# Lionel Morel

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## Current Position

**Since 2017 —** Research Engineer - DACLE Division, **CEA LIST**, Grenoble, FRANCE.
*On Leave from INSA Lyon (détachement).*

## Employment History

**2010-17 —** Assistant Professor - **CITI Lab**, Computer Science and Information Technologies Department, INSA de Lyon, **University de Lyon**, FRANCE.

**2007-09 —** Assistant Professor - LIESP Lab, Computer Science and Information Technologies Department, INSA de Lyon, **University de Lyon**, FRANCE.

**2006-07 —** Post-doctoral researcher - **INRIA**, Expresso team, Rennes, FRANCE.

**2005-06 —** Post-doctoral researcher - Embedded Systems Lab, Computer Science Department, **Åbo Akademi**, Turku, FINLAND.

**2004-05 —** Teaching and Research Assistant - **Verimag lab**, ENSIMAG, INPG, Université de Grenoble, FRANCE.

**2001-04 —** CNRS Doctoral Fellow. PhD student at **Verimag**, Grenoble, FRANCE.

**2001 —** Research Intern - Computer Science and Mathematics Department, **University of Stirling**, SCOTLAND.

## Education

**2005 —** PhD in Computer Science - Institut National Polytechnique de Grenoble, FRANCE

**2001 —** MSc in Computer Science - Université de Grenoble, FRANCE

**1999 —** BSc in Computer Science - Université de Grenoble, FRANCE

## Main Research Topics and Interests

(not in any significant order)
Compilation and Formal Verification applied to Synchronous Languages
Runtimes and Operating Systems Support for Dataflow/Streaming Languages
Programming Models for Parallel Systems
Performance Measurement and Performance-Aware Runtime and Operating Systems
Software Protection against Physical Attacks

## Scientific Production

| International Journal | 1 | National Conference | 5 | In Preparation | 3 |
|---|---|---|---|---|---|
| International Conference | 20 | Research Reports | 7 | | |

# Projects

Here is a list of research projects/tools I've been involved in.

**2017-20 —** **SERENE-IoT** / **POLEN** — SERENE-IoT ("Secured & EneRgy Efficient health-carE solutions for IoT market") is a european Penta project, coordinated by ST-Microelectronics and in which CEA's implication was focused on developping new security counter-measures against physical attacks on IoT medical-grade systems. Our main contribution to the project was the study and develop of combined counter-measures for protecting IoT systems, coinjointly against side-channel attacks and reverse engineering. This solution is implemented in a hardware-software prototype called POLEN which comprises: a hw extension to the RISCV32 architecture and a set of compiler-level program transformations implemented in LLVM.

**2017-19 —** **CLAPS** — The CLAPS project is part of the IRT-Nanoelec research program. It is a joint research project with INRIA-Grenoble (team CORSE), VERIMAG (team PACSS), CEA-CESTI (security certification organism) and CEA-DACLE. The goal of the project is to develop novel ideas and prototypes regarding the detection of and protections against fault-injection physical attacks. My implication in the project was twofold: 1. validate pre-existing counter-measures (developed in the PhD of ....); 2. develop a first version of bootloader usecase.

**2015-17 —** **CalMAR** — A Cal Multi-Application Runtime. Together with Manuel Selva and Kevin Marquet, we developed a runtime system able to execute several RVC-Cal applications, in a best-effort manner.

**2011-17 —** **PERF4DF**[1] — Performance Evaluation and Performance-Aware Runtimes for Dataflow Programs on NUMA Processors. In collaboration with Manuel Selva (formerly INSA Lyon), Kevin Marquet (INSA Lyon), Junaid Ahmad (EPFL) and Marco Mattavelli (EPFL). The project essentially dealt with:
- Instrumenting dataflow (RVC-Cal[2]) programs with calls to numap[3] and PAPI[4] functions in order to get metrics about memory usage of such programs while running on NUMA processors;
- Enhancing RVC-Cal runtime and compiler in order to accelerate the execution of CAL programs on NUMA processors;
- Benchmarking these compilation and runtime choices on NUMA processors. Experimentations are run on the grid5000 infrastructure[5].

The project is a direct continuous of Manuel Selva's PhD work. You can check out publications and posters on `http://lionel.morel.ouvaton.org/wp/`.

