, Australia.
- C. Ben Aoun, L. Andrade, T. Maehne, F. Pêcheux, M.-M. Louërat, A. Vachoux : "Pre-Simulation Elaboration of Heterogeneous Systems : The SystemC Multi-Disciplinary Virtual Prototyping Approach", Invited session at International Conference on Embedded Computer Systems : Architectures, Modelling and Simulation (SAMOS XV), Samos, Greece, pp. 278-285 (2015).
- C. Lécuyer, "Selling Innovation : The Case of Semiconductor Research at the University of California", colloque sur "From Knowledge to Profit : Scientific Institutions and the Commercialization of Science", Max Planck Institute for the History of Science, Berlin, Octobre 2016.
- C. Lécuyer, "Managing and Governing Innovation : The History of Moore's Law", colloque CNRS-EHESS/FFJ - JST/RISTEX sur "Innovation beyond Technique : Revising the Relations between Science and Society", Tokyo, Septembre 2016.
- C. Lécuyer, Professeur invité, GRIPS, Tokyo, Mai et juin 2016.
- C. Lécuyer, "Dirty Valley : The Fight over Environmental and Occupational Health in Silicon Valley", colloque Tensions of Europe, Stockholm, septembre 2015.

- T. Maehne, Zh. Wang, L. Andrade, B. Vernay, C. Ben Aoun, J.-P. Chaput, M.-M. Louërat, F. Pêcheux, A. Krust, G. Schroepfer, M. Barnasconi, K. Einwich, F. Cenni, O. Guillaume : "UVM-SystemC-AMS based Framework for the Correct by Construction Design of MEMS in their Real Heterogeneous Application Context", Invited session at IEEE International Conference on Electronics, Circuits, and Systems (ICECS), Marseille, France, pp. 862-865 (2014).
- Y. Moursy, R. Iskander, M.-M. Louërat : "Automated triangular wave generator design with process corners compensation", IMSTW'15 - 20th International Mixed-Signal Testing Workshop, Paris, France, pp. 1-6, (IEEE) (2015)
- H.-G. Stratigopoulos, Y. Makris : "From Data to Actions : Applications of Data Analytics in Semiconductor Manufacturing & Test", Design, Automation and Test in Europe Conference, Half-day Tutorial, Lausanne, Switzerland, March 2017
- H.-G. Stratigopoulos, Y. Makris : "From Data to Actions : Applications of Data Analytics in Semiconductor Manufacturing & Test", IEEE International Test Conference, Half-day Tutorial, Fort Worth, TX, USA, November 2016
- H.-G. Stratigopoulos, Y. Makris : "From Data to Actions : Applications of Data Analytics in Semiconductor Manufacturing & Test", IEEE International Test Conference, Half-day Tutorial, Anaheim, CA, USA, October 2015
- H.-G. Stratigopoulos, Y. Makris : "From Data to Actions : Applications of Data Analytics in Semiconductor Manufacturing & Test", IEEE International Symposium on Circuits and Systems, Full-day Tutorial, Lisbon, Portugal, May 2015
- H.-G. Stratigopoulos, Y. Makris : "From Data to Actions : Applications of Data Analytics in Semiconductor Manufacturing & Test", Design, Automation and Test in Europe Conference, Half-day Tutorial, Grenoble, France, March 2015
- H.-G. Stratigopoulos : "One-Shot Non-Intrusive Calibration Against Process Variations for Analog/RF Circuits", Special session in International Workshop on Design Automation for Analog and Mixed-Signal Circuits, Austin, TX, USA, November 2016.
- H.-G. Stratigopoulos, E. Simeu, S. Mir : "Test and calibration of RF circuits using built-in non-intrusive sensors", IEEE Computer Society Annual Symposium on VLSI, Invited Talk in Special Session, Montpellier, France, July 2015.
- H.-G. Stratigopoulos : "RF Built-In Test with Non-Intrusive Sensors", Special session in IEEE VLSI Test Symposium, Elevator Talk, Napa, CA, USA, April 2014.
- H.-G. Stratigopoulos : Panel in IEEE International Mixed-Signals, Sensors, and Systems Test Workshop (IMS3TW'12), "How Best Can We Deploy Analog/Mixed-Signal DFT Solutions?"
- H.-G. Stratigopoulos : Panel in IEEE VLSI Test Symposium (VTS'15), "Analog/RF BIST : Are we there yet?"
- H.-G. Stratigopoulos : Panel in IEEE European Test Symposium (ETS '15), "Is adaptive testing the panacea for the future test problems?"

Annexe 4 EQUIPE QI

Nom de l'équipe : Quantum Information

Acronyme : QI

Nom du responsable pour le contrat en cours : Damian Markham

Nom du responsable pour le contrat à venir : Damian Markham

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

1. A. Orioux and E. Diamanti, Recent advances on integrated quantum communications, *Journal of Optics* 16, 083002 (2016) [Invited review paper].
2. W. McCutcheon, A. Pappa, B. A. Bell, A. McMillan, A. Chailloux, T. Lawson, M. Mafu, D. Markham, E. Diamanti, I. Kerenidis, J. G. Rarity, M. S. Tame, Experimental verification of multipartite entanglement in quantum networks, *Nature Communications* 7, 13251 (2016).
3. E. Diamanti, H.-K. Lo, B. Qi, Z. Yuan, Practical challenges in quantum key distribution, *NJP Quantum Information* 2, 16025 (2016) [Invited review].
4. A. Sohbi, I. Zaquine, E. Diamanti, D. Markham, Logical and inequality-based contextuality for qudits, *Phys. Rev. A* 94, 032114 (2016).
5. C. Autebert, J. Trapateau, I. Zaquine, A. Lemaitre, C. Gomez-Carbonell, E. Diamanti, I. Zaquine, S. Ducci, "Multi-user quantum key distribution with entangled photons from an AlGaAs chop", *Quantum Science and Technology* 1, 01LT02 (2016)
6. S. Barz, V. Dunjko, F. Schlederer, M. Moore, E. Kashefi and I. Walmsley, Enhanced delegated computing using coherence, *Phys. Rev. A*, 2016.
7. E. Diamanti and E. Kashefi, Best of both worlds, *Nature Physics* 13, 3 (2017) [Invited commentary].
8. T. Douce, D. Markham, E. Kashefi, E. Diamanti, T. Coudreau, P. Milman, P. van Loock, G. Ferrini, Continuous-variable instantaneous quantum computing is hard to sample, *Phys. Rev. Lett.* 118, 070503 (2017).
9. N. Kumar, E. Diamanti, I. Kerenidis, Efficient quantum communications with coherent-state fingerprints over multiple channels, *Phys. Rev. A* 95, 032337 (2017)
10. G. N. Nikolopoulos and E. Diamanti, Continuous-variable quantum authentication of physical unclonable keys, *Scientific Reports* 7, 46047 (2017).
11. M. Cordier, A. Orioux, R. Gabet, T. Harlé, N. Dubreuil, E. Diamanti, P. Delaye, I. Zaquine, Raman-tailored photonic crystal fiber for telecom band photon-pair generation, *Optics Letters* 42, 2583 (2017).
12. J. Fitzsimons and E. Kashefi, Unconditionally verifiable blind computation, *Phys. Rev. A*, 2017.
13. E. Kashefi and P. Wallden, Garbled Quantum Computation, *Journal of Cryptography*, Special Issue on Quantum-Safe Cryptograph, 2017.
14. Gheorghiu, Alexandru, Petros Wallden, and Elham Kashefi, Rigidity of quantum steering and one-sided device-independent verifiable quantum computation, *New Journal of Physics* 19.2 (2017) : 023043.
15. Kashefi, Elham, and Petros Wallden, Optimised resource construction for verifiable quantum computation, *Journal of Physics A : Mathematical and Theoretical* 50.14 (2017) : 145306.

2. Ouvrages

Thèses soutenues

1. Damian Markham, Quantum Information and Quantum Networks, Habilitation à Diriger des Recherches, Juin 2017.

3. Colloques / congrès, séminaires de recherche

Articles publiés dans des actes de colloques / congrès

1. Scott Aaronson, Alexandru Cojocaru, Alexandru Gheorghiu, Elham Kashefi, On the implausibility of classical client blind quantum computing. arXiv preprint arXiv :1704.08482 (2017), Quantum Cryptography Workshop, 2017.
2. Daniel Mills, Anna Pappa, Theodoros Kapourniotis, Elham Kashefi, Information Theoretically Secure Hypothesis Test for Temporally Unstructured Quantum Computation, arXiv preprint arXiv :1704.01998 (2017), Quantum Physics and Logics Workshop, 2017.

4. Développements instrumentaux et méthodologiques

Plateformes et observatoires

- Experimental platform for quantum optical implementations of quantum network protocols, headed by Eleni Diamanti

9. Produits destinés au grand public

Émissions radio, TV, presse écrite

- Eleni Diamanti, Ordinateur Quantique : le dernier pas la singularité informatique, France Culture 09/11/2016.

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

- Eleni Diamanti, interviewed by Audrey Dufour, La Croix, 07/03/2017.

Débats science et société

- Eleni Diamanti, participated in the Bar des Sciences, Paris, November 2016.

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

- Eleni Diamanti, Editorial Board IOP Quantum Science and Technology
- Eleni Diamanti, Editorial Board, Nature Scientific Reports
- Eleni Diamanti, Guest Editor, special issue of MDPI Cryptography

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

Évaluation d'articles et d'ouvrages scientifiques

Regular reviewing for :

Nature, Nature Physics, Nature Communications, Nature Photonics, New Journal of Physics, Quantum Information, Physical Review X, Physical Review Letters, Physical Review A, Optica, New Journal of Physics,

Quantum Science and Technology, Optics Express, Optics Letters, J. Phys. A, Proc. Roy. Soc, IEEE, QIP, EUROCRYPT.

Évaluation des thèses

- Eleni Diamanti, pour Zoé Amblard, Université de Limoges, December 2016 (rapporteur)
- Elham Kashefi, pour Mathieu Laurière, University of Paris Diderot, 2017

Évaluation de projets de recherche

- Royal Society University Research Fellowships (UK)
- National Science Foundation (USA)
- Science Foundation Ireland (Ireland)
- Italian Research Centre CINECA (Italy)
- University of Pavia (Italy)
- NSERC (Canada)

3. Activités d'expertise scientifique

Expertise juridique

Eleni Diamanti, recruitment committee for Telecom ParisTech

Eleni Diamanti, Member of international expert review panel for the mid-term evaluation of EPSRC Quantum Technology Hubs (UK)

Eleni Diamanti, Quantum Technologies Scientific Committee, French Higher Education and Research Ministry
Eleni Diamanti, Elected member, Board of Stakeholders (BoS) of the European Photonics21 Public-Private-Partnership

Eleni Diamanti, Vice Director, Paris Center for Quantum Computing (PCQC)

Elham Kashefi, Managing board member of the Networked Quantum Information Technology (NQIT) hub in UK

4. Organisation de colloques / congrès

- Eleni Diamanti (Program Committee), Conference on Lasers and Electro-Optics/European Quantum Electronics Conference (CLEO Europe/EQEC), Munich, Germany, June 2017
- Eleni Diamanti (Chair), GdR IQFA 7th Colloquium, Paris, November 2016
- Damian Markham (Chair), TQC 2017, Paris, June 2016
- Eleni Diamanti (Chair), TYQI, June 2016
- Elham Kashefi (Chair), TYQI, June 2016
- Elham Kashefi (Program Committee), Logic in Computer Science (LICS 2017)
- Elham Kashefi (Program Committee), Quantum Cryptography (Qcrypt 2017)
- Elham Kashefi (Program Committee), Mathematical Foundations of Programming Semantics (MFPS 2017)
- Eleni Diamanti (Steering Committee) Ile-de-France Quantum Technologies Region Program SIRTEQ, 2016 - present
- Eleni Diamanti (Steering Committee) Conference on Quantum Cryptography (QCRYPT), 2013 - present
- Eleni Diamanti (Steering Committee) Groupe de Recherche Information Quantique : Fondements et Applications, 2010 - present

5. Post-doctorants et chercheurs accueillis

- Dominic Unruh, invited professor, LIP6 invited professor, University of Tartu, Estonia, June - July 2017
- Atul Mantri, doctorant, self funded, NUS Singapore, April - June 2017
- Alexandru Cojocaru, doctorant, NQIT / EPSRC, University of Edinburgh UK, June 2017
- Alexandru Ghrorghiu, doctorant, NQIT / EPSRC, University of Edinburgh UK, June 2017
- Daniel Miles, doctorant, NQIT / EPSRC, University of Edinburgh UK, June 2017

- Leo Colissen, doctorant, NQIT / EPSRC, University of Edinburgh UK, June - July 2017
- Anupama Unnikrishnan, doctorant, self funded, University of Oxford UK, July 2017
- Kelsey Horan, doctorant, City University of New York USA, May - July 2017
- Richard Yi, intern, MIT grant, MIT USA, June - July 2017
- Aravind Reddy Talla, IIT Kanpur, May - July 2017

7. Contrats de recherche financés par des institutions publiques ou caritatives

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

1. Type : H2020 Marie-Curie Innovation Training Network (ITN) Date : 2017 -2020 Title : Quantum Communications for All (QCALL) Cooridnator : Mohsen Razavi Countries : France, UK, Switzerland, Germany, Italy, Spain
2. Type : France-US Partner University Fund Date :2015 - 2018 Title : CRYSP Coordinator : Eleni Diamanti Country : France, USA

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

1. ANR Quantum Cryptography on Silicon (QRYPTOS), 2014 - 2017
2. ANR COMB, 2013 - 2017
3. Ile-de-France region NanoK QUIN

8. Indices de reconnaissance

Distinctions

- Damian Markham, Honorary Fellow, Department of Informatics, University of Ediburgh, 2012 - present.
- Eleni Diamanti, CNRS Scientific Excellence Award (PEDR)

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

- Eleni Diamanti, Central European Workshop on Quantum Optics (CEWQO), Copenhagen, Denmark, June 2017
- Damian Markham, Trustworthy Quantum Information (TyQi 2017) June 2017
- Elham Kashefi, The 12th International Computer Science Symposium in Russia, June 2017
- Eleni Diamanti, ICFO seminar, Barcelona, Spain, June 2017
- Eleni Diamanti, Plenary speaker, NSF Workshop on Advancing Communication and Quantum Information Research in Engineering (ACQUIRE), San Jose, CA, USA, May 2017
- Eleni Diamanti, Fondation des Sciences Mathématiques de Paris (FSMP), Maths en mouvement, Paris, France, May 2017 (maybe this can also go to dissemination)
- Eleni Diamanti, OSA Quantum Information and Measurement IV : Quantum Technologies (QIM), Paris, France, April 2017
- Elham Kashefi, Workshop on Quantum Computing, IPM, Decemebr 2016
- Eleni Diamanti, Imperial College London seminar, London, UK, November 2016
- Elham Kashefi, The International Conference on Quantum Cryptograph, USA, September 2016
- Elham Kashefi, CIFAR Quantum Information Science Program Meeting Canada, October 2016
- Eleni Diamanti, Université de Troyes seminar, Troyes, France, October 2016
- Eleni Diamanti, Photons beyond Qubits Workshop, Olomouc, Czech Republic, October 2016
- Eleni Diamanti, Italian Quantum Information Science Conference (IQIS 2016), Rome, Italy, September 2016

