

# Adrián Castelló

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## Main skills

- Low and high-level programming languages (C/C++, Java, Python, ...)
- High Performance and Cluster computing (MPI, OpenMP, OmpSs, Lightweight threads)
- GPU computing (OpenACC and CUDA Runtime and Driver APIs)
- Low-level network programming (InfiniBand verbs and TCP/UDP sockets)

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## Education

- Oct 2014 - **PhD. in Computer Science Student**, *Universitat Jaume I, Spain*, Advised by Enrique S. Quintana Ortí and Antonio J. Peña.  
Present Dissertation: “Programming Models for the Lightweight Threads Era”
- Jul 2014 **Master in Advanced Computer Systems (2-year Post-Graduate Diploma, M.Sc. equivalent)**, *Universitat Jaume I, Spain*, Average: 9.19/10.  
Dissertation: Evaluación de prestaciones mediante la aplicación HPL de clusters utilizando rCUDA. Supervised by Dr. Rafael Mayo Gual.
- Sep 2011 **Computer Science Engineer (5 years, B.Sc. + M.Sc. equivalent)**, *Universitat Jaume I, Spain*, Average: 7.89/10.  
Dissertation: Evaluación de presataciones en GPUs. Supervised by Dr. María Isabel Castillo Catalán.
- Feb 2009 **Technical Engineering in Computer Systems**, *Universitat Jaume I, Spain*, Average: 6.80/10.

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## Professional Activity

- Feb 2014 - **Research Assistant**, *HPC&A Group (www.hpca.uji.es) led by Enrique S. Quintana-Ortí*, *Universitat Jaume I, Spain*.  
Present
  - PhD Thesis “Programming Models for the Lightweight Threads Era” development. Advisored Enrique S. Quintana-Ortí and Antonio J. Peña. (Sep 2015 - Present)
  - rCUDA technology ([www.hpca.uji.es/rCUDA](http://www.hpca.uji.es/rCUDA)) development (Feb 2014 - Jul 2015).
- May 2015 - **Research Aide**, *Mathematics and Computer Science Division, PMRS Group led by Dr. Pavan Balaji*, Supervised by Dr. Sangmin Seo, Argonne National Laboratory, Lemont, Illinois, USA.  
Aug 2015
  - OpenMP-to-Argobots code translation. Supervised by Dr. Sangmin Seo.
- Oct 2013 - **Research Assistant**, *GAP Group (www.gap.upv.es) led by José Duato*, *Universitat Politècnica de València, Spain*.  
Jan 2014
  - rCUDA technology ([www.hpca.uji.es/rCUDA](http://www.hpca.uji.es/rCUDA)) development.

- Sep 2011 - **Research Assistant**, *HPC&A Group* ([www.hpca.uji.es](http://www.hpca.uji.es)) *leded by Enrique S. Quintana-Ortí*, Universitat Jaume I, Spain.  
Sep 2013  
○ rCUDA technology ([www.hpca.uji.es/rCUDA](http://www.hpca.uji.es/rCUDA)) development.
- Nov 2011 - **Research Assistant**, *RobInLab Group* ([www.robot.uji.es](http://www.robot.uji.es)) *leded by Ángel del Pobil*,  
Dec 2011 Universitat Jaume I, Spain.  
○ Robotic module development using ROSS.

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## Research Projects

- Sep 2015 - **“Programming Models for the Lightweight Threads Era”**, *PhD Studies advised by Enrique S. Quintana-Ortí and Antonio J. Peña*.  
Present  
○ GLT: A Common API for Lightweight Threads ([/www.hpca.uji.es/GLT](http://www.hpca.uji.es/GLT)).
- Jun 2016 - **“BOLT: A Lightning-Fast OpenMP Implementation”**, *Project leded by the PMRS research group in the MCS division at Argonne National Laboratory*,  
Present [www.mcs.anl.gov/bolt/](http://www.mcs.anl.gov/bolt/).
- Sep 2011 - **“rCUDA technology”**, *Join research between HPC&A research group at Universitat Jaume I de Castelló, Spain and GAP research group at Universitat Politècnica de València*, [www.hpca.uji.es/rCUDA](http://www.hpca.uji.es/rCUDA).  
Jul 2015

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## Awards

- 2015-2018 **Doctoral fellowship FPI Generalitat Valenciana**, *Programa Vali+D*, Personal investigador en formación.
- 2017 **EuroLab-4-HPC cross-site collaboration grant**, *Horizon 2020 project*.

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## Given Seminars

- Aug 2015 **Improving the Performance of OpenMP Using Lightweight Threads**, *A. Castelló*, Argonne National Laboratory, Argone, IL, USA.

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## Publications

### Journal papers

A. Castelló, A. J. Peña, R. Mayo, J. Planas, E. S. Quintana-Ortí, and P. Balaji, “Exploring the interoperability of remote GPGPU virtualization using rCUDA and directive-based programming models,” *The Journal of Supercomputing*, pp. 1–15, 2016.

C. Reaño, F. Silla, A. Castelló, A. J. Peña, R. Mayo, E. S. Quintana-Ortí, and J. Duato, “Improving the User Experience of the rCUDA Remote GPU Virtualization Framework,” *Concurrency and Computation: Practice and Experience (CCPE)*, vol. 27, p. 3746–3770, Sept. 2015.

### Conference papers

A. Castelló, S. Seo, R. Mayo, P. Balaji, E. S. Quintana-Ortí, and A. J. Peña, “GLT: A unified API for lightweight thread libraries,” in *Proceedings of the IEEE International European Conference on Parallel and Distributed Computing*, (Santiago de Compostela, Spain), August 2017.