**2007-09 —** Modeling Multi-Task Device Drivers using Synchronous Languages. In collaboration with Belgacem Ben Hedia (then INSA Lyon, now CEA) and Jean-Philippe Babau (then INSA Lyon, now UBO, Brest), we showed how multi-task applications can be modeled in a synchronous language and how this model can be used to prove temporal properties on such applications.

**2005-06 —** **Rialto 2.0** — A Language for Heterogeneous Computations, I contributed defining while working as a PostDoc with Professor Johan Lilius, at Åbo Akademi, Finland. The idea of Rialto was to provide language constructs to let programmer design both essential

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[1]See `https://gforge.inria.fr/projects/perf4df`

[2]See `http://orcc.sourceforge.net/`

[3]See `https://github.com/numap-library/numap`

[4]See `http://icl.cs.utk.edu/papi/pubs/index.html`

[5]See `http://www.grid5000.fr`

pieces of the semantics of different models of computations *and* programs themselves. Programs could mix components of different models of computation, letting the compiler instantiate details of the interactions between the various models of computation.

**2005-06 — ITCEE** — Improving Transient Control and Energy Efficiency by digital hydraulics, together with Pontus Boström and Marina Walden, at Åbo Akademi, Finland. In this project, we proposed a mode-automata-like restriction of Simulink/Stateflow and the use of assume-guarantee contracts in order to help design and reason about digital controllers for hydraulics systems. The work was in collaboration with Matti Linjama and Lauri Siivonen from the Institute of Hydraulics and Automation at the Tampere University of Technology, Finland.

**2002-05 — GOuPIL** — A graphical tool that allows a Lustre[6] programmer to apply various program transformations in order to ease formal validation. Techniques implemented in GOuPIL are the results of my PhD work and leveraged language constructions such as assume-guarantee contracts and array iterators to help the formal proof of safety properties on safety-critical program designed with the Lustre synchronous language.

# Doctoral Supervision

**2018-21 — Paul Iannetta - Université de Lyon** (due 2021)
co-supervised with *Laure Gonnord*, Université Lyon 1, LIP.

**2011-15 — Manuel Selva - Université de Lyon**
**Title** *Performance Monitoring of Throughput Constrained Dataflow Programs Executed on Shared-Memory Multi-core Architectures*
**Jury** Jean-François Nezan, Full Professor, INSA Rennes (reviewer)
Eduard Ayguadé, Full Professor, University of Catalunya (reviewer)
Albert Cohen, Research Director, INRIA (examiner)
Marco Mattavelli, Full Professor, EPFL (examiner)
Stéphane Frénot, Full Professor, INSA Lyon (director)
Kevin Marquet, Associate Professor, INSA Lyon (co-supervisor)
Lionel Morel, Associate Professor, INSA Lyon (supervisor)
**note:** As of Sept 2019, Manuel Selva is Assistant Professor at ENSIMAG-INPGrenoble.

# Other Supervisions

**2018 — Arthur Gontier** - Undergrad R&D project.
Topic: Encodage d'un langage synchrone vers des clauses de Horn, refactoring et expérimentations. Co-supervised with *Laure Gonnord*.

**2018 — Irénée Groz** - MSc project.
Topic: Intégrité et confidentialité des programmes et des données pour les systèmes embarqués. Co-supervised with *Damien Couroussé*.

**2018 — Paul Iannetta** - MSc project.
Topic: Semantic Polyhedral Model for Arrays and Lists. Co-supervised with *Laure Gonnord*.

**2017 — Romain Fontaine** - Undergrad R&D project.
Topic: Polyhedral Dataflow Programming - combining dataflow programming with polyhedral compilation. Co-supervised with *Laure Gonnord*.

**2017 — Szabolcs-Marton Bagoly** - Undergrad R&D project.
Topic: Analyse statique de propriétés de programmes Lustre via un encodage vers des Clauses de Horn. Co-supervised with *Laure Gonnord*.

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[6]See `https://en.wikipedia.org/wiki/Lustre_(programming_language)`

**2015 —** **Sebastian Bacanu, Kamil Deja, Max Thonagel** - Undergrad R&D project.
Topic: Programming a Many-Core platform: experiments with the Kalray MPPA.

**2014 —** **Tewodros Deneke** - PhD student from the Embedded Systems Lab at Åbo Akademi University, Turku Finlande. 6 months visit at the CITI Lab, June to December 2014.
Topic: Integration of a dataflow hevc decoder into the ffmpeg transcoding framework.