Annexe 4 EQUIPE SYEL

Nom de l'équipe : Systèmes Electroniques

Acronyme : SyeL

Nom du responsable pour le contrat en cours : Bertrand Granado

Nom du responsable pour le contrat à venir : Bertrand Granado

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

Articles scientifiques

- [SYEL-J-1] "A Genetic Algorithm for Multi-Objective Optimization in Workflow Scheduling with Hard Constraints", Sonia Yassa, Rachid Chelouah, Hubert Kadima, **Bertrand Granado**, International Journal of Metaheuristics, 2013
- [SYEL-J-2] "Signal Integrity-Aware Virtual Prototyping of Field Bus-Based Embedded Systems", **Mohamad Dib Alassir, Julien Denoulet, Olivier Romain, Patrick Garda**, IEEE Transactions on Components, Packaging and Manufacturing Technology, Vol 3, Number 12, pages 2081-2091, 2013
- [SYEL-J-3] "Towards embedded detection of polyps in WCE images for early diagnosis of colorectal cancer", Juan Silva, Aymeric Histace, Olivier Romain, Xavier Dray, **Bertrand Granado**, International Journal of Computer Assisted Radiology and Surgery, Springer Verlag, Vol 9, Number 2, pages 283-293, 2014
- [SYEL-J-4] "Opto-electrical Modeling of CMOS Buried Quad Junction Photodetector", **Sylvain Feruglio**, Thierry Courcier, Armine Karami, **Annick Alexandre-Gauthier, Olivier Romain**, Vincent Aimez, Paul Charette, Patrick Pittet, Guo-Neng Lu, Key Engineering Materials, Vol 605, pages 470-473, 2014
- [SYEL-J-5] "Computer-Assisted Segmentation of Videocapsule Images Using Alpha-Divergence-Based Active Contour In The Framework of Intestinal Pathologies Detection", Leila Meziou, Aymeric Histace, Frédéric Precioso, **Olivier Romain**, Xavier Dray, **Bertrand Granado**, Bogdan Matuszewski, International Journal of Biomedical Imaging, 2014
- [SYEL-J-6] "Toward a sparse self-organizing map for neuromorphic architectures", Laurent Rodriguez, Benoit Miramond, **Bertrand Granado**, ACM Journal on Emerging Technologies in Computing Systems, Vol 11, Number 4, pages 33, 2015
- [SYEL-J-7] "Electrical characterization and TCAD simulations of multi-gate bulk nMOSFET", Inga Zbierska, Liviu Militaru, Francis Calmon, **Sylvain Feruglio**, Guo-Neng Lu, Microelectronics Journal, Elsevier, Vol 46, Number 7, pages 588-592
- [SYEL-J-8] "Telemedicine, electroencephalography and current issues. SMART-EEG : An innovative solution", **Laurent Lambert**, Jane Despatin, **Imen Dhif, Imen Mhedhbi, Mohammed Shaaban Ibraheem, Syed Zahid Ahmed, Bertrand Granado, Khalil Hachicha, Andrea Pinna, Patrick Garda**, Fayez Kad-douh, Medhi Terosiet, Aymeric Histace, Olivier Romain, Catherine Bellet, Franck Durand, Jean Pierre Commes, Sylvain Hochberg, Didier Heudes, Pierre Lozeron, Nathalie Kubis, European Research in Telemedicine - La Recherche Européenne en Télémedecine, Elsevier Masson SAS, Vol 4, Number 3, pages 81-86, 2015

- [SYEL-J-9] "A RF network-on-chip dynamically reconfigurable for many-cores", **Alexandre Brière, Julien Denoulet, Andrea Pinna, Bertrand Granado**, François Pécheux, Revue des Sciences et Technologies de l'Information - Série TSI : Technique et Science Informatiques, Lavoisier, Vol 34/1-2, pages 11-29, 2015
- [SYEL-J-10] "ARC 2014 : Towards a Fast FPGA Implementation of a Heap-Based Priority Queue for Image Coding Using a Parallel Index-Aware Tree", **Yuhui Bai, Syed Zahid Ahmed, Bertrand Granado**, ACM Transactions on Reconfigurable Technology and Systems (TRETS), Vol 9, Number 1, pages 8 :1-8 :16, 2015
- [SYEL-J-11] "A CMOS Buried Quad p-n Junction Photodetector Model", **Sylvain Feruglio**, Thierry Courcier, **Olivier Tsiakaka**, Armine Karami, **Annick Alexandre-Gauthier**, Olivier Romain, Vincent Aimez, Paul G. Charette, Patrick Pittet, Guo-Neng Lu, IEEE Sensors Journal, Vol 16, Number 6, pages 1611-1620, 2016
- [SYEL-J-12] "High-Level Virtual Prototyping of Signal Integrity in Bus Communication", **Ruomin Wang, Julien Denoulet, Sylvain Feruglio, Farouk Vallette, Patrick Garda**, IEEE Transactions on Components Packaging and Manufacturing Technology, Vol 6, Number 6, pages 864-872, 2016
- [SYEL-J-13] "Sparse Recovery-based Error Concealment", Ali Akbari, Maria Trocan, **Bertrand Granado**, IEEE Transaction on Multimedia, Vol 19, Number 6, pages 1339-1350, 2017
- [SYEL-J-14] "High-throughput parallel DWT hardware architecture implemented on an FPGA-based platform", Mohammed Shaaban Ibraheem, Khalil Hachicha, Syed Zahid Ahmed, Laurent Lambert, Patrick Garda, Journal of Real-Time Image Processing, 10.1007/s11554-017-0711-6, August 2017
- [SYEL-J-15] "Fast and Parallel AAC Decoder Architecture for a Digital Radio Mondiale 30 Receiver", Mohammed Shaaban Ibraheem, Khalil Hachicha, Olivier Romain, IEEE Access Journal, Vol 5, pages 14638-14646, 2017

Articles de synthèse / revues bibliographiques

not applicable

Autres articles (articles publiés dans des revues professionnelles ou techniques, etc.)

not applicable

2. Ouvrages

Monographies et ouvrages scientifiques, éditions critiques, traductions

not applicable

Direction / édition scientifique

not applicable

Chapitres d'ouvrage

not applicable

Thèses publiées / éditées

not applicable

3. Colloques / congrès, séminaires de recherche

Éditions d'actes de colloques / congrès

not applicable

Articles publiés dans des actes de colloques / congrès**Articles scientifiques**

- [SYEL-C-1] "Software radio FM broadcast receiver for audio indexing applications", Brunel Happi Tietche, Olivier Romain, Bruce Denby, Elie-Laurent Benaroya, François De Dieuleveult, Bertrand Granado, Houssemeddine Khemiri, Gérard Chollet, Dijana Petrovska-Delacrétaz, Raphaël Blouet, Khalil Hachicha, Sylvain Viateur, IEEE International Conference on Industrial Technology (ICIT 2012), 2012, Athens (Greece)
- [SYEL-C-2] "FPGA-based radio-on-demand broadcast receiver with musical genre identification", Brunel Happi Tietche, Olivier Romain, Bruce Denby, Elie-Laurent Benaroya, Sylvain Viateur, IEEE International Symposium on Industrial Electronics (ISIE 2012), 2012, Hangzhou (China)
- [SYEL-C-3] "Prototype of a radio-on-demand broadcast receiver with real time musical genre classification", Brunel Happi Tietche, Olivier Romain, Bruce Denby, Elie-Laurent Benaroya, François De Dieuleveult, Bertrand Granado, Houssemeddine Khemiri, Gérard Chollet, Dijana Petrovska-Delacrétaz, Raphaël Blouet, Khalil Hachicha, Sylvain Viateur, DASIP '12 : Conference on Design & Architectures for Signal & Image Processing, 2012, Karlsruhe (Germany)
- [SYEL-C-4] "FPGA-Based Platform design of a Bio-Inspired Medical Hearing : Prosody modification of speech", Lotfi Bendaouia, F. Ykhlef, H. Salhi, M. Karabernou, Lounis Kessal, Olivier Romain, Bertrand Granado, Conference on Design of Circuits and Integrated Systems, 2012, Avignon (France)
- [SYEL-C-5] "Endocom and Cyclope : Two smart biomedical sensors for cardio-vascular surgery and gastroenterology", Patrick Garda, Olivier Romain, Aymeric Histace, Bertrand Granado, Andrea Pinna, Xavier Dray, Pascal Leprince, MobiHealth 2012 - Third International Conference on Wireless Mobile Communication and Healthcare, 2012, Paris (France)
- [SYEL-C-6] "Towards a mobile implementation of Waaves for Certified Medical Image Compression in E-health Applications", Imen Mhedhbi, Khalil Hachicha, Patrick Garda, Yuhui Bai, Bertrand Granado, Sébastien Topin, Sylvain Hochberg, Sylvain, MobiHealth 2012 - Third International Conference on Wireless Mobile Communication and Healthcare, 2012, Paris (France)
- [SYEL-C-7] "In Vivo NIRS Monitoring in Pig Spinal Cord Tissues", Olivier Tsiakaka, Mehdi Terosiet, Olivier Romain, Aymeric Histace, Habib Benali, Pierre François Pradat, Farouk Vallette, Michaël Feher, Sylvain Feruglio, Sylvain, EMBC 2015 - 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2015, Milan (Italy)
- [SYEL-C-8] "Symbolic Fusion : A Novel Decision Support Algorithm for Sleep Staging Application", Chen Chen, Xue Liu, Adrien Ugon, Xun Zhang, Amara Amara, Patrick Garda, Jean Gabriel Ganascia, Carole Philippe, Andrea Pinna, 5th EAI International Conference on Wireless Mobile Communication and Healthcare, 2015, London (United Kingdom)
- [SYEL-C-9] "Personalized sleep staging system using evolutionary algorithm and symbolic fusion", Chen Chen, Adrien Ugon, Xun Zhang, Amara Amara, Patrick Garda, Jean Gabriel Ganascia, Carole Philippe, Andrea Pinna, 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'16), 2016, Orlando (USA)
- [SYEL-C-10] "Embedded real-time monitoring using SystemC in IMA network", Zied Aloui, Nawfal Ahmada, Julien Denoulet, Francine Pierre, Martin Rayrole, Marc Gatti, Bertrand Granado, SAE 2016 Aerospace Systems and Technology Conference, 2016, Hartford (USA)
- [SYEL-C-11] "Relevance of impedance spectroscopy for the monitoring of implant-induced fibrosis : A preliminary study", Noëlle Lewis, Cyril Lahuec, Sylvie Renaud, E. Mcadams, P. Bogonez-Franco, C. Lethias, S. Kellouche and KELLOUCHE, F. Carreiras, Andrea Pinna, Aymeric Histace, M. Boissière, Emmanuel Pauthe, I. Lagroye, Fabien Soulier, Serge Bernard, Stéphane Binczak, Bertrand Granado, Bertrand, Patrick Garda, Mehdi Terosiet, Alexandre Goguin, Olivier Romain, BIOCAS : Biomedical Circuits and Systems, 2015, Atlanta (USA)
- [SYEL-C-12] "Polyps Recognition Using Fuzzy Trees", Orlando Luis Chuquimia Camacho, Andrea Pinna, Xavier Dray, Bertrand Granado, International Conference on Biomedical and Health Informatics - BHI'2017, 2017, Orlando (USA)

- [SYEL-C-13] "Towards Intelligent Capsules for Robust Wireless Endoscopic Imaging of the Gut", Dimitris Iakovidis, Roberto Sarmiento, Juan Silva, Aymeric Histace, Olivier Romain, Anastasios Koulaouzidis, Catherine Dehollain, Andrea Pinna, Bertrand Granado, Xavier Dray, International Conference on Imaging Systems and Techniques, 2014, Santorini (Greece)
- [SYEL-C-14] "Mask Motion Adaptive medical image coding", Imen Mhedhbi, Kaddouh Fayez, Khalil Hachicha, Didier Heudes, Sylvain Hochberg, Patrick Garda, IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI), 2014, Valence, (Spain)
- [SYEL-C-15] "Medical images compression with clinical diagnostic quality using logarithmic DWT", Mohammed Shaaban Ibraheem, Syed Zahid Ahmed, Khalil Hachicha, Patrick Garda, IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI), 2016, Las Vegas, (USA)
- [SYEL-C-16] "Synchronizing physiological data and video in a telemedicine application : A multimedia approach", AUTHOR = Lambert, Laurent and HACHICHA, Khalil and Ahmed, Zahid Syed and Pinna, Andrea and Garda, Patrick, 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 2015, Milan (Italy)
- [SYEL-C-17] "Epileptic Seizure Detection based on Expected Activity Measurement and Neural Network Classification", Imen Dhif, Khalil Hachicha, Andrea Pinna, Sylvain Hochberg, Imen Mhedhbi, Patrick Garda, The 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'17), 2017, Jeju Island (South Korea)
- [SYEL-C-18] "A Hardware MPI Spawn for Distributed Multiprocessing Reconfigurable System On Chip (MP-RSoC)", Christian Gamom, Emmanuel Kiegaing, Martin Mbouenda, Bertrand Fotsin, Bertrand Granado, IEEE International Symposium on Field-Programmable Custom Computing Machines, 2014, Boston (USA)

Autres produits présentés dans des colloques / congrès et des séminaires de recherche

4. Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs

We have three demonstrators

- NAuTILES - 3D prototype for validate real time 3D reconstruction in WCE.
- Smart-EEG to validate the multi-modal flow tool for neurological examinations.
- SpinalCom to validate monitoring of spinalcoord.

Plateformes et observatoires

We have constructed an experimental platform to enable energy measures on connected objects.

...

not applicable

5. Produits et outils informatiques

Logiciels

We have deposit five software deposit [SYEL-B-1, SYEL-B-3, SYEL-B-4, SYEL-B-5, SYEL-B-6]

Bases de données / cohortes

We have construct a gold standard database for AEP project.

Outils présentés dans le cadre de compétitions de solveurs

In 2017 we participate at EndoVisSub2017 a challenge for polyp detection in the colon.

Outils d'aide à la décision

not applicable

6. Brevets, licences et déclarations d'invention**Articles scientifiques**

- [SYEL-B-1] "Extraction Automatique Symboles pour la détection automatique des stages du sommeil (ExA-SySo)", Andrea Pinna ; Giovanna Morgavi, Xiu Liu , IDDN.FR.001.060021.000.SP2015.000.31230, 2015
- [SYEL-B-2] "Procédé de simulation du fonctionnement d'un circuit électronique et programme", Wilfried Dron, Khalil Hachicha, Patrick Garda, WO2017005883A1 ; FR3038755A1, 2015
- [SYEL-B-3] "Algorithme de compression vidéo avec capacité de définir des zones d'intérêts", Laurent Lambert, Khalil Hachicha, Andrea Pinna, Patrick Garda : IDDN.FR.001.250003.000.S.A.2016.000.21000, 2016
- [SYEL-B-4] "Mask Motion detection" Imen Mhedhbi, Khalil Hachicha, Patrick Garda, Inter Deposit Digital Number : 170002, Délivré par l'agence nationale de protection de programme, Février 2014.
- [SYEL-B-5] "WaavesLibMobile" Imen Mhedhbi, Khalil Hachicha, Patrick Garda, Inter Deposit Digital Number : 060025, Délivré par l'agence nationale de protection de programme, Décembre 2013.
- [SYEL-B-6] "Intégration des signaux biologiques dans FFMPEG (BIO-FFMPEG)" Laurent Lambert, Khalil Hachicha, Andrea Pinna, Patrick Garda, Dépôt effectué en mars 2017.

