

# Cédric AUGONNET

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French nationality  
11/04/1985 (Paris, 12<sup>th</sup>).



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## Educational background

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- 2011–now** System Software Engineer at NVIDIA in the Tesla Software Team, working on the design of HPC-related features in CUDA.
- 2008–2011** PhD in Computer Science – Scheduling Tasks over Multicore machines enhanced with Accelerators: a Runtime System’s Perspective under the direction of Raymond Namyst and Samuel Thibault.
- 2007–2008** Second year of Master at the University of Bordeaux 1, Operating systems and Networking (with high honors, Rank #1)
- 2006–2007** First year of Master at the Vrije Universiteit in Amsterdam, Master in Parallel and Distributed Computer Systems (ERASMUS) (with honors)
- 2005–2006** Bachelor in Computer Science at the École Normale Supérieure de Lyon (with honors)
- 2003–2005** MPSI and MP\* at the lycée Pothier, Orléans (45)
  - 2003** Baccalauréat (S, European) (with high honors)
- 2000–2003** Scholarship in the English European section at the Lycée Jacques Monod, Saint Jean de Braye (45)

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## Research

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### Research Interests

- The **StarPU** project (a Runtime-System for Scheduling Tasks on Accelerator-Based Machines)
- Low-level Data Management for High-Speed Networking and Accelerators
- High-Performance Computing
- Operating Systems

### Journals and Book Chapters

- 2011 **PEPPHER: Efficient and Productive Usage of Hybrid Computing Systems.** – S. Benkner, S. Pllana, J.-L. Träff, P. Tsigas, U. Dolinsky, C. Augonnet, B. Bachmayer, C. Kessler, D. Moloney, and V. Osipov – IEEE Micro, 31(5):28-41, 2011.
- 2010 **Faster, Cheaper, Better - a Hybridization Methodology to Develop Linear Algebra Software for GPUs** – E. Agullo, C. Augonnet, J. Dongarra, H. Ltaief, R. Namyst, S. Thibault, S. Tomov – GPU Computing Gems, 2010.
- 2010 **StarPU: A Unified Platform for Task Scheduling on Heterogeneous Multi-core Architectures** (extended version) – C. Augonnet, S. Thibault, R. Namyst, and P-A. Wacrenier – In Concurrency and Computation: Practice and Experience, **Euro-Par 2009 best papers issue.**

### Refereed Publications and Workshops

- 2011 **LU factorization for accelerator-based systems.** – E. Agullo, C. Augonnet, J. Dongarra, M. Faverge, J. Langou, H. Ltaief, and S. Tomov. In 9th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 11), Sharm El-Sheikh, Egypt, JUNE 2011 – **(Best Paper Award)**
- 2011 **QR Factorization on a Multicore Node Enhanced with Multiple GPU Accelerators** – E. Agullo, C. Augonnet, J. Dongarra, M. Faverge, H. Ltaief, S. Thibault and S. Tomov. In 25th IEEE International Parallel and Distributed Processing Symposium (IEEE IPDPS 2011), Anchorage, Alaska, USA, 5 2011.
- 2011 **Détection optimale des coins et contours dans des bases d'images volumineuses sur architectures multicœurs hétérogènes.** – S.-A. Mahmoudi, P. Manneback, C. Augonnet and S. Thibault. In 20èmes Rencontres Franco-phones du Parallélisme, Saint-Malo, France, May 2011.
- 2010 **Data-Aware Task Scheduling on Multi-Accelerator based Platforms** – C. Augonnet, J. Clet-Ortega, S. Thibault and R. Namyst – ICPADS'10 – Shanghai, China
- 2009 **Automatic Calibration of Performance Models on Heterogeneous Multicore Architectures** – C. Augonnet, S. Thibault and R. Namyst – HPPC'09 workshop (held in conjunction with EUROPAR'09) – Delft, The Netherlands
- 2009 **StarPU: un support exécutif unifié pour les architectures multicœurs hétérogènes** – C. Augonnet, S. Thibault and R. Namyst – RENPAR'09 – Toulouse, France – **(Best Paper Award)**
- 2009 **StarPU: A Unified Platform for Task Scheduling on Heterogeneous Multi-core Architectures** – C. Augonnet, S. Thibault, R. Namyst and P.A. Wacrenier – EUROPAR'09 – Delft, The Netherlands
- 2009 **Exploiting the Cell/BE architecture with the StarPU unified runtime system** – C. Augonnet, S. Thibault, R. Namyst and M. Nijhuis – SAMOS'09 workshop – Samos, Greece
- 2009 **Mapping and synchronizing streaming applications on Cell processors** – M. Nijhuis, H. Bos, H. Bal and C. Augonnet – HiPEAC'09 – Paphos, Cyprus
- 2008 **A unified runtime system for heterogeneous multicore architectures** – C. Augonnet and R. Namyst – HPPC'08 workshop (held in conjunction with EUROPAR'08) – Las Palmas de Gran Canaria, Spain