A. Castelló, S. Seo, R. Mayo, P. Balaji, E. S. Quintana-Ortí, and A. J. Peña, “GLTO: On the adequacy of lightweight thread approaches for OpenMP implementations,”

in *Proceedings of the International Conference on Parallel Processing*, (Bristol, UK), August 2017.

A. Castelló, A. J. Peña, S. Seo, R. Mayo, P. Balaji, and E. S. Quintana-Ortí, “A Review of Lightweight Thread Approaches for High Performance Computing,” in *Proceedings of the IEEE International Conference on Cluster Computing (CLUSTER 2016)*, (Taipei, Taiwan), Sept. 2016.

S. Iserte, F. J. Clemente-Castelló, A. Castelló, R. Mayo, and E. S. Quintana-Ortí, “Enabling GPU Virtualization in Cloud Environments,” in *Proceedings of the 6th International Conference on Cloud Computing and Services Science (CLOSER 2016)*, (Rome, Italy), pp. 249–256, Apr. 2016.

A. Castelló, A. J. Peña, R. Mayo, P. Balaji, and E. S. Quintana-Ortí, “Exploring the Suitability of Remote GPGPU Virtualization for the OpenACC Programming Model Using rCUDA,” in *Proceedings of the IEEE International Conference on Cluster Computing (CLUSTER 2015)*, (Chicago, IL, USA), pp. 92–95, Sept. 2015.

A. Castelló, R. Mayo, J. Planas, and E. S. Quintana-Ortí, “Exploiting Task-Parallelism on GPU Clusters via OmpSs and rCUDA Virtualization,” in *Proceedings of the IEEE International Workshop on Reengineering for Parallelism in Heterogeneous Parallel Platforms (RePara 2015)*, (Helsinki, Finland), Aug. 2015.

A. Castelló, J. Duato, R. Mayo, A. J. Peña, E. S. Quintana-Ortí, V. Roca, and F. Silla, “On the Use of Remote GPUs and Low-Power Processors for the Acceleration of Scientific Applications,” in *The Fourth International Conference on Smart Grids, Green Communications and IT Energy-aware Technologies (ENERGY 2014) (ISBN:978-1-61208-332-2)*, (Chamonix, France), pp. 57–62, Apr. 2014.

C. Reaño, F. Silla, A. J. Peña, G. Shainer, S. Schultz, A. Castelló, E. S. Quintana-Ortí, and J. Duato, “Boosting the Performance of Remote GPU Virtualization Using Infini-Band Connect-IB and PCIe 3.0,” in *Proceedings of the IEEE International Conference on Cluster Computing (CLUSTER 2014)*, (Madrid, Spain), pp. 266–267, Sept. 2014.

S. Iserte, A. Castelló, R. Mayo, E. S. Quintana-Ortí, C. Reaño, J. Prades, F. Silla, and J. Duato, “SLURM Support for Remote GPU Virtualization: Implementation and Performance Study,” in *Proceedings of the International Symposium on Computer Architecture and High Performance Computing (SBAC-PAD 2014)*, (Paris, France), pp. 318–325, Oct. 2014.

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## Participation in Scientific Committees

### Organizing Committee

2017 **AsHES**, *7th International Workshop on Accelerators and Hybrid Exascale Systems*, Orlando (US), May 2017. Web Chair.

### Program Committee

2017 **CLUSTER**, *19th IEEE Cluster*, Hawaii (US), Sept 2017. Track: Application, Algorithms, and Libraries.

### Journal reviewer

Oct 2015 - **Journal of Software Engineering: Theories and Practices**, Reviewer.

Present

#### External reviewer

- 2017 **CLUSTER**, *19th IEEE Cluster*, Hawaii (US), Sept 2017. Subreviewer.  
2016 **WACCPD**, *Third Workshop on Accelerator Programming Using Directives*, Subreviewer.  
2014 **HeteroPar**, *International Workshop on Algorithms, Models and Tools for Parallel Computing on Heterogeneous Platforms*, Subreviewer.

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#### Teaching

- 2016-2017 **1004 Estructura de Computadores**, *Universitat Jaume I*, Laboratory.  
2016-2017 **1018 Administración de Sistemas Operativos**, *Universitat Jaume I*, Laboratory.  
2017 **MOOC: Aprende a programar en C desde cero**, *Universitat Jaume I*, On-line course.

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#### Courses and Summer Schools

- Jul 2016 **Advanced Computer Architecture and Compilation for High-performance and Embeded Systems**, *ACACES*, Organized by HIPEAC, Fiuggi, Italia.  
Jun 2016 **International Summer School on HPC Challenges in Computation Science, OpenMP and MPI Programming Models**, Organized by PRACE, XSEDE, AICS and Compute Canada, Ljubljana, Slovenia.  
Nov 2015 **Parallel Programming, OpenMP and OmpSs Programming Models**, PATC @ BSC, Organized by PRACE and BSC, Barcelona, Spain.  
Jul 2015 **Parallel Programming with MPI, Introduction and Advanced Concepts of MPI**, Taught by Pavan Balaji, Rajeev Thakur, Ken Raffenetti, Antonio Peña and Min Si. Argonne National Laboratory, Lemont, IL (USA)  
May 2013 **Introduction to Parallel Programming, Using CUDA to Harness the Power of GPUs**, UDACITY (www.udacity.com), Taught by David Luebke and John Owens.  
Jul 2012 **Programming and tUning Massively Parallel Systems, PUMPS**, Taught by Wen-mei W. Hwu and David B. Kirk, BSC and UPC, Barcelona, Spain.

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#### Languages

Spanish **Native**

English **FCE(B2)**

German **A2**

*University of Cambridge. 2014*

*Official Language School of Castellón, Spain. 2013*