7. Rapports d'expertises techniques, produits des instances de normalisation

not applicable

8. Produits des activités didactiques

not applicable

Ouvrages

not applicable

E-learning, moocs, cours multimedia, etc.

not applicable

9. Produits destinés au grand public**Émissions radio, TV, presse écrite**

not applicable

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

not applicable

Produits de médiation scientifique

not applicable

Débats science et société

not applicable

10. Autres produits propres à une discipline

Créations artistiques théorisées

not applicable

Mises en scènes

not applicable

Films

not applicable

...

not applicable

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

not applicable

Direction de collections et de séries

not applicable

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

- Bertrand Granado serve a reviewer in mid-evaluation ANR projects
- Bertrand Granado is a new member of NSERC's Electrical and Computer Engineering Evaluation Group committee.

Évaluation d'articles et d'ouvrages scientifiques

Évaluation de laboratoires (type Hceres)

- Bertrand Granado, evaluation committee member for LCOMS, Décembre 2016

Évaluation de projets de recherche

- Bertrand Granado, CNRS 2016, CNRS 2017
- Andrea Pinna, CNRS 2017

3. Activités d'expertise scientifique

Activités de consultant

not applicable

Participation à des instances d'expertises (type Anses) ou de normalisation

not applicable

Expertise juridique

not applicable

4. Organisation de colloques / congrès**5. Post-doctorants et chercheurs accueillis****6. Interactions avec les acteurs socio-économiques****Contrats de R&D avec des industriels**

not applicable

Bourses Cifre

- Imen dhif, CIRA
- Mohammed Shabaan, CIRA
- Ahcine Safraou, Air Liquide
- Vanessa Tran, Valeo

Créations de laboratoires communs avec une / des entreprise(s)

not applicable

Création de réseaux ou d'unités mixtes technologiques

not applicable

Créations d'entreprises, de start-up

- *Wisebatt*, Wilfried Dron, Khalil Hachicha, Patrick Garda

7. Contrats de recherche financés par des institutions publiques ou caritatives**Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)**

- *Wisebatt* EIT-Digital funding

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

- ANR Winocod

Contrats avec les collectivités territoriales

- FUI SmartEEG

Contrats financés dans le cadre du PIA

- CORAC

Contrats financés par des associations caritatives et des fondations (ARC, FMR, FRM, etc.)

not applicable

8. Indices de reconnaissance**Prix**

not applicable

Distinctions

not applicable

Responsabilités dans des sociétés savantes

- Patrick Garda, director of GDR SoC/SiP from 2012 to 2016
- Bertrand Granado, member of direction board of GDR SoC/SiP since 2010

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

During the period members of the team has been invited in 6 conferences and workshop, here the list :

- **Patrick Garda**, "Estimation de la consommation de systèmes hétérogènes", Ecole thématique COncception FAible Consommation pour les systèmes embarqués temps réels, La colle-sur-loup, France, 2012
- **Bertrand Granado**, "Reconfiguration dynamique : de l'architecture au système", Ecole d'hiver Francophone sur les Technologies de Conception des Systèmes embarqués Hétérogènes - Fetch, Louvain-la-neuve, Belgium, 2015
- **Bertrand Granado**, "NAutILES (Novel Autonomous Intelligent Localizable Endoscopic System) the next generation of Wireless Capsule Endoscopy", 4th European Colorectal Cancer Days - Prevention and Screening, Brno, Czech Republic, 2015
- **Bertrand Granado**, "NAutILES-Projekt : Weiterentwicklung der Videokapsel", LebensBlicke video-capsule expert meeting, Frankfurt, Germany, 2015
- **Andrea Pinna**, "Integrate a multi-modal lesion recognition processing", Workshop on Endoluminal Robots : Advanced Diagnosis and Targeted Therapies, International Conference of the IEEE Engineering in Medicine and Biology Science EMBC, Orlando, USA, 2017
- **Bertrand Granado**, "Dispositifs Médicaux : de la puce aux médecins embarqués sur puce", Ecole d'hiver Francophone sur les Technologies de Conception des Systèmes embarqués Hétérogènes - Fetch, Mont Tremblant, Canada, 2017

**Annexe 4 DEPARTEMENT
SYSCOMP**

Annexe 4 EQUIPE APR

Nom de l'équipe : Algorithmes, Programmes et Résolution

Acronyme : APR

Nom du responsable pour le contrat en cours : Emmanuel CHAILLOUX

Nom du responsable pour le contrat à venir : Antoine MINÉ

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

Articles marquants

- [APR-J-1] Caterina Urban and **Antoine Miné**. Inference of ranking functions for proving temporal properties by abstract interpretation. *Computer Languages, Systems and Structures*, 47 :77–102, 2017.
- [APR-J-2] **Romain Demangeon**, Laura Bocchi, Nobuko Yoshida, Tzu-Chun Chen, and Kohei Honda. Monitoring networks through multiparty session types. *Theoretical Computer Science*, 669 :33–58, March 2017.
- [APR-J-3] **Mathias Bourgoïn**, **Emmanuel Chailloux**, and Jean-Luc Lamotte. Efficient Abstractions for GPGPU Programming. *International Journal of Parallel Programming*, 42(4) :583–600, August 2014.
- [APR-J-4] **Carine Pivoteau**, Bruno Salvy, and **Michele Soria**. Algorithms for combinatorial structures : Well-founded systems and Newton iterations. *Journal of Combinatorial Theory, Series A*, 119(8) :1711–1773, November 2012.
- [APR-J-5] **Philippe Aubry** and **Annick Valibouze**. Parallel computation of resolvents by multimodular techniques and decomposition formula. *International Journal of Algebra and Computation*, 22(5) :1–21, August 2012.

Autres articles

- [APR-J-6] Alexis Darrasse, Hsien-Kuei Hwang, and **Michèle Soria**. Shape Measures of Random Increasing k-trees. *Combinatorics, Probability and Computing*, 25 :668–699, 2016.
- [APR-J-7] **Antoine Genitrini**, Bernhard Gittenberger, Veronika Kraus, and Cécile Mailler. Associative and commutative tree representations for Boolean functions. *Theoretical Computer Science*, 570 :70–101, March 2015.
- [APR-J-8] Samy Abbes and **Jean Mairesse**. Uniform and Bernoulli measures on the boundary of trace monoids. *Journal of Combinatorial Theory, Series A*, 135 :201–236, October 2015.
- [APR-J-9] **Binh-Minh Bui-Xuan**, Ondra Suchy, Jan Arne Telle, and Martin Vatshelle. Feedback vertex set on graphs of low cliquewidth. *European Journal of Combinatorics*, 34(3) :666–679, 2013.
- [APR-J-10] **Frédéric Peschanski**, Hanna Klaudel, and Raymond Devillers. A petri net interpretation of open reconfigurable systems. *Fundamenta Informaticae*, 122(1-2) :85–117, 2013.

Articles de synthèse / revues bibliographiques

Articles de synthèse

[APR-J-11] Julien Bertrane, Patrick Cousot, Radhia Cousot, Jérôme Feret, Laurent Mauborgne, **Antoine Miné**, and Xavier Rival. Static Analysis and Verification of Aerospace Software by Abstract Interpretation. *Foundations and Trends in Programming Languages*, 2(2-3) :171–291, 2015.

Autres articles (articles publiés dans des revues professionnelles ou techniques, etc.)

Not applicable

2. Ouvrages

Monographies et ouvrages scientifiques, éditions critiques, traductions

Not applicable

Direction / édition scientifique

Not applicable

Chapitres d'ouvrage

[APR-CHAP-1] **Mathias Bourgoïn**, **Emmanuel Chailloux**, and Jean-Luc Lamotte. High Level GPGPU Programming with Parallel Skeletons. In *PATTERNS FOR PARALLEL PROGRAMMING ON GPUS*. Saxe-Coburg Publications, 2014.

Thèses soutenues

PhD thesis :

1. Aurélien Deharbe : “Analyse statique de programmes concurrents et dynamiques”, supervisors **Frédéric Peschanski** et **Michèle Soria**, defense 21/09/2016.
2. Etienne Millon : “Analyse de sécurité de logiciels système par typage statique, Application au noyau Linux”, supervisors **Emmanuel Chailloux** and Sarah Zenou (Airbus), defense 10/07/2014.
3. Mathias Bourgoïn : “Abstractions performantes pour cartes graphiques”, supervisors **Emmanuel Chailloux** and Jean-Luc Lamotte, defense 11/12/2013.
4. Basile Morcrette : “Combinatoire analytique et modèles d’urnes”, supervisors **Michèle Soria** and **Philippe Dumas**, defense 26/06/2013.
5. Jérémie Lumbroso : “Algorithmes probabilistes pour la fouille quantitative de données et la génération aléatoire”, supervisor **Michèle Soria** and **Philippe Flajolet**, defense 13/12/2012.
6. Philippe Wang : “Langages Applicatifs et Machines Abstraites pour la Couverture de Code Structurale”, supervisor **Emmanuel Chailloux**, defense 04/10/2012.
7. Olivier Roussel : “Générateur aléatoire de structures ordonnées par le modèle de Boltzmann”, supervisor **Michèle Soria**, defense 25/09/2012.
8. Ting ZHAO Ting : “Résolution de systèmes polynomiaux paramétriques par radicaux et ses applications géométriques”, supervisors Dongming Wang and **Philippe Aubry**, defense 03/05/2012.

3. Colloques / congrès, séminaires de recherche

Éditions d'actes de colloques / congrès

[APR-A-1] Mireille Bousquet-Mélou, Robert Sedgewick, and **Michèle Soria**. *Introduction for Special Issue AofA14*, volume 75 of *Algorithmica*. Springer, August 2016.

Articles publiés dans des actes de colloques / congrès

Articles marquants

[APR-C-1] Olivier Bodini, **Matthieu Dien**, **Antoine Genitrini**, and **Frédéric Peschanski**. The Ordered and Colored Products in Analytic Combinatorics : Application to the Quantitative Study of Synchronizations in Concurrent Processes. In *14th Workshop on Analytic Algorithmics and Combinatorics (ANALCO17)*, pages 16 – 30, Barcelone, Spain, January 2017.

[APR-C-2] **Vincent Botbol**, **Emmanuel Chailloux**, and Tristan Le Gall. Static Analysis of Communicating Processes Using Symbolic Transducers. In Ahmes Bouajjani and David Monniaux, editors, *International Conference on Verification, Model Checking, and Abstract Interpretation - VMCAI 2017*, volume 10145 of *Lecture Notes in Computer Science*, Paris, France, January 2017. Springer International Publishing.

[APR-C-3] Raphaël Monat and **Antoine Miné**. Precise Thread-Modular Abstract Interpretation of Concurrent Programs Using Relational Interference Abstractions. In Ahmed Bouajjani and David Monniaux, editors, *Verification, Model Checking, and Abstract Interpretation (VMCAI) 2017*, volume 10145 of *Lecture Notes in Computer Science*, pages 386–404, Paris, France, January 2017. Springer.

[APR-C-4] Benoît Vaugon, Philippe Wang, and **Emmanuel Chailloux**. Programming Microcontrollers in Ocaml : the OCaPIC Project. In *International Symposium on Practical Aspects of Declarative Languages (PADL 2015)*, volume 9131 of *Lecture Notes in Computer Science*, pages 132–148, Portland, OR, United States, June 2015. Springer Verlag.

[APR-C-5] **Michèle Soria**. Combinatorial Systems and Newton iteration. In *24th International Meeting on Probabilistic, Combinatorial and Asymptotic Methods for the Analysis of Algorithms, AofA13*, Cala Galdana, Menorca, Spain, May 2013.

Autres articles

[APR-C-6] **Antoine Miné**, Jason Breck, and Thomas Reps. An Algorithm Inspired by Constraint Solvers to Infer Inductive Invariants in Numeric Programs. In Peter Thiemann, editor, *25th European Symposium on Programming, ESOP 2016, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2016*, volume 9632 of *Programming Languages and Systems*, pages 560–588, Eindhoven, Netherlands, April 2016. Springer.

[APR-C-7] **Thibault Suzanne** and **Antoine Miné**. From Array Domains to Abstract Interpretation Under Store-Buffer-Based Memory Models. In *SAS 2016 - 23rd Static Analysis Symposium*, volume 9837 of *Lecture Notes in Computer Science*, pages 469–488, Edinburgh, United Kingdom, September 2016. Springer.

[APR-C-8] Bernard Mourrain and **Philippe Trébuchet**. Toric Border Basis. In *ISSAC'14 - International Symposium on Symbolic and Algebraic Computation*, pages 343–350, Kobe, Japan, July 2014. ACM New York, NY, USA.

[APR-C-9] **Antoine Genitrini**, Bernhard Gittenberger, and Cécile Mailler. No Shannon Effect Induced by And/Or Trees. In *The 25th International Conference on Probabilistic, Combinatorial and Asymptotic Methods for the Analysis of Algorithms, AofA 2014*, volume BA of *DMTCS*, pages 109–120, Paris, France, June 2014.

[APR-C-10] **Aurélien Deharbe** and **Frédéric Peschanski**. The Omniscient Garbage Collector : a Resource Analysis Framework. In *Application of Concurrency to System Design*, pages 102–111, La Marsa, Tunisia, June 2014. IEEE.

- [APR-C-11] **Romain Demangeon**, Nobuko Yoshida, Tzu-Chun Chen, Kohei Honda, and Laura Bocchi. Monitoring Networks through Multiparty Session Types. In *2013 IFIP Joint International Conference on Formal Techniques for Distributed Systems (33rd FORTE / 15th FMOODS)*, volume 7892 of *Lecture Notes in Computer Science*, pages 50–65, Florence, Italy, June 2013. Springer Berlin Heidelberg.
- [APR-C-12] **Benjamin Canou**, **Emmanuel Chailloux**, and Vincent Balat. A declarative-friendly API for Web document manipulation. In *International Symposium on Practical Aspects of Declarative Languages (PADL 2013)*, volume 7752 of *Lecture Notes in Computer Science*, pages 109–124, Rome, Italy, January 2013. Springer.
- [APR-C-13] Grégoire Henry, Michel Mauny, **Emmanuel Chailloux**, and Pascal Manoury. Typing Unmarshalling without Marshalling Types. In *International Conference on Functional Programming*, pages 287–298, Copenhagen, Denmark, September 2012. ACM.
- [APR-C-14] Bernard Mourrain and **Philippe Trébuchet**. Border basis representation of a general quotient algebra. In *International Conference on Symbolic and Algebraic Computation (ISSAC)*, pages 265–272, Grenoble, France, July 2012. ACM Press.
- [APR-C-15] Ting Zhao, Dongming Wang, Hoon Hong, and **Philippe Aubry**. Real Solution Formulas of Cubic and Quartic Equations Applied to Generate Dynamic Diagrams with Inequality Constraints. In *27th Annual ACM Symposium on Applied Computing (SAC 2012)*, pages 94–101, Trento, Italy, March 2012.

