

Curriculum Vitæ: Arnaud Legrand

Personal Information

Last, First, and Middle Names: Legrand, Arnaud, Régis

Date and Place of Birth: 02-20-1977, Créteil (Val de Marne 94), France

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Education and Professional Experience

- Oct. 2004-... :** Tenured Researcher for the CNRS (CR2) at Laboratoire d'Informatique de Grenoble (formerly known as "Informatique et Distribution" laboratory).
- 2003-2004:** Post-Doctoral Research Associate, École Normale Supérieure de Lyon (France).
- 2000-Dec. 2003:** Ph.D. Computer Science, École Normale Supérieure de Lyon. Laboratoire de l'Informatique du Parallélisme.
Dissertation: *Heterogeneous parallel algorithms and scheduling : static and dynamic approaches*
Advisors: Prof. Olivier BEAUMONT and Prof. Yves ROBERT.
- 1999-2000:** Diplôme d'études approfondies (DEA) in Fundamental Computer Science ("Operating Systems, Networks and Parallel Algorithms" section), École Normale Supérieure de Lyon, France.
Thesis: *Parallel linear algebra kernels: heterogeneous and non-dedicated environments*.
Advisors: Prof. Olivier BEAUMONT and Prof. Yves ROBERT.
- June-July 1999:** Two month internship at University of California, San Diego (USA).
Thesis: *Scheduling Heuristics for Parameter-Sweep Applications on a Grid computing Platform*.
Advisors: Prof. Fran BERMAN and Prof. Henri CASANOVA.
- 1997-2000:** Magistère d'Informatique et de Modélisation (B.S. in Computer Science and Modeling); École Normale Supérieure de Lyon, France.

Awards

In 2004, my PhD Thesis was awarded by an *accessit* to the "Prix de thèse Specif" (SPECIF is the French Society for Education and Research in CS).

Projects I Am Involved In

- SimGrid: a toolkit that provides core functionalities for the simulation of distributed applications in heterogeneous distributed environments. This is a 6 years-old free software project whose specific goal is to facilitate research in the area of distributed and parallel application scheduling on distributed computing platforms ranging from simple network of workstations to Computational Grids. I am one of the main developers (together with Henri Casanova and Martin Quinson) of this project.
- DOCCA: Design and Optimization of Collaborative Computing Architecture, a 3 year ANR grant for young researchers (2007-2010). This is a joint project with Corinne Touati and Florence Perronnin.
- ALPAGE: ALgorithmique des Plates-formes À Grande Échelle, a 3 year ANR grant (2005-2008). This is a joint project with Yves Robert, Anne-Marie Kermarrec, Pierre Freignaud, Olivier Beaumont, and their respective teams.

Selected Publications

International journals

- [1] O. Beaumont, L. Carter, J. Ferrante, A. Legrand, L. Marchal, and Y. Robert. Centralized versus distributed schedulers multiple bag-of-tasks applications. *IEEE Trans. Parallel Distributed Systems*, 2007.
- [2] A. Legrand, L. Marchal, and Y. Robert. Optimizing the steady-state throughput of scatter and reduce operations on heterogeneous platforms. *Journal Parallel and Distributed Computing*, 65(12):1497–1514, 2005.
- [3] O. Beaumont, A. Legrand, L. Marchal, and Y. Robert. Steady-state scheduling on heterogeneous clusters. *Int. J. of Foundations of Computer Science*, 16(2):163–194, 2005.
- [4] O. Beaumont, A. Legrand, L. Marchal, and Y. Robert. Pipelining broadcasts on heterogeneous platforms. *IEEE Trans. Parallel Distributed Systems*, 16(4):300–313, 4 2005.
- [5] O. Beaumont, H. Casanova, A. Legrand, Y. Robert, and Y. Yang. Scheduling divisible loads on star and tree networks: Results and open problems. *IEEE Trans. Parallel Distributed Systems*, 16(3):207–218, 2005.
- [6] A. Legrand, H. Renard, Y. Robert, and F. Vivien. Mapping and load-balancing iterative computations on heterogeneous clusters with shared links. *IEEE Trans. Parallel Distributed Systems*, 15(6):546–558, 2004.
- [7] C. Banino, O. Beaumont, L. Carter, J. Ferrante, A. Legrand, and Y. Robert. Scheduling strategies for master-slave tasking on heterogeneous processor platforms. *IEEE Trans. Parallel Distributed Systems*, 15(4):319–330, 2004.
- [8] O. Beaumont, A. Legrand, and Y. Robert. Scheduling divisible workloads on heterogeneous platforms. *Parallel Computing*, 29:1121–1152, 2003.
- [9] O. Beaumont, A. Legrand, and Y. Robert. The master-slave paradigm with heterogeneous processors. *IEEE Trans. Parallel Distributed Systems*, 14(9):897–908, 2003.

Refereed Conference and Workshop Proceedings

- [10] H. Casanova, A. Legrand, and M. Quinson. Simgrid: a generic framework for large-scale distributed experiments. In *Proceedings of the 10th Conference on Computer Modeling and Simulation (EuroSim'08)*, 2008.
- [11] A. Legrand and C. Touati. Non-cooperative scheduling of multiple bag-of-task applications. In *Proceedings of the 25th Conference on Computer Communications (INFOCOM'07)*, Alaska, USA, May 2007.
- [12] A. Legrand, A. Su, and F. Vivien. Minimizing the stretch when scheduling flows of biological requests. In *Symposium on Parallelism in Algorithms and Architectures SPAA'2006*. ACM Press, 2006.
- [13] A. Legrand, M. Quinson, K. Fujiwara, and H. Casanova. The simgrid project - simulation and deployment of distributed applications. In *Proceedings of the IEEE International Symposium on High Performance Distributed Computing (HPDC-15)*, pages 385–386. IEEE Computer Society Press, 2006.
- [14] O. Beaumont, L. Carter, J. Ferrante, A. Legrand, L. Marchal, and Y. Robert. Centralized versus distributed schedulers multiple bag-of-task applications. In *International Parallel and Distributed Processing Symposium IPDPS'2006*. IEEE Computer Society Press, 2006.
- [15] A. Legrand, A. Su, and F. Vivien. Off-line scheduling of divisible requests on an heterogeneous collection of databanks. In *Proceedings of the 14th Heterogeneous Computing Workshop*, Denver, Colorado, USA, Apr. 2005. IEEE Computer Society Press.
- [16] O. Beaumont, A. Legrand, L. Marchal, and Y. Robert. Independent and divisible tasks scheduling on heterogeneous star-shaped platforms with limited memory. In *PDP'2005, 13th Euromicro Workshop on Parallel, Distributed and Network-Based Processing*, pages 179–186. IEEE Computer Society Press, 2005.
- [17] H. Casanova, A. Legrand, and L. Marchal. Scheduling distributed applications: the simgrid simulation framework. In *Proceedings of the Third IEEE International Symposium on Cluster Computing and the Grid (CCGrid'03)*. IEEE Computer Society Press, May 2003.
- [18] H. Casanova, A. Legrand, D. Zagorodnov, and F. Berman. Heuristics for scheduling parameter sweep applications in grid environments. In *Heterogeneous Computing Workshop*, pages 349–363, 2000.