### Conferences (Refereed Abstracts)

- 2010 **StarPU: a Runtime System for Scheduling Tasks** – NVIDIA GPU Technology Conference – San Jose, USA
- 2010 **Auto-tuned performance models to improve task scheduling on accelerator-based platforms** – PMAA'10 – University of Basel, Switzerland
- 2009 **StarPU : A Unified Platform for Task Scheduling on Heterogeneous Multicore Architectures** – Workshop on Massively Multiprocessor and Multicore Computers – INRIA Rocquencourt

### Invitations

- 07/2010 (3 weeks) ICL, University of Tennessee Knoxville (UTK), USA
- 05/2010 (1 week) NCSA, University of Illinois Urbana-Champaign (UIUC), USA
- 04/2010 (1 week) ICL, University of Tennessee Knoxville (UTK), USA
- 12/2009 (2 weeks) NCSA, University of Illinois Urbana-Champaign (UIUC), USA
- 04/2009 (2 weeks) Lisbon and Evora Universities, Portugal

### Internships

- 2008 **Master Thesis (6 months)**: Toward efficient runtime systems for heterogeneous multicore machines. Supervised by Raymond Namyst in the LaBRI – INRIA Bordeaux Runtime team.
- 2007 **Research internship (12 weeks)**: Interval-based registration cache for zero-copy protocols on MYRINET EXPRESS. Supervised by Loic Prylli and Patrick Geoffray in Oak Ridge (TN) at MYRICOM INC..
- 2007 **Research project (8 months)**: Porting the Hinch on IBM Cell Processor. Supervised by Henri Bal and Herbert Bos at the Vrije Universiteit in Amsterdam.
- 2006 **Research internship (8 weeks)**: High speed networking optimisation by the use of RDMA techniques. Performed at the LaBRI in Bordeaux (France) in the Runtime team. Supervised by Olivier Aumage and Élisabeth Brunet.

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## Teachings

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- 2010–2011** **Teacher Assistant** Processor Architectures. 2<sup>nd</sup> year at the University of Bordeaux 1 (computer science).
- 2009–2010** **Teacher Assistant** System and Network programming projects. 2<sup>nd</sup> year at the ENSEIRB (computer science).
- 2009–2010** **Teacher Assistant** System programming. 2<sup>nd</sup> year at the ENSEIRB (computer science).
- 2009–2010** **Teacher Assistant** Introduction to Unix. 1<sup>st</sup> year at the ENSEIRB (electronic).
- 2008–2009** **Teacher Assistant** Graph algorithmics. 1<sup>st</sup> year at the ENSEIRB (computer science).
- 2008–2009** **Teacher Assistant** Operating system. 2<sup>nd</sup> year at the ENSEIRB (telecom).
- 2002–2005** **Private lessons:** Mathematics, Physics and English.

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## Software development

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**StarPU** I was the initial developer of the **StarPU** runtime system which provides support for heterogeneous multicore platforms (multicore CPUs, multi-GPU setups and Cell/BE processors). **StarPU** is freely available under LGPL license at <http://runtime.bordeaux.inria.fr/StarPU/>.

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## Technical Skills

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- Basic tools:** Good knowledge of Windows, GNU/Linux(Debian) and LINUX. Use of  $\LaTeX$ .
- Development:** VIM, SVN, CVS, GNU Make, GNU Autotools, GDB, Valgrind...
- Programming:** **Proficient in C, C++, Fortran, Objective CAML, Java, BASH, Perl ...**
- HPC:** Advanced knowledge in parallel programming. pthreads, MPI, and low level programming.
- OS:** System programming, and advanced knowledge of Operating Systems problematics. Some experience with kernel programming, especially in the Linux kernel.
- Accelerators:** CUDA programming. Advanced knowledge of IBM Cell Processor. Various work on runtime system programming for multicore architectures.

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## Languages

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**French:** Native speaker

**English:** Fluent

2003 Cambridge Advanced Exam

2002 Cambridge First Certificate

**German:** Basic skills