Autres produits présentés dans des colloques / congrès et des séminaires de recherche

Not applicable

4. Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs

Not applicable

Plateformes et observatoires

Not applicable

5. Produits et outils informatiques

Logiciels

— **Absolute** (2016-)

<https://github.com/mpelleau/AbSolute>

AbSolute is a constraint solver based on abstract domains. This solver can solve continuous, discrete and mixed problems (containing both integer and real variables) and proposes techniques for processing both linear and non-linear constraints.

— **Arbogen** (2012-, GNU General Public License v2.0)

<https://github.com/fredokun/arbogen>

Arbogen is a fast uniform random generator of tree structures. The tool reads a grammar file describing a tree structure (e.g. binary trees, 2-3-4 trees, etc.) and a size interval (eg. trees of size 1000+-100). The generated tree are generated with a guarantee of uniformity, which means that it is the "average" tree for the given size.

— **LaTTe** (2016-, MIT License)

<https://github.com/fredokun/arbogen>

LaTTe is a proof assistant library based on type theory. The specific feature of LaTTe is its design as a library (unlike most proof assistant, generally designed as standalone tools) tightly integrated with the Clojure language and ecosystem. This enables "proving in the large" : sharing mathematical contents across the internet in a collaborative way.

- **Pendulum** (2014-, MIT licence)

<https://github.com/remyzorg/pendulum>

pendulum is a language dedicated to the programming of reactive systems on the Web. It has a powerful expressivity to describe synchronous concurrent systems communicating with broadcasted signals. Its constructions and implementation are mostly based on Esterel. The language is embedded in OCaml as a syntax extension. It allows the programmer to describe reactive machines as OCaml values, and run them on signals arguments.

- **piexplorer** (2015, GNU General Public License v3.0)

<https://github.com/fredokun/piexplorer>

The problem of generating an explicit state-space for the pi-calculus is a complex problem. As of today, there exists only two tools with this functionality : the HAL laboratory and piexplorer. The latter is based on a symbolic semantics that is much more economical than the early semantics as implemented by HAL.

- **scade2b** (2013-2015, CeCILL-B licence)

<http://www.algo-prog.info/cercles/web/?id=cercles:Actualite>

A translator, written in OCaml, from a textual version (à la Lustre) of a Scade project to produce B machines (constants, imports) to check pre and post-conditions (assumes and guarentees).

- **SPOC : Stream Processing with Ocaml** (2012-, CECILL-B licence)

<http://mathiasbourgoin.github.io/SPOC/>

The SPOC library enables the detection and use of GPGPU devices with OCaml using Cuda and OpenCL. There is also a camlp4 syntax extension to handle external Cuda or OpenCL kernels, as well as a DSL (called Sarek) to express GPGPU kernels from the OCaml code.

Bases de données / cohortes

Not applicable

Outils présentés dans le cadre de compétitions de solveurs

Not applicable

Outils d'aide à la décision

Not applicable

6. Brevets, licences et déclarations d'invention

Not applicable

7. Rapports d'expertises techniques, produits des instances de normalisation

Not applicable

8. Produits des activités didactiques

Ouvrages

Not applicable

E-learning, moocs, cours multimedia, etc.

- Mooc on "Recursive Programming" edited by C. Queinnec, 2 seasons March-May 2014 and February-April 2015, and permanent since Septembre 2015.

<https://www.programmation-recursive.net/>

9. Produits destinés au grand public

Émissions radio, TV, presse écrite

— Since 2012 A. Valibouze is co-editor for the edition “Au cœur de la recherche”, Mediapart,
<http://blogs.mediapart.fr/edition/au-coeur-de-la-recherche-0>

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

Not applicable

Produits de médiation scientifique

Autres articles

[APR-V-1] Christian Queinnec. Les Tours de Hanoï : un problème classique de récursion, April 2015. https://interstices.info/jcms/p_82121/les-tours-de-hanoi-un-probleme-classique-de-recursion

Débats science et société

Not applicable

10. Autres produits propres à une discipline

Créations artistiques théorisées

Not applicable

Mises en scènes

Not applicable

Films

Not applicable

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

- Oeuvres Complètes de Ph. Flajolet (**M. Soria**)
- Techniques et Sciences Informatiques (TSI) - Hermès (**E. Chailloux**)

Direction de collections et de séries

Not applicable

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

- Member of " Conseil National des Universités " - CNU since 2012 (**A. Valibouze**)

Évaluation d'articles et d'ouvrages scientifiques

- Referees for journals :
DAM 2013 & 2014 & 2015, TSI 2014, COMNET 2015, SCP 2015 & 2016, ALGO 2016 & 2017, JOCO 2016, FMSD 2016, JSC 2016, JFP, MFPS, TCS2016, VLDB 2017
- Referees for main conferences/workshops and **PC members** :
ISSAC 2012, IPEC 2013, HLPP 2013 & 2014, **AOFA 2014 & 2015 & 2016 & 2017**, COMLAN 2014, **OCAML 2015**, CAV 2015 & 2016, **CONCUR 2015 & 2016 & 2017**, CSL 2015, EUROPAR 2015, **TASE 2015**, **SAS 2015**, POPL 2015, **IMPACT 2015 & 2016**, CONCUR 2015, **CC 2016**, ICFP 2016, **SAC-SOAP 2016 & 2017 & 2018**, SAS 2016, VMCAI 2016, ESOP 2017, **FOSSACS 2017**, ITP 2017, STACS 2017, **TAPAS 2017**, WWW 2017

Évaluation de laboratoires (type Hceres)

- AERES (scientific advisor board) for Laboratory LIX (M. Soria, Jan 2014)

Évaluation de projets de recherche

- Evaluation of projects for SYSTEMATIC cluster (thematic group on Open Source Software)
- Referee for an ERC project, an AGORANOV project and for a tenure at IMDEA.

3. Activités d'expertise scientifique

Activités de consultant

A. Miné is a senior consultant for the ABSINT enterprise which commercializes tools based on abstract interpretation.

Participation à des instances d'expertises (type Anses) ou de normalisation

A. Miné participates to the LabOssec project, commissioned by the ANSSI, which aims at studying the usage of static tools for software security and elaborating a standard to certify static tools and their configuration throughout their responses on flaws or vulnerabilities test cases.

Expertise juridique

Not applicable

4. Organisation de colloques / congrès

- National conferences :
 - "Formal method in Industry" at IHP (April 2014)
<http://www.ihp.fr/fr/node/14042>
 - "Languages and Tools for Software Reliability" at OSIS (The Open Source Innovation Spring)
 - 2016:<http://www.open-source-innovation-spring.org/2016/langages-et-outils>
 - 2017:<http://www.open-source-innovation-spring.org/langages-et-outils>
- European conference at Jussieu campus :
 - Alea Young Researcher's Workshop (ALEA-Network)
<https://alea-young-2017.lip6.fr/>
- International workshop :
 - Workshop on Static Analysis of Concurrent Software, satellite event at SAS 2016.
- International conferences at Jussieu campus :
 - AOFA 2014 : 25th International Conference on Probabilistic, Combinatorial and Asymptotic Methods for the Analysis of Algorithms
<http://www.aofa14.upmc.fr/>
 - POPL 2017 : 44th ACM SIGPLAN Symposium on Principles of Programming Languages
<http://conf.researchr.org/home/POPL-2017>
More than 700 registred people, most important participation of the past ten years.

5. Post-doctorants et chercheurs accueillis

- Postdocs :
- Marie Pelleau
 - Nicolas Basset
- Visiting professors and researchers :
- Pr. Bernhard Gittenberger (2 weeks, 2016) - Technische Universitat Wien (Austria)
 - Pr. Ihsen Yengui (1 month, 2016) - University of Sfax (Tunisia)
 - Pr. Nobuko Yoshida (1 month, 2016) - Impérial College London (UK)
 - Caterina Urban (2 weeks, 2017) - ETH Zurich (Switzerland)

6. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

Not applicable

Bourses Cifre

- E. Millon (Airbus) - (2010-2014)
- A. Roux (Thalès) - (2016-)

Créations de laboratoires communs avec une / des entreprise(s)

Not applicable

Création de réseaux ou d'unités mixtes technologiques

Not applicable

Créations d'entreprises, de start-up

Not applicable

7. Contrats de recherche financés par des institutions publiques ou caritatives

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

- European grants :
 - **ASSUME - ITEA3** (2015-2018) Affordable Safe And Secure Mobility Evolution
Scientific responsible (LIP6 part) : **A. Miné**
<http://assume-project.eu/>
 - **MOPSA - ERC Consolidator Grant** (2016-2021)
Modular Open Platform for Static Analysis
Principal investigator : **A. Miné**
<https://www-apr.lip6.fr/~mine/mopsa>
- bi-lateral projects :
 - **PHC-Amadeus** (France - Austria / 2013-2014) :
Boolean expressions : compactification, satisfiability and distribution of functions
Scientific responsible (LIP6 part) : **A. Genitrini**
 - **SU - FAPERJ grant** (France-Brazil / 2015-2016) :
Parallel Scientific Workflow Management Systems on GPU (**PSwmsGpu - SU - FAPERJ grant**)
(UPMC - UFRJ-UFF (Rio - Brazil))
scientific responsible LIP6 : **E. Chailloux**
 - **ANR-MOST** (France - Taiwan / 2015-2019) :
Non-conventional asymptotic analysis in Combinatorics
Scientific responsible (LIP6 part) : **A. Genitrini**
<http://metaconc.stat.sinica.edu.tw/>
- **GDMI-ALEA-NETWORK** (2015-2019)
<http://aleanetwork.net/>

ALEA-Network is a GDMI project funded by CNRS, and co-signed by 4 european Universities (Wien, Stockholm, Oxford, Munich). This project gathers researchers from Europe and some other countries all over the world, interested in the study of discrete random structures, and coming from various domains : Computer Science, Discrete Mathematics, Probability, Statistical Physics, Bio-Informatics. In this multidisciplinary context, the objective is to elaborate methods for quantifying alea and analyze statistical properties of fundamental combinatorial structures.

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

- **ALPACA, PEPS-INS2I project** : (2012-2013)
Analyse des Langages Parallèles en Combinatoire Analytique
Scientific responsible (LIP6 part) : **F. Peschanski**
- **PWD, ANR project** : (2009-2013) :
Programming the Diffuse Web
Scientific responsible (LIP6 part) : **C. Queinnec**
<http://www-sop.inria.fr/indes/pwd/>
- **OPENGPU, FUI project** (2010-2012)
Scientific responsible (LIP6 part) : **E. Chailloux**
<http://opengpu.net/>
- **MAGNUM, ANR project** (2010-2015) :
Méthodes Algorithmiques pour la Génération aléatoire Non Uniforme : Modèles et applications
Scientific leader : **M. Soria**
<http://www.lix.polytechnique.fr/~rossin/ANR/Magnum/www/>
- **CERCLES2, ANR project** (2011-2014) :
Compositional Certification of Critical and Safe embedded Softwares (2011-2014)
Scientific responsible (Lip6 part) : **E. Chailloux**
<http://www.algo-prog.info/cercles>
- **UCF, FUI project** (2014-2017) :
Ubiquitous Contents Framework

- Scientific responsible (LIP6 part) : **E. Chailloux**
- **COVERIF, ANR project** (2015-2019) :
Combining abstract interpretation and constraint programming to verify critical properties of embedded programs with floating point computations
Scientific responsible (LIP6 part) : **A. Miné**
- **GraphGPU, PEPS-INS2I project** (2016-2017) :
Graph GPU Library for Parameterized Algorithms
Scientific leader : **B-M. Bui-Xuan**
- **LCHIP, FUI project** (2016-2020) :
Low Cost High Integrity Platform
Scientific responsible (LIP6 part) : **E. Chailloux**
- **APRES, PEPS-INS2I project** (2017) :
on analysis for a safe and efficient Web programming
Scientific leader : **R. Demangeon**

Contrats avec les collectivités territoriales

Not applicable

Contrats financés dans le cadre du PIA

Not applicable

Contrats financés par des associations caritatives et des fondations (ARC, FMR, FRM, etc.)

Not applicable

8. Indices de reconnaissance

Prix

- Award for M. Bourgoin at GDR GPL (2015) for his PhD thesis : “Abstractions performantes pour artes graphiques” (Efficient Abstractions for GPU).
- ESOP paper [APR-C-6] has been selected as one of Computing Review’s Notable Books and Articles of 2016.

Distinctions

- A. Miné is a new junior member at IUF (Institut Universitaire de France) since October 2016.

Responsabilités dans des sociétés savantes

Not applicable

Contrats financés dans le cadre du PIA

Not applicable

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

Here, the list of invited talks in conferences (A. Miné at SAS 2015) and in foreign laboratories :

- A. Valibouze (Iran, Chine), A. Genitrini (Austria, Poland, Taiwan), B-M. Bui-Xuan (Vietnam, Suède), E. Chailloux (UFRJ-UFF, Brazil), M. Soria (Minorque, Taiwan) P. Aubry (Chine), A. Miné (Padova).

Annexe 4 EQUIPE CN

Nom de l'équipe : Complex Networks

Acronyme : ComplexNetworks

Nom du responsable pour le contrat en cours : Clémence Magnien

Nom du responsable pour le contrat à venir : Lionel Tabourier

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

Articles marquants

[CN-JM-1] **Tiphaine Viard, Matthieu Latapy, and Clémence Magnien**. “Computing maximal cliques in link streams”. *Theoretical Computer Science*, 609(Part 1) :245–252, January 2016.

Autres articles

[CN-J-1] **Clémence Magnien, Amélie Medem Kuate, Sergey Kirgizov, and Fabien Tarissan**. “Towards realistic modeling of IP-level routing topology dynamics”. *Networking science*, 3(1-4) :24–33, December 2013.

[CN-J-2] Romain Hollanders, **Daniel Bernardes**, Bivas Mitra, Raphael Jungers, Jean-Charles Delvenne, and **Fabien Tarissan**. “Data-driven traffic and diffusion modeling in peer-to-peer networks : A real case study”. *Network Science*, 2(3) :341–366, December 2014.

[CN-J-3] **Lionel Tabourier**, Anne-Sophie Libert, and Renaud Lambiotte. “Predicting links in ego-networks using temporal information”. *EPJ Data Science*, 5(1) :1–16, December 2016.

[CN-J-4] **Noe Gaumont, Clémence Magnien, and Matthieu Latapy**. “Finding remarkably dense sequences of contacts in link streams”. *Social Network Analysis and Mining*, 6(1) :87, 2016.

Articles de synthèse / revues bibliographiques

Non applicable

Autres articles (articles publiés dans des revues professionnelles ou techniques, etc.)