**2014 —** **Coralie Saysset** - MSc Université de Lyon - INSA Lyon.
Topic: Evaluation of the memory usage of dataflow programs.

**2013 —** **Franco di Pietro** - Bachelor R& D Project. National University of Santiago, Argentina.
Topic: Energy profiling methodlogy for micro-controller based embedded systems-Co-supervised with *Guillaume Salagnac*.

**2011 —** **Moemen Cherni** - Degree Project, l'École Supérieur des Communications de Tunis.
Topic: Dynamic Extraction of temporal specifications for admission control of service-oriented applications.

**2010 —** **Chinmay Malaviya** - Bachelor R&D Project, Nanyang Technological University, School of Computer Engineering.
Topic: Deployment of Ambient Applications in Real Rime Platforms.

**2008 —** **Mohammed Hindawi** - MSc l'INSA de Lyon.
Topic: Description and Implementation of UML Guide Styles. Co-supervised with *J-L Sourrouille*, LIESP Laboratory, INSA.

# PhD Jurys

**2017 —** **Małgorzata Maria Michalska**
Title: Systematic Design Space Exploration of Dynamic Dataflow Programs on Multi-core Platforms. School: École Polytechnique Fédérale de Lausanne, EPFL, Switzerland. **reviewer**.

**2013 —** **Fareed Ahmed Jokhio**
Title: Video Transcoding in a Distributed Cloud Computing Environment. School: Åbo Akademi University, Finland. **reviewer**.

# Publications

## In Preparation

[IP1]  *Lionel Morel* and Damien Couroussé.  Polen: a sw/hw approach to program and data confidentiality. In preparation.

[IP2]  *Lionel Morel*, Thomas Hiscock, and Damien Couroussé.  Polymorphic execution of encrypted programs as a protection against side-channel attacks and reverse engineering.  In preparation.

[IP3]  Laure Gonnord, Ludovic Henrio, *Lionel Morel*, and Gabriel Radanne.  A survey on parallelism and determinacy.  In preparation.

## Journals

[J4]  *Lionel Morel*.  Array Iterators in Lustre: From a Language Extension to Its Exploitation in Validation. *EURASIP Journal on Embedded Systems*, page 59130, 2007.

## Conferences

[C5]  *Lionel Morel* and Damien Couroussé.  Idols with Feet of Clay: On the Security of Boot- loaders and Firmware Updaters for the IoT.  In *17th IEEE International NEWCAS Conference*, Munich, Germany, 2019.

[C6]  Romain Fontaine, Laure Gonnord, and *Lionel Morel*.  Polyhedral Dataflow Programming: a Case Study.  In *SBAC-PAD 2018 - 30th International Symposium on Computer Architecture and High-Performance Computing*, pages 1–9, Lyon, France, September 2018. IEEE.

[C7]  François TRAHAY, Manuel Selva, *Lionel Morel*, and Kevin Marquet.  NumaMMA: NUMA MeMory Analyzer.  In *ICPP 2018 - 47th International Conference on Parallel Processing*, Eugene, United States, August 2018.

[C8]  *Lionel Morel*, Manuel Selva, Kevin Marquet, Coralie Saysset, and Tanguy Risset.  Work-in-Progress: CalMAR -a Multi-Application Dataflow Runtime.  In *Thirteenth ACM International Conference on Embedded Software 2017, EMSOFT'17*, Seoul, South Korea, October 2017.

[C9]  Manuel Selva, *Lionel Morel*, and Kevin Marquet.  numap: A portable library for low level memory profiling.  In *2016 International Conference on Embedded Computer Systems: Architectures, Modeling, and Simulation, SAMOS 2016, Samos, Greece, July 18-21, 2016*, 2016.

[C10]  Manuel Selva, *Lionel Morel*, Kevin Marquet, and Stephane Frenot.  A Monitoring System for Runtime Adaptations of Streaming Applications. In *International Conference on Parallel, Distributed and Network-based Processing*, International Conference on Parallel, Distributed and Network-based Processing, Turku, Finland, March 2015.

[C11]  Tewodros Deneke, *Lionel Morel*, Sébastien Lafond, and Johan Lilius.  Integration of Dataflow Components Within a Legacy Video Transcoding Framework. In *2015 IEEE Workshop on Signal Processing Systems, SiPS 2015*, Hangzhou, China, October 2015.

