

 **Emmanuelle SAILLARD**
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POSTDOC POSITION IN HPC

EDUCATION

- Since 2016 **Postdoc in parallel computing**
Mentor: Jean-Francois Méhaut
Inria, Grenoble, France
- 2015 – 2016 **Postdoc in parallel computing**
Development of dynamic analyses for speculative communication and synchronization optimizations in large scale scientific codes
Mentors: Koushik Sen, Costin Iancu and Wim Lavrijsen
University of California Berkeley – Lawrence Berkeley National Lab, Berkeley, USA
- 2012 – 2015 **PhD student in parallel computing**
Static/dynamic analyses for validation and improvement of multi-models HPC applications launched on hybrid supercomputers with CPUs/GPUs clusters
Mentors: Denis Barthou and Patrick Carribault
CEA – Université de Bordeaux, France
- 2010 – 2012 **Master degree in computer science, with distinction**
From concepts to systems (COSY), speciality: Modelisation, Optimisation and Decision (MODE)
Université de Versailles, France
- 2008 – 2010 **Bachelor of science (Mathematics and computer science)**
Université de Paris Diderot, France
- 2006 – 2008 **Preparatory classes**
“Spéciales” : Mathematics and Physics (MP)
“Supérieures” : Mathematics, Physics and industrial science (MPSI)
Lycée Saint Charles, Orléans, France
- 2006 **High school diploma in science, with distinction**
Lycée Duhamel du Monceau, Pithiviers, France

COMPUTER SCIENCE

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| Parallelism Models | Message Passing Interface (MPI), OpenMP, POSIX Threads, Unified Parallel C (UPC). |
| Programming Languages | C, System programming over LINUX in HPC environment, C++, Bash, Java, PHP. |
| Web application design | HTML and CSS. |
| Methodologies | Version control (GIT), UML modeling. |

PUBLICATIONS

- 2017 **Maximizing Communication Overlap with Dynamic Program Analysis**
Emmanuelle Saillard, Koushik Sen, Wim Lavrijsen, and Costin Iancu (submitted)
- 2016 **PARCOACH Extension for Hybrid Applications with Interprocedural Analysis**
Emmanuelle Saillard, Hugo Brunie, Patrick Carribault and Denis Barthou, [DOI 10.1007/978-3-319-39589-0_11](https://doi.org/10.1007/978-3-319-39589-0_11)
9th Parallel Tools Workshop 2015
- 2015 **Correctness Analysis of MPI-3 Non-Blocking Communications in PARCOACH**
Julien Jaeger, Emmanuelle Saillard, Patrick Carribault and Denis Barthou, [DOI 10.1145/2802658.2802674](https://doi.org/10.1145/2802658.2802674)
EuroMPI 2015
- 2015 **MPI Thread-Level Checking for MPI+OpenMP Applications**
Emmanuelle Saillard, Patrick Carribault and Denis Barthou, [DOI 10.1007/978-3-662-48096-0_3](https://doi.org/10.1007/978-3-662-48096-0_3)
EuroPar 2015
- 2015 **Static/Dynamic Validation of MPI Collective Communications in Multi-Threaded Context**
Emmanuelle Saillard, Patrick Carribault and Denis Barthou, [DOI 10.1145/2688500.2688548](https://doi.org/10.1145/2688500.2688548)
PPoPP 2015

- 2014 **Static Validation of Barriers and Worksharing Constructs in OpenMP Applications**
Emmanuelle Saillard, Patrick Carribault and Denis Barthou DOI [10.1007/978-3-319-11454-5_6](https://doi.org/10.1007/978-3-319-11454-5_6)
IWOMP 2014.
- 2014 **PARCOACH: Combining Static and Dynamic Validation of MPI Collective Communications**
Emmanuelle Saillard, Patrick Carribault and Denis Barthou, DOI [10.1177/1094342014552204](https://doi.org/10.1177/1094342014552204)
IJHPCA 2014.
- 2013 **Combining Static and Dynamic Validation of MPI Collective Communications**
Emmanuelle Saillard, Patrick Carribault and Denis Barthou DOI [10.1145/2488551.2488555](https://doi.org/10.1145/2488551.2488555)
EuroMPI 2013

TEACHING

MASTER 2 MIHPS (UVSQ-CENTRALE)	Course title: Advanced compilation: addition of a profiling pass in GCC (plugin) Teacher: Patrick Carribault - Teaching assistant (6h) in 2014
MASTER 1 MIHPS (UVSQ)	Course title: C programming and UNIX environment Teacher: Marc Perache - Teaching assistant (9h) in 2013, 2014 Course title: Parallel optimization techniques (MPI+OpenMP) Teacher: Marc Perache - Teaching assistant (9h) in 2014, 2015

SUPERVISING

INTERNSHIP SUPERVISION	Title: Evaluation of a dynamic analysis for HPC applications validation Master student supervision in 2014 Title: Validation of multi-models HPC applications - Extension of PARCOACH Master student supervision in 2015
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INTERNSHIP

Master internship at CEA (Bruyères-le-Châtel, France) <i>Static validation of parallel programming models</i> Tutor: Patrick Carribault	APRIL 2012 – AUGUST 2012
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Scientific applications mainly rely on the MPI parallel programming model. But the advent of manycore architectures (larger number of cores and lower amount of memory per core) requires the mixing of MPI with a thread based model like OpenMP. Integrating two different programming models inside the same application can be tricky and generates complex bugs – mostly detected during program execution. During this internship, I developed compile-time analyses integrated in the GNU GCC compiler for applications validation. This internship positively confirmed my decision to continue further the work achieved, this was the object of my thesis.

Intern at Exascale Computing Research Lab (Genci, CEA, Intel, UVSQ) (Versailles, France) <i>Automatic detection of HLS variables</i> Tutors: Marc Tchiboukdjian and Patrick Carribault	JUNE 2011 – AUGUST 2011
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With the decreasing amount of memory available per core in current supercomputers it is important to reduce memory footprint of HPC applications. The MPC (Multiprocessor Computing) framework provides an implementation thread-based of MPI 1.3 standard and allows application developers to share common variables between MPI tasks on the same node. This last extension of MPI is called Hierarchical Local Storage (HLS) and was conjointly developed by CEA and the Exascale Computing Research lab. These three months aimed at finding which variables can be HLS with a post mortem study. The internship was decomposed into two phases. First, I recorded all variables memory access and MPI communications, inserting edges between matching MPI communications to build an acyclic graph that highlight all possible executions paths. Secondly, I developed an analysis based on the acyclic graph to identify variables that can use HLS without additionnal synchronizations while detecting where to add synchronizations for the others. This was a good introduction to the HPC field.

MISCELLANEOUS

VOLUNTEERING	Charity shop volunteer at the “ British Red Cross ” to help selecting donations from the public.
HOBBIES	Photography, travelling, reading, running, yoga, cooking.