Non applicable

2. Ouvrages

Monographies et ouvrages scientifiques, éditions critiques, traductions

Non applicable

Direction / édition scientifique

Non applicable

Chapitres d'ouvrage

Non applicable

Thèses soutenues

PhD thesis :

1. Raphaël Fournier. *Détection et analyse d'une thématique rare dans de grands ensembles de requêtes : l'activité pédophile dans le P2P*. 2012.
2. Massoud Seifi. *Cœurs stables de communautés dans les graphes de terrain*. 2012.
3. Sébastien Heymann. *Analyse exploratoire de flots de liens pour la détection d'événements*. 2013.
4. Daniel Bernardes. *Information Diffusion in Complex Networks : Measurement-Based Analysis Applied to Modelling*. 2014.
5. Alice Albano. *Dynamique des graphes de terrain : analyse en temps intrinsèque*. 2014.
6. Sergey Kirgizov. *Analyse empirique et modélisation de la dynamique de la topologie de l'internet*. 2014.
7. Élie Rotenberg. *Une approche pour l'estimation fiable des propriétés de la topologie de l'Internet*. 2014
8. Eric Freyssinet. *Lutte contre les botnets : analyse et stratégie*. 2015.
9. Maximilien Danisch. *Mesures de proximité appliquées à la détection de communautés dans les grands graphes de terrain*. 2015.
10. Tiphaine Viard. *Flots de liens pour la modélisation d'interactions temporelles et application à l'analyse de trafic IP*. 2016.
11. Noé Gaumont. *Groupes et communautés dans les flots de liens : des données aux algorithmes*. 2016.

HDR :

1. Jean-Loup Guillaume. *Déterminisme et non-déterminisme au service de la détection de communautés dynamiques*. 2012.

3. Colloques / congrès, séminaires de recherche

Éditions d'actes de colloques / congrès

- [CN-A-1] Hanene Azzag, **Bénédicte Le Grand**, Monique Noirhomme-Fraiture, Fabien Picarougne, and François Poulet. *Atelier fouille visuelle de données (EGC'2012)*. January 2012.
- [CN-A-2] **Fabien Tarissan**. *Actes de la conférence Modèles et Analyses Réseau : Approches Mathématiques et Informatiques (MARAMI)*. 2014.

Articles publiés dans des actes de colloques / congrès

- [CN-C-1] **Lionel Tabourier**, Alina Stoica, and Fernando Peruani. "How to detect causality effects on large dynamical communication networks : A case study". In *Communication Systems and Networks (COM-SNETS)*, pages 1–7, Bangalore, India, January 2012. IEEE.
- [CN-C-2] **John Whitbeck**, **Marcelo Dias De Amorim**, Vania Conan, and **Jean-Loup Guillaume**. "Temporal Reachability Graphs". In *ACM Mobicom*, pages 377–388, Istanbul, Turkey, August 2012. ACM.
- [CN-C-3] **Alice Albano**, **Jean-Loup Guillaume**, **Sébastien Heymann**, and **Bénédicte Le Grand**. "A Matter of Time - Intrinsic or Extrinsic - for Diffusion in Evolving Complex Networks". In *Conference on Advances in Social Networks Analysis and Mining*, pages 202–206, Niagara Falls, Canada, August 2013.
- [CN-C-4] **Fabien Tarissan** and Raphaëlle Nollez-Goldbach. "The Network of the International Criminal Court Decisions as a Complex System". In Otto E. Rössler Ali Sanayei, Ivan Zelinka, editor, *Interdisciplinary Symposium on Complex Systems*, volume 8 of *Emergence, Complexity and Computation*, pages 255–264, Prague, Czech Republic, September 2013.

- [CN-C-5] **Matthieu Latapy, Elie Rotenberg**, Christophe Crespelle, and **Fabien Tarissan**. “Measuring the degree distribution of routers in the core internet”. In *13th IFIP International Conference on Networking*, pages 1–9, Trondheim, Norway, June 2014. IEEE.
- [CN-C-6] Darko Obradovic and **Maximilien Danisch**. “Direct Generation of Random Graphs Exactly Realising a Prescribed Degree Sequence”. In *The 6th International Conference on Computational Aspects of Social Networks*, Porto, Portugal, July 2014.
- [CN-C-7] **Maximilien Danisch, Jean-Loup Guillaume**, and **Bénédicte Le Grand**. “Learning a proximity measure to complete a community”. In *2014 International Conference on Data Science and Advanced Analytics (DSAA2014)*, pages 90–96, Shanghai, China, October 2014. IEEE.
- [CN-C-8] **Lionel Tabourier**, Anne-Sophie Libert, and Renaud Lambiotte. “RankMerging : Learning to rank in large-scale social networks”. In *DyNakII, 2nd International Workshop on Dynamic Networks and Knowledge Discovery (PKDD 2014 workshop)*, Nancy, France, September 2014.
- [CN-C-9] **Raphaël Tackx**, Jean-Loup Guillaume, and **Fabien Tarissan**. “Revealing intricate properties of communities in the bipartite structure of online social networks”. In *IEEE Ninth International Conference on Research Challenges in Information Science (RCIS'15)*, pages 321–326, Athènes, Greece, May 2015. IEEE.

Autres produits présentés dans des colloques / congrès et des séminaires de recherche

Non applicable

4. Développements instrumentaux et méthodologiques

Non applicable

5. Produits et outils informatiques

Logiciels

1. *RankMerging*

<http://lioneltabourier.fr/program.html>

Source codes, user guide and examples to the RankMerging algorithms as described in the publication : *RankMerging : learning-to-rank in large scale social networks*.

2. *UDPping*

<http://data.complexnetworks.fr/udpping/>

udpping implements the UDP Ping measurement primitive, as defined in the publication [CN-C-5].

Bases de données / cohortes

1. Data collected with the udpping tool :

<http://tddi.complexnetworks.fr/>

The three datasets are described in details in the publication [CN-C-5].

Outils présentés dans le cadre de compétitions de solveurs

Non applicable

Outils d'aide à la décision

Non applicable

6. Brevets, licences et déclarations d'invention

Non applicable

7. Rapports d'expertises techniques, produits des instances de normalisation

Non applicable

8. Produits des activités didactiques

Ouvrages

1. Élaboration d'un ouvrage collectif *Éléments de Programmation (en Python)*, manuel de cours pour les étudiants en première année universitaire, 2015 (F. Tarissan).

E-learning, moocs, cours multimedia, etc.

Non applicable

9. Produits destinés au grand public

Émissions radio, TV, presse écrite

1. *Réseaux sociaux : "Comment les chercheurs savent (presque) tout de nous ?"*. Entretien sur Radio France Internationale (RFI), émission *Autour de la question*, mars 2013 (M. Latapy).

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

1. *Le risque épidémique dans les sociétés contemporaines*. Lionel Tabourier. Le Prisme à Idées (4), 2012.

Produits de médiation scientifique

1. Coordination des actions de la Fête de la Science pour le LIP6, UPMC, 2013–2015 (F. Tarissan).

Débats science et société

Non applicable

10. Autres produits propres à une discipline

Non applicable

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

1. Editorial board member of *Computer Networks*, 2013–2016 (M. Latapy) ;
2. Editorial board member of *Journal of Complex Networks* since 2013 (M. Latapy) ;
3. Editorial board member of *Social Networks Analysis and Mining* (SNAM) since 2013 (M. Latapy) ;
4. Editorial board member of *Theoretical Computer Science* (TCS) since 2014 (M. Latapy) ;
5. Editorial board member of *Computer Communications* since 2015 (M. Latapy) ;
6. Editorial board member of *Advances in Complex Systems* since 2016 (M. Latapy) ;
7. Guest editor, with Rokia Missaoui and Talel Abdesslem, for *Trends in Social Network Analysis – Information Propagation, User Behavior Modelling, Forecasting, and Vulnerability Assessment*, book of invited paper following ASONAM 2015, Springer (M. Latapy).

Direction de collections et de séries

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

1. Member of Interdisciplinary Commission (CID) 53 (on the theme *Methods, practices and communication of sciences and techniques*) of CoNRS : recruitment of CNRS researchers and other evaluation tasks, 2013-2017 (M. Latapy);
2. Member of Section 6 (on the theme *fundamentals of computer science, computation, algorithms, representations, uses*) of CoNRS : recruitment of CNRS researchers and other evaluation tasks, 2012-2016 (M. Latapy);
3. Member of the group of experts of Section 27 in UPMC : setting up of committees for recruitment of permanent UPMC personnel, participation to committees; 2011-2015, president until 2013 (M. Latapy);
4. Member of the group of experts of Section 27 in UPMC : setting up of committees for recruitment of permanent UPMC personnel, participation to committees; Coordinator, 2016-2017 (C. Magnien);
5. Member for two recruitment committees for professor positions : université de Lorraine (2016), université Pierre et Marie Curie (2015) (C. Magnien);
6. Member for nine recruitment committees for assistant professor positions : université Pierre et Marie Curie (2017, 2016, 2015, 2014, 2013), université d'Avignon (2015), ENS de Lyon (2013), université de Lorraine (2013), université Bordeaux 1 (2012) (C. Magnien);
7. Member of the ANR Evaluation committee on the theme *Données, Connaissances, données massives (Big Data)*, 2016 (C. Magnien);
8. Member of the ANR Evaluation committee for the international program, 2012 (C. Magnien).
9. Recurrent evaluations for *Crédit Impôt Recherche (CIR)* et *Jeunes Entreprises Innovantes (JEI)* (M. Latapy).
10. Committee member for International Doctoral Program (PDI) *Modélisation des Systèmes Complexes* (candidate selection for PhD funding), UPMC, 2013 (M. Latapy);
11. Member of the scientific and ethical committee for a study conducted by ENAC on the Evaluation of People Behaviour, 2016-2018 (M. Latapy);
12. Reviewer for one research habilitation (HDR), 2016 (C. Magnien);
13. Reviewer for 11 PhD thesis (C. Magnien);

Évaluation d'articles et d'ouvrages scientifiques

1. Many reviews for journals (all permanent members);

Program committees memberships

1. *IEEE Symposium on Wireless Telecommunications Applications (ISWTA)*, 2012 (M. Latapy);
2. *3-rd IEEE international workshop on TRaffic Analysis and Classification (TRAC)*, 2012 (M. Latapy);
3. *1-st International Conference on Mobile Intelligent System (ICMIS)*, 2012 (M. Latapy);
4. *Social Networks track of the ACM World Wide Web Conference (WWW)*, 2012 (M. Latapy);
5. Atelier sur la fouille de grands graphes (FGG), in conjunction with EGC 2012-2013, (C. Magnien);
6. *MERMAT : International Workshop on Measurement-based Experimental Research, Methodology and Tools*, 2013 (F. Tarissan);
7. *2-nd Annual Workshop on Symplifying Complex Networks for Practitioners (Simplex)*, 2013 (M. Latapy);
8. *Conférence de Recherche en Informatique (CRI)*, 2013 (M. Latapy);
9. *11-th IEEE/IFIP International Conference on Embedded and Ubiquitous Computing (EUC)*, 2013 (M. Latapy);

10. *6-th Smart Territory and Networks (STaN) satellite workshop of ECCS*, 2013 (M. Latapy);
11. *4-th IEEE international workshop on TRaffic Analysis and Classification (TRAC)*, 2013 (M. Latapy);
12. *RCIS : IEEE Eighth International Conference on Research Challenges in Information Science*, 2014 (F. Tarissan);
13. *6-th ACM international conference on Web Science (WebSci)*, 2014 (M. Latapy);
14. *8-th IEEE International Conference on Research Challenges in Information Science (RCIS)*, 2014 (M. Latapy);
15. *Time(s) and temporalities of the Web*, 2015 (M. Latapy);
16. *IEEE international workshop on TRaffic Analysis and Classification (TRAC)*, 2014, 2015 (M. Latapy);
17. *7-th ACM international conference on Web Science (WebSci)*, 2015 (M. Latapy);
18. *Mediterranean Conference on Information & Communication Technologies (MedICT)*, 2015 (M. Latapy);
19. *Social Networks and Graph Analysis track of the 24-th ACM World Wide Web Conference (WWW)*, 2015 (M. Latapy);
20. PC co-chair, *7-th IEEE International Workshop on Network Science for Communication Networks (NetSciCom)*, 2015 (M. Latapy, C. Magnien);
21. *ALGOTEL : Conférence Rencontres Francophones sur les Aspects Algorithmiques des Télécommunications*, 2013, 2014, 2015 (F. Tarissan);
22. *FGG : Atelier Fouille de Grands Graphes*, 2013, 2014, 2015 (F. Tarissan);
23. *MARAMI : Conférence Modèles et l'Analyse des Réseaux : Approches Mathématiques et Informatique* : 2013, 2014, 2015, 2016 (F. Tarissan)
24. *Workshop on Complex Networks and their Applications (COMPLEX NETWORKS)*, 2015-2016 (M. Latapy), 2014-2016 (C. Magnien);
25. *2-nd International Workshop on Dynamics in Networks (DyNo)*, 2016 (M. Latapy);
26. *7-th International Conference on Data Communication Networking (DCNET)*, 2016 (M. Latapy);
27. *32-nd IEEE International Conference on Data Engineering (ICDE)*, 2016 (M. Latapy);
28. *Social Networks and Graph Analysis and Web science tracks of the 25-th ACM World Wide Web Conference (WWW)*, 2016 (M. Latapy);
29. *International School and Conference on Network Science NetSciX*, 2016 (M. Latapy);
30. *6-th IEEE International Workshop on Network Science for Communication Networks (NetSciCom)*, 2013, 2014 (M. Latapy), 2009-2013, 2016 (C. Magnien);
31. *Social Networking Workshop, COMSNETS* 2016, 2017 (L. Tabourier);
32. *8-th International Conference on Data Communication Networking (DCNET)*, 2017 (M. Latapy);
33. *1-st Network Traffic Measurement and Analysis Conference (TMA)*, 2017 (M. Latapy);
34. *8-th IEEE International Workshop on Network Science for Communication Networks (NetSciCom)*, 2017 (M. Latapy);
35. *Social Networks and Graph Analysis track of the 26-th ACM World Wide Web Conference (WWW)*, 2017 (M. Latapy);
36. *International workshop on Complex Networks (CompleNet)*, 2012 (M. Latapy), 2012-2017 (C. Magnien).

Évaluation de laboratoires (type Hceres)

1. Member of the AERES evaluation committee for *Laboratoire Spécification et Vérification (LSV)*, 2013 (M. Latapy);
2. Member of the AERES evaluation committee for *LITIS*, 2015 (C. Magnien);
3. member of the orientation and surveillance committee for *ISC-PIF (UPS 3611 du CNRS)* (M. Latapy).

Évaluation de projets de recherche

1. Member of the *Comité Français d'Evaluation de la Coopération Scientifique et Universitaire avec le Brésil* (COFECUB), (M. Latapy);
2. Recurring evaluations for *Fonds National de la Recherche Scientifique* (FNRS), Belgium (M. Latapy);
3. Expert for Mission Expertise Internationale, ministry of Research (C. Magnien);
4. Evaluation of proposals for ANR, 2013 (C. Magnien);
5. Evaluation of ANR pre-proposals and final proposals, 2015 (C. Magnien).