[C12] Manuel Selva, _Lionel Morel_, Kévin Marquet, and Stéphane Frénot. Extending dataflow programs for guaranteed throughput. In _MES '13 - International Workshop on Many-core Embedded Systems_, Proceedings of the First International Workshop on Many-core Embedded Systems, pages 54–57, Tel Aviv, Israel, June 2013. ACM.

[C13] Johan Lilius, Andreas Dahlin, and _Lionel Morel_. Rialto 2.0: A Language for Heterogeneous Computations. In _Distributed, Parallel and Biologically Inspired Systems_, pages 7–18, Brisbane, Australia, September 2010.

[C14] _Lionel Morel_, Jean-Philippe Babau, and Belgacem Ben Hedia. Formal modelling framework of data acquisition software using a synchronous approach for timing analysis. In _30th IFAC Workshop on Real-Time Programming and 4th International Workshop on Real-Time Software (WRTP/RTS'09)_, pages 1–8, Mrągowo, Poland, October 2009.

[C15] Firas Alhalabi, Narkoy Batouma, Mathieu Maranzana, _Lionel Morel_, and Jean-Louis Sourrouille. Centralized vs. Decentralized QoS Management policy. In _ICTTA'08_, pages 1–6, Damas, Syria, April 2008. IEEE Press.

[C16] Mohammed Hindawi, _Lionel Morel_, Régis Aubry, and Jean-Louis Sourrouille. Description and Implementation of a UML Style Guide. In _Workshop Quality in Modeling_, LNCS 5241, pages 291–302, France, September 2008. Springer Verlag. Version courte.

[C17] Mohammed Hindawi, _Lionel Morel_, Régis Aubry, and Jean-Louis Sourrouille. Description and Implementation of a Style Guide for UML. In Jean-Louis Sourrouille & Al, editor, _Quality in Modeling (co-located with MODELS'08)_, pages 31–45, Toulouse, France, September 2008.

[C18] Jean-Louis Sourrouille, Mohammed Hindawi, _Lionel Morel_, and Régis Aubry. Specifying consistent subsets of UML. In Michal Śmialek, editor, _Educator symposium (co-located with Models'08)_, pages 26–38, Toulouse, France, September 2008. Warsaw University of Technology.

[C19] _Lionel Morel_ and Pontus Boström. Design and Validation of Digital Controllers for Hydraulic Systems. In _Tenth Scandinavian International Conference on Fluid Power_, page 1, Finland, 2007.

[C20] _Lionel Morel_ and Pontus Boström. Design and Implementation of Energy Saving Digital Hydraulic Control System. In _The Tenth Scandinavian International Conference on Fluid Power (SICFP)_, page 1, Finland, 2007.

[C21] _Lionel Morel_ and Louis Mandel. Executable Contracts for Incremental Prototypes of Embedded Systems. In _Formal Foundations of Embedded Software and Component-Based Software Architectures (FESCA)_, pages 121–135, Portugal, 2007.

[C22] _Lionel Morel_, Pontus Boström, and Marina Waldén. Stepwise development of Simulink models using the refinement calculus framework. In _ICTAC'07 - International Colloquium on Theoretical Aspects of Computing_, pages 79–93, Macao, China, September 2007.

[C23] _Lionel Morel_ and Florence Maraninchi. Arrays and contracts for the specification and analysis of regular systems. In _Application of Concurrency to System Design, 2004. ACSD 2004. Proceedings. Fourth International Conference on_, pages 57–66, Hamilton, Canada, June 2004.

[C24] _Lionel Morel_ and Florence Maraninchi. Logical-time contracts for reactive embedded components. In _Euromicro Conference, 2004. Proceedings. 30th_, pages 48–55, Rennes, France, September 2004.

[C25] _Lionel Morel_. Efficient compilation of array iterators for Lustre. In _Synchronous Languages and Applications_, page 1, France, 2002.

# National Conferences

[NC26] Paul Iannetta, *Lionel Morel*, and Laure Gonnord. On optimizing scalar self-rebalancing trees. COMPAS'2020. The COMPAS conference 2020 is being postponed to 2021, due to COVID-19.

[NC27] Trahay Trahay, Manuel Selva, *Lionel Morel*, and Marquet. Numamma: Numa memory analyzer. In *COMPAS 2017 - Conférence d'informatique en Parallélisme, Architecture et Système*, Sophia Antipolis, France, June 2017. Inria, N/A.