3. Activités d'expertise scientifique

Activités de consultant

1. Consulting to companies in the field of complex networks, data analysis and modelling (M. Latapy).

Participation à des instances d'expertises (type Anses) ou de normalisation

1. Trainer in Paris Académie for last year high schools teacher (Terminale S), *Informatique et Sciences du Numérique (ISN)*, 2011–2013 (F. Tarissan).
2. Member of the *Informatique et Technologies de l'Information et de la Communication (ITIC)* group, dedicated to bringing computer science teaching into high school, since 2010 (F. Tarissan).

Expertise juridique

Non applicable

4. Organisation de colloques / congrès

Chairs of organising committees and/or seminars :

1. *Modèles et Analyse des Réseaux : Approches Mathématiques et Informatique (MARAMI)*, 2014 (F. Tarissan);
2. Person in charge for the *Colloquium d'Informatique* of UPMC committee, 2013–2015 (F. Tarissan);
3. Axis *Modélisation des Interactions Temporelles* (MIT) of ISCC, since 2015 (M. Latapy).

Participation to the organizing committees of :

1. Thematic day *Dynamique des graphes*, 2012 (F. Tarissan);
2. ResCom scientific meeting (approximately 50 persons), 2012 (C. Magnien);
3. thematic scientific meeting on *Dynamique des graphes*, 2012 (C. Magnien);
4. *Codes Sources* seminar, one seminar per month, since 2014 (L. Tabourier);
5. Local organisation chair for ASONAM (300 participants, 4 days), 2015 (M. Latapy);
6. Large Networks workshop, in conjunction with EUSN, 2016 (L. Tabourier).

5. Post-doctorants et chercheurs accueillis

Post-docs :

Emilie Coupechoux – 2012-2013

Bipartite graph modelling

Funded by the Euler project

Romain Campigotto – 2012-2014

Community detection in graphs and link streams.

Funded by the CLEAR common laboratory with Thales

François Queyroi – 2013-2014

Clustering in link streams.

Funded by the CLEAR common laboratory with Thales

Elie de Panafieu – 2015

Fundamental aspects of link streams

Funded on recurring funds

Keun-Woo Lim – 2014-2016

Mobile application usage characterisation and prediction.

Funded by the ANR project ABCD.

Louisa Harutyunyan – 2014-2016

Algorithms for link streams.

Funded by a grant from the Canadian government.

Robin Lamarche-Perrin – 2015-2016

Multi-scale graph analysis compression

Funded by the Request project.

Researchers :

Frédéric Ouédraogo – april - june, 2013

University of Ouagadougou, Burkina Faso

Internet topology dynamics

Darko Obradovic – may - july, 2013

Delft University, Netherlands

Graph Modelling

Alexandru Stan – march - april, 2015

Babes-Bolyai university, Romania

Random graph generation

Bivas Mitra – June, 2015

Indian Institute of Technology, Kharagpur, India

Analysis of Twitter user activity

Thi Ha Duong Phan – July - september, 2016

Vietnam mathematics institute, Vietnam

Connectivity in link streams.

6. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

Non applicable

Bourses Cifre

Damien Nogues 2012-2015

En partenariat avec Thales

Créations de laboratoires communs avec une / des entreprise(s)

2011- Participation to the common laboratory UPMC–Thales *Centre for Learning and Retrieval* (CLEAR).
The laboratory also involves the MLIA team of LIP6.

Création de réseaux ou d'unités mixtes technologiques

Non applicable

Créations d'entreprises, de start-up

Non applicable

7. Contrats de recherche financés par des institutions publiques ou caritatives

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

1. Project member of *Experimental UpdateLess Evolutive Routing (EULER)*, funded by the UE, programme Future Internet Research and Experimentation (FIRE/STREP), coordinated by Dimitri Papadimitriou. 2010-2014.
2. *Evolving Communities and Information Spreading*. Project funded by the Indo-French Center for the Promotion of Advanced Research (IFCPAR/CEFIPRA). 2014-2016. Collaboration with the Complex Network research group in IIT, Kharagpur, India.
3. Project member of *Opinion Dynamics and Cultural Conflicts in the European Space (ODYCCEUS)*. Funded by the H2020 FETPROACT program, coordinated by the Max Planck Institute for Mathematics in the Sciences. 2016-2019.

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

- Coordinator of the project *Dynamics of Graph Topologies (DynGraph)*, funded by the ANR. 2010-2014.
- Project coordinator for *Droit et Réseaux d'interaction Multi-échelle (Doré)*. Funded by the CNRS PEPS HuMaIn (Humanités, Mathématiques, Informatiques) program. 2013, renewed for 2014.
- Project coordinator for *Analyse de Structures Conversationnelles dans des Echanges d'Emails (AS-CEE)*. Funded by the CNRS PEPS HuMaIn (Humanités, Mathématiques, Informatiques) program. 2014, renewed in 2015.
- Project coordinator for *Flots de Liens – Analyse et Modélisation pour la sécurité (FLAMS)*. Funded by the CNRS PEPS SISC (Sécurité Informatique et des Systèmes Cyber-physiques) program. 2016
- Coordinator of the project *Community Dynamics, Diffusion and Detection of Events (CODDDE)*. Funded by the ANR. 2013-2017.
- Project member of *Information Diversity and Algorithmic Recommendation (Algodiv)*, funded by the ANR, coordinated by Camille Roth (Sciences Po médialab). 2016-2019.

Contrats avec les collectivités territoriales

1. *Analyse de dynamique de graphes de terrain*. 2011-2013
PhD funding granted by the *Domaine d'intérêt majeur (DIM)* of the Île-de-France region.
2. Coordinator of the thematic network *Analysis of Link Streams (ALIS)*, funded by the *Réseau National des Systèmes Complexes (RNSC)*. 2013-2014, renewed for 2015.
3. Project member of *Investigation par Traitement et Analyse des crypto-monnaies (iTRAC)*, funded by the FUI call 21, coordinated by Grégoire Biette (Thales). 2016-2018.

Contrats financés dans le cadre du PIA

1. Project member of *REcursive QUery and Scalable Technologies (REQUEST)*, funded by the 3d FSN call *Informatique en nuage – Cloud computing*, coordinated by Catherine Gouttas (Thales). 2014-2017.

Contrats financés par des associations caritatives et des fondations (ARC, FMR, FRM, etc.)

Non applicable

8. Indices de reconnaissance

Prix

1. Best paper award, *Interdisciplinary Symposium on Complex Systems (ISCS'13)*, 2013 (F. Tarissan) ;
2. Best paper award, *Asia-Pacific Network Operations and Management Symposium (APNOMS'16)* 2016 (F. Tarissan) ;

3. *Prime d'excellence Scientifique* (PES) then *Prime d'Encadrement Doctoral et de Recherche* (PEDR) from CNRS, since 2012 (M. Latapy), 2012-2014 (C. Magnien);
4. *Prime d'Investissement Recherche* (PIR) from UPMC, 2014-2015, (F. Tarissan);
5. *Prime d'Investissement Pédagogique* from UPMC, 2014-2015, (F. Tarissan).

Distinctions

Non applicable

Responsabilités dans des sociétés savantes

1. Elected at the scientific board of INS2I, CNRS, 2012-2014 (C. Magnien).
2. Scientific board member of the RESCOM axis of CNRS GDR RSD (*Réseaux et Systèmes Distribués*) (previously GDR ASR) since 2012 (C. Magnien);
3. Member of the direction board of *Institut des Systèmes Complexes de Paris-Île-de-France* (ISC-PIF) since 2014 (M. Latapy);
4. Member of the direction board of *Institut des Communications* (ISCC) since 2014 (M. Latapy);
5. Member of the *Directoire des formations et de l'insertion professionnelle* of UPMC since 2016 (C. Magnien);

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

1. Workshop *Theoretical Foundations of Network Analysis*, UCL, 2013 (C. Magnien);
2. Workshop *Data Science in the Big Data Era*, 2013 (C. Magnien);
3. Workshop *Dynamics on and of complex networks VI* (DOOCN), *European Conference on Complex Systems (ECCS)*, 2013 (F. Tarissan);
4. *Warwick Complexity Forum*, 2014 (C. Magnien);
5. Invited talk at *Complex and Social Networks group, Indian Institute of Technology (IIT), India*, 2014 (C. Magnien);
6. Workshop *Complex Networks & Dynamics*, 2014 (F. Tarissan);
7. Workshop *Dynamics on and of complex networks* (DOOCN), 2016 (M. Latapy);
8. Workshop *Expected Structures in Random Graph Models*, TU Kaiserslautern, 2016 (C. Magnien);

Annexe 4 EQUIPE MOVE

Nom de l'équipe : Modélisation et vérification

Acronyme : MoVe

Nom du responsable pour le contrat en cours : Fabrice Kordon

Nom du responsable pour le contrat à venir : Béatrice Bérard and Tewfik Ziadi

I. PRODUITS DE LA RECHERCHE

1. Journaux/revues

Articles scientifiques

- [MOVE-J-1] Lom Messan Hillah, Ariele-Paolo Maesano, Fabio De Rosa, Fabrice Kordon, Pierre-Henri Wuillemin, Riccardo Fontanelli, Sergio Di Bona, Davide Guerri, and Libero Maesano. Automation and intelligent scheduling of distributed system functional testing. *International Journal on Software Tools for Technology Transfer*, 19(3) :281–308, 2017.
- [MOVE-J-2] Regina Hebig, Djamel Eddine Khelladi, and Reda Bendraou. Approaches to Co-Evolution of Metamodels and Models : A Survey. *IEEE Transactions on Software Engineering*, 43(5) :396–414, 2017.
- [MOVE-J-3] Etienne Renault, Alexandre Duret-Lutz, Fabrice Kordon, and Denis Poitrenaud. Variations on Parallel Explicit Emptiness Checks for Generalized Büchi Automata. *International Journal on Software Tools for Technology Transfer*, 2016.
- [MOVE-J-4] Béatrice Bérard, Pascal Lafourcade, Laure Millet, Maria Potop-Butucaru, Yann Thierry-Mieg, and Sébastien Tixeuil. Formal verification of mobile robot protocols. *Distributed Computing*, 29 :1–25, April 2016.
- [MOVE-J-5] Béatrice Bérard, Serge Haddad, Aleksandra Jovanović, and Didier Lime. Interrupt Timed Automata with Auxiliary Clocks and Parameters. *Fundamenta Informaticae*, 143(3-4) :235–259, March 2016.
- [MOVE-J-6] Fabrice Kordon, Hubert Garavel, Lom Messan Hillah, Emmanuel Paviot-Adet, Loïc Jezequel, César Rodríguez, and Francis Hulin-Hubard. MCC'2015 – The Fifth Model Checking Contest. *Transactions on Petri Nets and Other Models of Concurrency*, 9930 :262–273, 2016.
- [MOVE-J-7] Djamel Eddine Khelladi, Regina Hebig, Reda Bendraou, Jacques Robin, and Marie-Pierre Gervais. Detecting complex changes and refactorings during (Meta)model evolution. *Information Systems*, 62, 2016.
- [MOVE-J-8] Matthias Güdemann, Pascal Poizat, Gwen Salaün, and Lina Ye. VerChor : A Framework for the Design and Verification of Choreographies. *IEEE Transactions on Services Computing*, 9(4) :647–660, July 2016.
- [MOVE-J-9] Sylvain Lamprier, Nicolas Baskiotis, Tewfik Ziadi, and Lom Messan Hillah. The CARE Platform for the Analysis of Behavior Model Inference Techniques. *Information and Software Technology*, 60 :32–50, April 2015.
- [MOVE-J-10] Béatrice Bérard, Krishnendu Chatterjee, and Nathalie Sznajder. Probabilistic Opacity for Markov Decision Processes. *Information Processing Letters*, 115(1) :52–59, January 2015.
- [MOVE-J-11] Jean-Rémy Falleri, Xavier Blanc, Reda Bendraou, Marcos Aurélio Almeida Da Silva, and Cédric Teyton. Incremental inconsistency detection with low memory overhead. *Software : Practice and Experience*, 44(5) :621–641, May 2014.

[MOVE-J-12] Paul Gastin and Nathalie Sznajder. Fair Synthesis for Asynchronous Distributed Systems. *ACM Transactions on Computational Logic*, 14(2) :9, June 2013.

Articles de synthèse / revues bibliographiques

Nothing selected in the 20%

Autres articles (articles publiés dans des revues professionnelles ou techniques, etc.)

Not applicable.

2. Ouvrages

Monographies et ouvrages scientifiques, éditions critiques, traductions

Nothing selected in the 20%

Direction / édition scientifique

Not applicable.

Chapitres d'ouvrage

[MOVE-Ch-1] Ahmed Chawki Chaouche, Amal El Fallah Seghrouchni, Jean-Michel Ilié, and Djamel Eddine Saïdouni. Smart Agent Foundations : From Planning to Spatio-temporal Guidance. In *Enablers for Smart Cities*, pages 33–63. John Wiley & Sons, Inc, August 2016.

Thèses soutenues

Ph.D. Theses :

1. BUI Thi-Mai-Anh : “Séparation des Préoccupations en Épidémiologie”, supervised by Mikal ZIANE, defended on December 2016.
2. MARTINEZ Jabier : “Exploration des variantes d’artefacts logiciels pour une analyse et une migration vers des lignes de produits”, supervised by Mikal ZIANE, defended on October 2016.
3. KHELLADI Djamel Eddine : “Co-évolution des contraintes OCL suite à l’évolution des métamodèles”, supervised by Reda BENDRAOU, defended on September 2016.
4. MILLET Laure : “Vérification et synthèse d’algorithmes de robots”, supervised by Béatrice BÉRARD, defended on December 2015.
5. LAURENT Yoann : “Alloy4PV : Un Framework pour la Vérification de Procédés Métiers”, supervised by Marie-Pierre GERVAIS, defended on January 2015.
6. RENAULT Etienne : “Contribution aux tests de vacuité pour le model checking explicite”, supervised by Fabrice KORDON, defended on December 2014.
7. BEN SALEM Ala Eddine : “Model checking adapté aux spécifications et propriétés à vérifier”, supervised by Fabrice KORDON, defended on September 2014.
8. KCHIR Selma : “Faciliter le développement des applications de robotique”, supervised by Mikal ZIANE, defended on June 2014.
9. COLANGE Maximilien : “Exploitation des symétries pour le modèle checking : du modèle au codage”, supervised by Fabrice KORDON, defended on October 2013.
10. MELEKHOVA Olga : “Modèle de décision de composants autonomiques pour systèmes répartis à grande échelle”, supervised by Jacques MALENFANT, defended on November 2013.
11. BEN MAÏSSA Yann : “Contribution à la modélisation et à la vérification de réseaux de capteurs sans fil”, supervised by Fabrice KORDON, defended on September 2013.

12. ZHANG Yan : “Conception semi-automatique de contrôleurs avec VeriJ”, supervised by Béatrice BÉRARD, defended on July 2013.
13. WOUTERS Laurent : “Infrastructure pour la modélisation multi-domaines orientée experts”, supervised by Marie-Pierre GERVAIS, defended on January 2013.
14. ALMEIDA DA SILVA Marcos Aurélio : “Détection et Traitement des Déviations dans les Environnements de développement logiciel centrés procédés”, supervised by Marie-Pierre GERVAIS, defended on June 2012.
15. FALL Ibrahimia : “Gestion Optimisée de Produits-Modèles de Procédés Logiciels”, supervised by Marie-Pierre GERVAIS, defended on February 2012.

Habilitation These :

1. DURET-LUTZ Alexandre (from Epita) : “Contributions to LTL and ω -automata for Model Checking”, defended on February 2017
2. ZIADI Tewfik : “Contributions to Variability Inference for the development of Software Systemslogiciels”, defended on December 2016
3. THIERRY-MIEG Yann : “From Symbolic Verification To Domain Specific Languages”, defended on December 2016
4. BENDRAOU Reda : “Model-Driven Process Engineering for flexible yet sound process modeling, execution and verification”, defended on December 2015

3. Colloques / congrès, séminaires de recherche

Éditions d'actes de colloques / congrès

- [MOVE-P-1] Fabrice Kordon and Daniel Moldt, Editors. *Application and Theory of Petri Nets and Concurrency*, volume 9695 of *Lecture Notes in Computer Science*, Torun, Poland, June 2016.
- [MOVE-P-2] Reda Bendraou, Dietmar Pfahl, turner richard, Marco Kuhlmann, Regina Hebig, and Fabrizio maria Maggi, editors. *Proceedings of the 2015 International Conference on Software and System Process*, Proceedings of the 2015 International Conference on Software and System Process, France, August 2015.
- [MOVE-P-3] Regina Hebig, Reda Bendraou, Markus Völter, and Michel Chaudron, editors. *Proceedings of the 1st International Workshop on Model-Driven Development Processes and Practices (MD²P²)*, volume 1249 of *CEUR Workshop Proceedings*, Valence, Spain, 2014. CEUR.

Articles publiés dans des actes de colloques / congrès

- [MOVE-C-1] Ludovic Le Frioux, Souheib Baarir, Julien Sopena, and Fabrice Kordon. PaInleSS : a Framework for Parallel SAT Solving. In *20th International Conference on Theory and Applications of Satisfiability Testing (SAT 2017)*, Lecture Notes in Computer Science, Melbourne, Australia, August 2017. Springer.
- [MOVE-C-2] Jabier F Martinez, Tewfik Ziadi, Tegawendé Bissyandé, Jacques F Klein, and Yves F Le Traon. Bottom-Up Technologies for Reuse : Automated Extractive Adoption of Software Product Lines. In *39th International Conference on Software Engineering (ISCE 2017)*, pages 67–70, Buenos Aires, Argentina, May 2017.
- [MOVE-C-3] Olga Melekhova and Jacques Malenfant. A Token-Based Scheme for Coordinating Decisions in Large-Scale Autonomic Systems. In *IEEE 26th International Conference on Enabling Technologies : Infrastructure for Collaborative Enterprises (WETICE 2017)*, Poznan, Poland, June 2017. IEEE Computer Society. à paraître/to appear.
- [MOVE-C-4] Béatrice Bérard, Olga Kouchnarenko, John Mullins, and Mathieu Sassolas. Preserving opacity on Interval Markov Chains under simulation. In *WODES 2016 - 13th International Workshop on Discrete Event Systems*, pages 319–324, Xi'an, China, May 2016.

- [MOVE-C-5] Lom Messan Hillah, Ariele-Paolo Maesano, Libero Maesano, Fabio De Rosa, Fabrice Kordon, and Pierre-Henri Wuillemin. Service functional testing automation with intelligent scheduling and planning. In *Symposium on Applied Computing (SAC)*, Proceeding of the 31st Annual ACM Symposium on Applied Computing, pages 1605–1610, Pisa, Italy, April 2016. ACM.
- [MOVE-C-6] Thomas Brihaye, Morgane Esti venart, Gilles Geeraerts, Hsi-Ming Ho, Benjamin Monmege, and Nathalie Sznajder. Real-time Synthesis is Hard! In Martin Fr nzle and Nicolas Markey, editors, *14th International Conference on Formal Modeling and Analysis of Timed Systems (FORMATS'16)*, volume 9884 of *Lecture Notes in Computer Science*, pages 105–120, Qu bec City, Canada, August 2016. Springer.
- [MOVE-C-7] Etienne Renault, Alexandre Duret-Lutz, Fabrice Kordon, and Denis Poitrenaud. Parallel Explicit Model Checking for Generalized B uchi Automata. In *21th International Conference on Tools and Algorithms for the Construction and Analysis of Systems, TACAS 2015*, volume 9035 of *Lecture Notes in Computer Science*, pages 613–627, London, United Kingdom, April 2015. Springer.
- [MOVE-C-8] Jabier Martinez, Tewfik Ziadi, Tegawend  F. Bissyand , Jacques Klein, and Yves Le Traon. Automating the Extraction of Model-Based Software Product Lines from Model Variants . In *ASE 2015 - 30th IEEE/ACM International Conference on Automated Software Engineering*, pages 396–406, Lincoln, Nebraska, United States, November 2015. IEEE.
- [MOVE-C-9] Ala Eddine Ben Salem, Alexandre Duret-Lutz, Fabrice Kordon, and Yann Thierry-Mieg. Symbolic Model Checking of stutter invariant properties Using Generalized Testing Automata. In *20th International Conference on Tools and Algorithms for the Construction and Analysis of Systems, TACAS 2014*, volume 8413 of *Lecture Notes in Computer Science*, pages 440–454, Grenoble, France, April 2014. Springer.
- [MOVE-C-10] Yoann Laurent, Reda Bendraou, Souheib Baarir, and Marie-Pierre Gervais. Formalization of fUML : An Application to Process Verification. In *CAiSE 2014 - The 26th International Conference on Advanced Information Systems Engineering*, volume 8484 of *Lecture Notes in Computer Science*, pages 347–363, Thessaloniki, Greece, June 2014. Springer.
- [MOVE-C-11] Laure Millet, Maria Potop-Butucaru, Nathalie Sznajder, and S bastien Tixeuil. On the Synthesis of Mobile Robots Algorithms : the Case of Ring Gathering. In *SSS 2014 - 16th International Symposium on Stabilization, Safety and Security of Distributed Systems*, volume 8756 of *Lecture Notes in Computer Science*, pages 237–251, Paderborn, Germany, September 2014. Springer.
- [MOVE-C-12] Amel Yessad, Isabelle Mounier, Jean-Marc Labat, Fabrice Kordon, and Thibault Carron. Have you found the error? A Formal Framework for Learning Game Verification. In *9th European Conference on Technology Enhanced Learning*, volume 8719 of *Lecture Notes in Computer Science*, pages 476–481, Graz, Austria, September 2014. Springer.
- [MOVE-C-13] Maximilien Colange, Souheib Baarir, Fabrice Kordon, and Yann Thierry-Mieg. Towards Distributed Software Model-Checking using Decision Diagrams. In *25th International Conference on Computer Aided Verification (CAV)*, volume 8044 of *Lecture Notes in Computer Science*, pages 830–845, Saint-Petersbourg, Russia, July 2013. Springer Verlag.
- [MOVE-C-14] Sylvain Lamprier, Nicolas Baskiotis, Tewfik Ziadi, and Lom Messan Hillah. CARE : a platform for reliable Comparison and Analysis of Reverse-Engineering techniques. In *18th IEEE International Conference on Engineering of Complex Computer Systems – ICECCS*, pages 252–255, Singapore, Singapore, July 2013. IEEE.
- [MOVE-C-15] Huu Nghia Nguyen, Pascal Poizat, and Fatiha Za di. Automatic Skeleton Generation for Data-Aware Service Choreographies. In *24th IEEE International Symposium on Software Reliability Engineering, ISSSRE 2013*, pages 320–329, Pasadena, CA, United States, November 2013. IEEE.
- [MOVE-C-16] Rania Kh fifi, Pascal Poizat, and Fatiha Sa s. Automatic Composition of Form-Based Services in a Context-Aware Personal Information Space. In *11th International Conference on Service Oriented Computing, ICSOC 2013*, volume 8274 of *Lecture Notes in Computer Science*, pages 575–583, Berlin, Germany, December 2013. Springer.
- [MOVE-C-17] Mathieu Jaume, Radoniaina Andriatsimandefitra, Val rie Viet Triem Tong, and Ludovic M . Secure states versus Secure executions : From access control to flow control. In *ICISS 2013 - 9th International Conference on Information Systems Security*, volume 8303 of *Lecture Notes in Computer Science*, pages 148–162, Calcutta, India, December 2013. Springer.

- [MOVE-C-18] Béatrice Bérard, Serge Haddad, Mathieu Sassolas, and Nathalie Sznajder. Concurrent Games on VASS with Inhibition. In Maciej Koutny and Irek Ulidowski, editors, *23rd International Conference on Concurrency Theory (CONCUR'12)*, volume 7454 of *Lecture Notes in Computer Science*, pages 39–52, Newcastle upon Tyne, United Kingdom, September 2012. Springer.
- [MOVE-C-19] Tewfik Ziadi, Luz Frias, Marcos Aurélio Almeida Da Silva, and Mikal Ziane. Feature Identification from the Source Code of Product Variants. In *16th European Conference on Software Maintenance and Reengineering (CSMR)*, pages 417–422, Szeged, Hungary, 2012. IEEE Computer Science.

Autres produits présentés dans des colloques / congrès et des séminaires de recherche

Nothing selected in the 20%

4. Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs

1. PRODAN/Alloy4SPV, this is a tool for verifying resources constraints, time, control-flows and object-flows on processes. It has been integrated in the industrial tool Obeo designer and used in the context of the ITEA MeRGE project.

Plateformes et observatoires

1. Organization (since 2011) of the Model Checking Contest, that compares model checking tools from the community thanks to an increasing benchmark gathered from colleagues. <https://mcc.lip6.fr>.

5. Produits et outils informatiques

Logiciels

1. CosyVerif (<http://cosyverif.org>) : is a software environment whose goal is the formal specification and verification of dynamic systems. It has been designed in order to support different formalisms and provides a graphical interface connected to a tool server by means of a Web services based API. CosyVerif is so far derived for Petri Nets (colored and P/T) as well as for Parametric Timed Automata. It is used to experiment new tools and for teaching purposes including in summer schools)
2. BUT4Reuse (Bottom-Up Technologies for Reuse, <https://lip6.fr/but4reuse>) is a generic and extensible tool aimed to leverage existing similar software products in order to help in extractive SPL adoption. The envisioned users are 1) SPL adopters and 2) Integrators of techniques and algorithms to provide automation in SPL adoption activities

Bases de données / cohortes

1. Petri Net repository (<http://pnrepository.lip6.fr>) : it is a growing collection of parameterized benchmark of Petri nets. These models have been gathered from the community since 2011 during the Model Checking Contest and originate from both industrial and academic cases studies. There are in 2017, 861 instances dispatched over 88 Petri nets that can be manipulated either via a web-based graphical interface or thanks to a REST API. It is more intended for model checking tools (understanding the PNML ISO/IEC format). Soon, formulas and outputs from the editions of the model checking contest will be made available, as a reference for improving tools quality.

Outils présentés dans le cadre de compétitions de solveurs

1. ITS-Tools (<http://ddd.lip6.fr/itstools.php>) is a powerful symbolic model-checker, supporting a variety of formalisms. It has participated in the Model Checking Contest co-located with the international PetriNets conference) every year since 2012 (except in 2014). Overall, our tool has obtained 3 gold, 1 silver, and 5 bronze medals in four participations, with a positive trend in results (i.e. we are improving our tool more regularly and faster than competing teams).

2. PaInleSS (<https://www.lrde.epita.fr/wiki/PaInleSS>) : it is a framework to build parallel SAT solvers for multi-core environments jointly developed at LIP6 and LRDE. Thanks to its genericity and modularity, it provides the implementation of basics for parallel SAT solving like clause exchanges, Portfolio and Divide-and-Conquer strategies. It also enables users to easily create their own parallel solvers based on new strategies. It is being presented at the SAT competition in 2017.

Outils d'aide à la décision

Not applicable.

6. Brevets, licences et déclarations d'invention

Not applicable.

7. Rapports d'expertises techniques, produits des instances de normalisation

We have produced an successfully validated (via a ballot in 2016) the Committee draft of the ISO/IEC 15909-1 revision (Petri net standard). This work has passed a major achievement and is planned to become the new revision of this international standard in 2018.

We are involved in the OMG SPEM2.0 standard and are part of the Finalization Task Force.

8. Produits des activités didactiques

Ouvrages

Not applicable.

E-learning, moocs, cours multimedia, etc.

1. 2014, MOOC "Programmation sur iPhone et iPad" (10 weeks, under iOS7), FUN
2. 2015, MOOC "Programmation sur iPhone et iPad" (parts I and II, 6 weeks each, under iOS8), FUN
3. 2017, MOOC "Programmation iOS" (parts I and II, 6 weeks each, under iOS10), edx
4. 2017, MOOC "Programmation Concurrente" (6 weeks), edx

9. Produits destinés au grand public

Émissions radio, TV, presse écrite

Not applicable.

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

[MOVE-V-1] Andrey Sadovykh, Alessandra Bagnato, Jacques Robin, Alexander Viehl, Tewfik Ziadi, and Jabier Martinez. REVAMP : Challenges and innovation roadmap for variability management in round-trip engineering of software-intensive systems. *Revue Génie Logiciel*, (120) :32–36, May 2017.

Produits de médiation scientifique

Not applicable.

Débats science et société

Not applicable.

10. Autres produits propres à une discipline

Créations artistiques théorisées

Not applicable.

Mises en scènes

Not applicable.

Films

Not applicable.