[NC28] Kevin Marquet, *Lionel Morel*, Tanguy Risset, and Manuel Selva. CalMAR: Un runtime multi-applicatif pour l'exécution efficace d'applications flot-de-données. In *COMPAS 2017 - Conférence d'informatique en Parallélisme, Architecture et Système*, Sophia Antipolis, France, June 2017. Inria, N/A.

[NC29] Manuel Selva, *Lionel Morel*, Kevin Marquet, and Stéphane Frénot. Une Bibliothèque Portable de Profilage Mémoire Bas-Niveau. In *COMPAS 2016 - Conférence d'informatique en Parallélisme, Architecture et Système*, Lorient, France, June 2016. Inria, N/A.

[NC30] Manuel Selva, *Lionel Morel*, Kevin Marquet, and Stéphane Frénot. A QoS Monitoring System for Dataflow Programs. In *COMPAS 2013 - Conférence d'informatique en Parallélisme, Architecture et Système*, Grenoble, France, January 2013. Inria, N/A.

# Thesis

[T31] *Lionel Morel*. *Exploitation des structures régulières et des spécifications locales pour le développement correct de systèmes réactifs de grande taille*. Theses, Institut National Polytechnique de Grenoble - INPG, March 2005.

[T32] *Lionel Morel*. Compilation Efficace d'Itérateurs de Tableaux Lustre. Master's thesis, Université Joesph Fourier - Grenoble I, 2001.

# Technical and Research Reports

[R33] Paul Iannetta, Laure Gonnord, *Lionel Morel*, and Tomofumi Yuki. Semantic Array Dataflow Analysis. Research Report RR-9232, Inria Grenoble Rhône-Alpes, December 2018.

[R34] Paul Iannetta, Laure Gonnord, *Lionel Morel*, and Tomofumi Yuki. Semantic Array Dataflow Analysis. Research Report RR-9232, Inria Grenoble Rhône-Alpes, December 2018.

[R35] Laure Gonnord, Szabolcs-Marton Bagoly, and *Lionel Morel*. Static Analysis via Horn Encoding from synchronous Dataflow Programs. Technical Report RT-0492, Université Lyon 1 Claude Bernard, LIP & INSA, CITI , October 2017.

[R36] Romain Fontaine, *Lionel Morel*, and Laure Gonnord. Combining dataflow programming and polyhedral optimization, a case study. Technical Report RT-0490, Inria Rhône-Alpes ; CITI - CITI Centre of Innovation in Telecommunications and Integration of services ; LIP - ENS Lyon, July 2017.

[R37] Manuel Selva, *Lionel Morel*, and Kevin Marquet. numap: A Portable Library For Low Level Memory Profiling. Research Report RR-8879, INRIA, March 2016.

[R38] Pontus Boström and *Lionel Morel*. Mode-automata in stateflow/simulink. Technical Report 772, TUCS (Turku University Computer Science), 2006.

[R39] Pontus Boström, Matti Linjama, *Lionel Morel*, Lauri Siivonen, and Marina Waldén. Design and validation of digital controllers for hydraulics systems. Technical Report 800, TUCS (Turku University Computer Science), 2006.

## Seminars

**2018** — Journée thématique sur les Attaques par Injections de Faute — "Towards Fault Analysis of Firmware Updaters".

— Nanoelectronics, Applications, Design & Technology Conference Highlights from CATRENE, PENTA, ECSEL and H2020 projects. ADTC-18, Grenoble — "The emergence of new IoT threats and HealthCare mobile applications".

— Journée Protection du Code et des Données, CEA LIST, Saclay — "POLEN: Combining Polymorphism and Program Encryption to Guarantee Data and Code Confidentiality".

**2017** — Séminaire d'Informatique pour les Etudiants, Scientifiques, et Tous ceux que l'informatique intéresse à l'ENS Lyon (SIESTE)— "Synchronous Languages 101".

**2016** — Journée Langages LIP ENS Lyon— "Synchronous Languages 101", together with Laure Gonnord.

**2015** — Journée Calcul LIP ENS Lyon — "NUMA Profiling for Dynamic Dataflow Applications".

**2014** — Seminar on Compilation and Execution of Streaming Programs — "Runtime Monitoring of Throughput-Constrained Dataflow Programs"

— Regional day on Embedded Systems (SEMBA) — "Runtime Monitoring of Throughput-Constrained Dataflow Programs"

**2013** — Seminar at the Turku University Computer Science Departement — "Dataflow Models of Computations and Languages".