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

1. F. Kordon, editorial board member, *Science of Computer Programming*, Elsevier (since 2010)
2. J. Malenfant, editorial board member, *Technique et Science Informatiques*, Lavoisier (until 2016)

Participation à des comités de programmes

1. 2017 :

- R. Bendraou, PC member of the 24th Asia-Pacific Software Engineering Conference
- R. Bendraou and T. Ziadi, PC member of the 14th ACS/IEEE International Conference on Computer Systems and Applications
- R. Bendraou, PC member of the 13th European Conference on Modelling Foundations and Applications
- R. Bendraou, PC member of the International Conference on Software and System Processes
- R. Bendraou, PC member of the Workshop on Model-Driven Engineering Tools Challenge
- R. Bendraou, PC member of the Second International Workshop on Collaborative Modelling in MDE
- R. Bendraou, PC member of the first International Workshop on Debugging in Model-Driven Engineering
- B. Bérard, PC member of the Workshop on Functional Art, Music, Modeling and Design
- B. Bérard, PC member of the mSR days (Modélisation des Systèmes Réactifs)
- J.-M. Ilié, PC member of the 8th International Conference on Ambient Systems, Networks and Technologies
- J.-M. Ilié, PC member of the 13th International Conference on Intelligent Environments
- J.-M. Ilié, PC member of the The International Workshop on Agent Technology for Ambient Intelligence
- J.-M. Ilié, PC member of the 8th EPIA Conference on Progress in Artificial Intelligence
- F. Kordon, P. Poizat, and Y. Thierry-Mieg, PC members of 38th International Conference on Application and Theory of Petri Nets and Concurrency
- F. Kordon, PC member of the 19th International Conference on Formal Engineering Methods
- J. Malenfant, PC member of the 2017 International Conference on Industrial Automation, Robotics and Control Engineering
- J. Malenfant, PC member of the 2017 International Conference on Robotics and Automation Sciences
- J. Malenfant, PC member of the 13th Congress of the International Conference on Autonomic and Autonomous Systems
- J. Malenfant, PC member of the 1st IEEE International Conference on Robotic Computing
- P. Poizat, PC member of the 15th International Conference on Service Oriented Computing

- N. Sznajder, PC member of the 15th International Conference on Formal Modelling and Analysis of Timed Systems
- T. Ziadi, PC member of the 21st International Systems and Software Product Line Conference
- T. Ziadi, PC member of the 32th Software Engineering Track at ACM Symposium On Applied Computing

2. 2016 :

- R. Bendraou, PC member of the 23rd Asia-Pacific Software Engineering Conference
- R. Bendraou and P. Poizat, PC member of the 14th International Conference on Service Oriented Computing
- R. Bendraou, PC member of the International Conference on Software and Systems Process
- R. Bendraou, PC member of the 5ème Conférence en Ingénierie du Logiciel
- R. Bendraou, PC member of 34th INFORSID conference
- R. Bendraou, PC member of the 1st International Workshop on Collaborative Modelling in MDE
- B. Bérard, PC member of the 14th International Conference on Formal Modelling and Analysis of Timed Systems
- J.-M. Ilié, PC member of the Intelligent Computing for Smart Cities special session in the 10th IDC2016 International symposium on intelligent distributed systems
- J.-M. Ilié, PC member of the 4th International Symposium on Modelling and Implementation of Complex Systems
- F. Kordon, PC co-chair (with D. Moldt) of 37th International Conference on Application and Theory of Petri Nets and Concurrency
- F. Kordon, PC member of the 18th International Conference on Formal Engineering Methods
- F. Kordon, PC member of the 30th ACM/SIGAPP Symposium On Applied Computing - track Verification and Testing track
- J. Malenfant, PC member of the 2016 International Conference on Cloud and Robotics
- J. Malenfant, PC member of the 12th Congress of the International Conference on Autonomic and Autonomous Systems
- D.Poitrenaud, PC members of the 10th International Workshop on Verification and Evaluation of Computer and Communication Systems
- P. Poizat, PC co-chair with R. Oulad Haj Thami of the 4th International Workshop on Advanced Information Systems for Enterprises
- P. Poizat and Y. Thierry-Mieg, PC members of 37th International Conference on Application and Theory of Petri Nets and Concurrency
- T. Ziadi, PC member of the 21st IEEE International Conference on Engineering of Complex Computer Systems
- T. Ziadi, PC member of the 31th Software Engineering Track at ACM Symposium On Applied Computing
- T. Ziadi, PC member of the 13th ACS/IEEE International Conference on Computer Systems and Applications
- T. Ziadi, PC member of the 4th International Symposium on Modelling and Implementation of Complex Systems

3. 2015 :

- R. Bendraou, PC member of 11th International Conference on Software and System Process
- R. Bendraou, PC member of the 22nd Asia Pacific Software Engineering Conference
- R. Bendraou and P. Poizat, PC member of the 13th International Conference on Service Oriented Computing
- R. Bendraou, PC member of the European Conference on Modelling Foundations and Applications
- R. Bendraou, PC member of the 2nd International Workshop on Industrial Model-Driven Development Processes and Practices
- R. Bendraou, PC member of the Fourth SEMAT Workshop on General Theories of Software Engineering
- J.-M. Ilié, PC member of the 12th International Symposium on Programming and Systems
- J.-M. Ilié, PC member of the 12th ACS/IEEE International Conference on Computer Systems and

Applications

- F. Kordon, PC member of the 17th International Conference on Formal Engineering Methods
- J. Malenfant, PC member of the 11th Congress of the International Conference on Autonomic and Autonomous Systems
- D. Poitrenaud, PC members of the 9th International Workshop on Verification and Evaluation of Computer and Communication Systems
- T. Ziadi, PC member of the 30th Software Engineering Track at ACM Symposium On Applied Computing
- T. Ziadi, PC member of the 12th ACS/IEEE International Conference on Computer Systems and Applications
- M. Ziane, PC member of the 6th International Workshop on Domain-Specific Languages and models for ROBotic systems

4. 2014 :

- R. Bendraou, PC member of the 21st Asia-Pacific Software Engineering Conference
- R. Bendraou, PC member of the Tenth European Conference on Modelling Foundations and Applications
- R. Bendraou, PC member of the 1st International Workshop on Model-Driven Development Processes and Practices
- R. Bendraou, PC member of the 3rd SEMAT Workshop on General Theories of Software Engineering
- F. Kordon, PC member of the 17th International ACM SIGSOFT Symposium on Component Based Software Engineering
- F. Kordon, PC member of the 22nd International Conference on Real-Time and Network Systems
- J. Malenfant, PC member of the 10th International Conference on Autonomic and Autonomous Systems
- D. Poitrenaud, PC members of the 8th International Workshop on Verification and Evaluation of Computer and Communication Systems
- P. Poizat, PC member of the 12th International Conference on Service Oriented Computing
- P. Poizat, PC member of the 21st International Conference on Web Services
- T. Ziadi, PC member of the 3rd International Symposium on Modelling and Implementation of Complex Systems
- T. Ziadi, PC member of the 5th International Workshop on Domain-specific Languages and Models for ROBotic systems
- M. Ziane, PC member of the 5th International Workshop on Domain-Specific Languages and models for ROBotic systems

5. 2013 :

- R. Bendraou, PC member of the 20th Asia-Pacific Software Engineering Conference
- R. Bendraou, PC member of the 9th European Conference on Modelling Foundations and Applications
- R. Bendraou, PC member of the Third Workshop on Process-based approaches for Model-Driven Engineering
- R. Bendraou, PC member of the 2nd SEMAT Workshop on a General Theory of Software Engineering
- B. Bérard, PC member of the mSR days (Modélisation des Systèmes Réactifs)
- F. Kordon, PC member of the 7th Verification and Evaluation of Computer and Communication Systems
- F. Kordon, PC member of the 16th International ACM SIGSOFT Symposium on Component Based Software Engineering
- F. Kordon, PC member of the 21st International Conference on Real-Time and Network Systems
- J. Malenfant, PC member of the 9th Congress of the International Conference on Autonomic and Autonomous Systems
- D. Poitrenaud, PC members of the 7th International Workshop on Verification and Evaluation of Computer and Communication Systems

- P. Poizat, PC member of the 16th International ACM Sigsoft Symposium on Component-Based Software Engineering
- P. Poizat, PC member of the 10th International Symposium on Formal Aspects of Component Software
- P. Poizat, PC member of the 20th International Conference on Web Services
- M. Ziane, PC member of the 4th International Workshop on Domain-Specific Languages and models for ROBotic systems

6. 2012 :

- F. Kordon, PC member of the 15th IEEE International Symposium on Object and component-oriented Real-time distributed Computing
- F. Kordon, PC member of the 12th IEEE International Conference on Application of Concurrency to System Design
- F. Kordon, PC member of the 23rd IEEE International Symposium on Rapid System Prototyping
- J. Malenfant, PC member of the 8th Congress of the International Conference on Autonomic and Autonomous Systems
- D. Poitrenaud, PC members of the 6th International Workshop on Verification and Evaluation of Computer and Communication Systems

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

- M.-P. Gervais, member of the Conseil National des Universités (2012-2015)
- F. Kordon, expert at AEQES for Computer Science (evaluation of higher education institutions in Belgium, season 2016/2017)
- J. Malenfant, expert at the Research Council of Sweden for project evaluation (2012-2013)
- P. Poizat, member of the Comité National de la Recherche Scientifique for section 6 (2014-2016)
- P. Poizat, expert at CINECA for the evaluation of the quality of research in Italy (2016)

Évaluation d'articles et d'ouvrages scientifiques

Not listed (too many to be gathered).

Évaluation de laboratoires (type Hceres)

- B. Bérard, member of the HCERES committee for Loria in 2016
- B. Bérard, member of the Inria evaluation committee for the track "systèmes embarqués et temps réel" in 2016
- P. Poizat, expert at AERES for the evaluation of the LIFL and LAGIS laboratories + project for the CRISTAL laboratory (2013)

Évaluation de projets de recherche

- B. Bérard, expert at ANR for project evaluation (since 2012)
- B. Bérard, expert at ANRT for the evaluation of CIFRE grants (since 2014)
- P. Poizat, expert at BPRP (Belgium) to evaluate projects (2015)
- N. Sznajder, expert at ANR for project evaluation (2017)
- T. Ziadi, expert at ANRT for the evaluation of CIFRE grants (since 2013)

3. Activités d'expertise scientifique

Activités de consultant

Not applicable.

Participation à des instances d'expertises (type Anses) ou de normalisation

1. R. Bendraou, member of the Finalization Task Force of the OMG SPEM Standard (Software Process Engineering Metamodel)
2. L.-M. Hillah, standard ISO/IEC-15909-1 about Petri Nets, editor (also a participation of Fabrice Kordon)

Expertise juridique

Not applicable.

4. Organisation de colloques / congrès

1. R. Bendraou, General Co-Chair with D. Raffo of the 11th International Conference on Software and System Processes in 2017
2. F. Kordon, General co-chair (with D. Buchs) of the Model Checking Contest¹ (since 2011), L. M. Hillah is a member of the model board and E. Paviot-Adet is a member of the formula board.
3. F. Kordon, General co-chair (with M. Boufaïda) of the 2012, 2014 and 2016 editions of the International Workshop on Advanced Information Systems for Enterprises (Franco-Algerian cooperation)
4. F. Kordon, Tutorial co-chair (with S. Haddad) of the 18th International Symposium on Formal Methods
5. J. Malenfant, Organizing chair of the “journée sur les Architectures Logicielles pour la Robotique Autonome, les Systèmes Cyber-Physiques et les Systèmes Auto-adaptables” in 2014
6. P. Poizat, General Co-Chair with Federico Bergenti, and Walid Gaaloul of the 25th IEEE International Conference on Enabling Technologies : Infrastructure for Collaborative Enterprises
7. T. Ziadi, Co-chair of the REVE (Reverse-Engineering of Variability) workshop, associated with SPLC (International Systems and Software Product Line Conference) from 2013 to 2017 (5 editions)

5. Post-doctorants et chercheurs accueillis

Post-doc :

- T. Menouer (2015-2017)
- R. Hebig (2013-2015)
- F.-R. Golra (2014-2015)

invited professors :

- M. Boubakir (Univ. Jijel, Algeria) in 2012
- K. Chatterjee (Institute of Science and Technology, Austria) in 2012
- L. Kahloul (Univ. Biskra, Algeria) in 2016
- E. Kindler (Univ. Copenhagen, Denmark) in 2015
- J. Mullins (Ecole Polytechnique de Montréal, Canada) in 2013/2014 and 2016
- M. Ogawa (Japan Advanced Institute of Science and Technology, Japan) in 2014
- R. Page (Univ. York, UK) in 2013
- Y. Rahmoune (Univ. Constantine, Algeria) in 2015
- N. Tonelloto (CNR Pisa, Italy) in 2015

6. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

- E. Effa-Bella, doctorante IRT SystemX encadrée par R. Bendraou dans le cadre d'une convention avec l'UPMC (2016-2019)

1. <https://mcc.lip6.fr>.

Bourses Cifre

- L. Wouters, CIFRE avec EADS, par M.-P. Gervais (2010-2013)

Créations de laboratoires communs avec une / des entreprise(s)

Not applicable.

Création de réseaux ou d'unités mixtes technologiques

Not applicable.

Créations d'entreprises, de start-up

Not applicable.

7. Contrats de recherche financés par des institutions publiques ou caritatives**Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)**

- ITEA3 European project REVaMP² (2017-2020) with more than 30 partners in 5 countries. Our team is the scientific coordinator.
- European project ITEA MeERGE (2012-2015) with 35 partners, our team is the scientific coordinator
- European project FP7 MIDAS (2012-2015) in cooperation with the Decision team at LIP6.
- franco-canadian project CFQCU on security and opacity of systems (2012-2014)
- CoopIntEER CNRS/CONICYT with Universidad Técnica Federico Santa María (Valparaiso, Chile) which also involved the Regal team (2012-2013)
- franco-algerian project CMEP Tassili 11MDU837 about the design, analysis and verification of enterprise collaborative systems (2011-2014)

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

- ANR PARDI (2017-2021)
- FUI Monoge (2013-2016), our team is the scientific coordinator
- ANR Impro (2011-2014)
- ANR Proteus (2009-2013)
- ANR SALTY (2009-2012)
- ANR Galaxy (2009-2012)

Contrats avec les collectivités territoriales

Not applicable.

Contrats financés dans le cadre du PIA

Not applicable.

Contrats financés par des associations caritatives et des fondations (ARC, FMR, FRM, etc.)

Not applicable.

8. Indices de reconnaissance

- R. Bendraou, member of the steering committee of the European Conference on Modeling Foundations and Applications (since 2011)
- R. Bendraou, member of the steering committee of the International Conference on Software & System Processes (since 2017)

- B. Bérard, member of the steering committee of the “Modélisation des Systèmes Réactifs” conférence (since 2011)
- F. Kordon, member of the steering committee of the International Conferences on Application and Theory of Petri Nets and Concurrency (since 2012)
- J. Malenfant, member of the steering committee of the International Conferences on Autonomic and Autonomous Systems (since 2017)
- J. Malenfant, co-responsible of the ALROB action between the two GDR GPL and Robotique (since 2015).
- D. Poitrenaud, member of the steering committee of the International Conference on Verification and Evaluation of Computer and Communication Systems (2012-2015)

Prix

- Jabier Martinez, accessit from GDR GPL for his thesis work “Mining Software Artifact Variants for Product Line Migration and Analysis”, defended in October 2016 (co-utelle Ph.D. between UPMC and Univ. Luxembourg)
- Best paper award paper at the 15th international conference on Software reuse for “Metamodel and Constraints Co-evolution : A Semi Automatic Maintenance of OCL Constraints” (R. Hebig, R. Bendraou, J. Robin and M.-P. Gervais)

Distinctions

Not applicable.

Responsabilités dans des sociétés savantes

Not applicable.

Contrats financés dans le cadre du PIA

Not applicable.

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

- R. Bendraou, 2 months in 2017 at the Korea Advanced Institute of Science & Technology.
- R. Bendraou, 6 months in 2015 at the LASER laboratory, University of Massachusetts, USA.
- T. Ziadi, 3 months in 2014 and 3 months in 2015 at Université du Luxembourg in the context of the co-supervision with prof. Y. Le Traon of J. Martinez's Ph.D.
- F. Kordon, 1 month in 2013 at Universidad Técnica Federico Santa María (Valparaiso de Chile), within the context of a CoopIntEER CNRS/CONICYT project.



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