— Presentation to members of GRAME (see `http://www.grame.fr/`) — "Compilation and Execution of Dataflow Programs", together with Kevin Marquet.

**2011** — Seminar at the Turku University Computer Science Departement — "Synchronous Languages".

— Seminar at the Turku University Computer Science Departement — "Building Ambient Systems".

**2010** — Seminar at the CITI Lab — "Java for real-time".

— Seminar at the CITI Lab — "Lustre – a synchronous life".

— Seminar at the CITI Lab — "Formal Modeling of Multi-Task Device Drivers for the Validation of Timing Properties".

**2009** — Workshop Synchron — "Formal Modeling of Multi-Task Device Drivers for the Validation of Timing Properties".

**2007** — Verimag Workshop — "Rialto: A language for heterogeneous computations".

— LIESP Lab Seminar (INSA) — "Executable Contracts for Incremental Prototypes of Embedded Systems".

**2006** — ARTIST Workshop on Models of Computations and Concurrency — "Rialto: A language for heterogeneous computations".

From 2017 to 2020, I have been employed by CEA, with a contractual impossibility to teach. Below is a recap of the teaching activities I pursued, while Associate Professor at the **Computer Science Department, INSA-Lyon, Université de Lyon**, from 2007 to 2017. Further down are teaching activities related to positions I held pre-2007.

# INSA-era

As of 2017, I was in the charge of the following courses:

**2016-17 —** *Computer Organization*, ran together with Christian Wolf, at the Computer Science and Information Technologies Dept, INSA Lyon.

**2015-17 —** *Programming Massively Parallel Processors (GPUs)*, ran together with Christian Wolf, as part of the M2 curriculum at the Computer Science and Information Technologies Dept, INSA Lyon.

**2012-17 —** *Operating Systems*, ran together with Guillaume Salagnac, course which is part of the Information Science & Technologies Semester organized by INSA Lyon for english-speaking students.

Apart from the courses mentioned above, I'm regularly involved (teaching assistant) in courses including:

**2016-17 —** *Compiler Design*, at INSA Lyon, run by Eric Guérin and Florent de Dinechin.
**2013-17 —** *Advanced Operating Systems*, at INSA Lyon, run by Kevin Marquet.
**2016-17 —** *Operating Systems*, at INSA Lyon, run by Guillaume Salagnac.
**2015-17 —** *Computer Organization*, at Université Lyon 1, run by Nicolas Louvet and Laure Gonnord.
**2016-17 —** *Compilation and Program Analysis*, at École Normale Supérieur de Lyon, run by Laure Gonnord.

In the more or less recent past, I've been in charge (lecturer) of the following course:

**2008-13 —** In charge of the *Advanced Operating Systems* course, at INSA Lyon.
**2010-13 —** In charge of the *Embedded Software* course, within the **Master of Science in Embedded Systems, Université Libanaise, Beyrouth, Lebanon**.

# pre-INSA-era (aka "in a previous life")

While a postdoc at Åbo Akademi, Turku, Finland, I was in charge of the following lecture:

**2005-06 —** In charge of the course *Models of Computations and Concurrency*, within the **Master's degree in Embedded Computing, at Åbo Akademi, Turku, Finland**.

I've also been involved in the following courses (lecturer or teaching assistant):

**2007-13 —** Real-Time and Embedded Systrems, INSA Lyon.
**2001-05 —** Computer Organization at Université de Grenoble.
**2001-04 —** Automata and Languages at Université de Grenoble.

## Titles and grants

**2016-17 —** I held a Région Rhône-Alpes Grant, for cooperation with Marco Mattavelli's group at EPFL, Lausanne, Switzerland.

**2011-14 —** Contractor of an industrial bilateral grant with Bull SA, for the PhD work of Manuel Selva.

**2011- ... —** I hold the title of **Docent from Åbo Akademi University**, in Turku, Finland.

## Service

**2015-17 —** PC member for PDP's special session on Energy Efficient Management of Parallel Systems, Platforms and Computations.

**2014-17 —** INSA Lyon's **supervisor for exchange programs with partner universities in Danemark and Finland**.

**2012-17 —** Elected at the CITI Lab's council, acting as **council chairman**.

**2012-17 —** Served on two recruiting committees at INSA Lyon.

**2008-10 —** **Co-supervisor** (with Youakim Badr) of the M1 year *International Master in Information Systems (IMIS), at INSA Lyon*.