Research Curriculum Vitae
April 2016

Name: Ramón Doallo Biempica
Research Group: Computer Architecture Research Group (http://gac.udc.es)
Department: Departamento de Electrónica y Sistemas
Faculty: Facultad de Informática **University**: Universidad de A Coruña, 15071 A Coruña, Spain
Phone: +34-981167000, **Fax**: +34-981167160
E-Mail doallo@udc.es
Orcid: 0000-0002-6011-3387 **ResearchID:** P-5897-2014
Personal web page: http://gac.udc.es/~doallo/

SUMMARY

Ramón Doallo, Ph.D in Physics (Univ. Santiago de Compostela) is a **Full Professor** and **Head of the Computer Architecture Research Group** at University of A Coruña. He has 28 years of experience in research and development in the area of High Performance Computing (HPC), covering a wide range of topics such as compilers and programming languages for HPC, parallel and distributed algorithms and applications, cloud computing, Big Data processing, processor architecture, computer graphics, and distributed Geographic Information Systems. He has published more than 200 technical papers on these topics.

He has participated in 118 research actions (projects, research networks, contracts …) funded by national and international agencies and by public institutions and private enterprises, being the coordinator on 78 of them. He is co-founder of the spin-off Torus Software Solutions devoted to high performance communications.

He has been member of the Program Committee or external reviewer in several yearly-celebrated international HPC workshops and conferences. He has also served as Guest Editor of Concurrency and Computation: Practice and Experience, Journal of Parallel and Distributed Computing, and Microprocessors and Microsystems. Currently he is serving as Head of the International Doctoral School of the University of A Coruña.

1. EDUCATION

- **Ph.D** in Physics, April 1992, Universidad de Santiago de Compostela, Spain.
- **Graduate** in Physics, June 1987, Universidad de Santiago de Compostela, Spain.

2. CURRENT POSITION

- **Head of the International Doctoral School** of University of A Coruña. Since January 2012.
- **Full Professor** (Catedrático), Departamento de Electrónica y Sistemas, Universidad de A Coruña, Spain, since 1999.
- **Head of Computer Architecture Research Group**, Universidad de A Coruña, Spain, since 1994.

3. PROFESSIONAL EXPERIENCE

- **Director of the Department of Electronics and Systems** (1999-2003), Universidad de A Coruña, Spain
- **Coordinator of the University of A Coruña with the Galicia Supercomputing Center** (position equivalent to Director of Department) (1993-1999), Vice-Rectorate for Research, Universidad de A Coruña, Spain.
- **Associate Professor** (1994-1999), Departamento de Electrónica y Sistemas, Universidad de A Coruña, Spain.
- **Assistant Professor** (1990-1994), Departamento de Electrónica y Sistemas, Universidad de A Coruña, Spain.
- **FPI Grant** (young researcher grant, funded by the Ministry of Education of Spain, 1988-1990), Departmento de Electrónica y Computación, Universidad de Santiago de Compostela, Spain.

4. SELECTED PUBLICATIONS (LAST 5 YEARS)

- All Journal publications listed in SCI JCR 2014
- All conference publications ranked "A" in the CORE list (2013 Ranking of ICT Conferences, http://www.core.edu.au)

1. Jacobo Lobeiras, Margarita Amor, Ramon Doallo. Designing Efficient Index-Digit Algorithms for CUDA GPU Architectures. IEEE Trans. Parallel Distrib. Syst. 27(5): 1331-1343, 2016.
2. Roberto R. Expósito, Guillermo L. Taboada, Sabela Ramos, Juan Touriño, Ramón Doallo: Performance Evaluation of Data-Intensive Computing Applications on a Public IaaS Cloud. Comput. J. 59(3): 287-307, 2016.
3. David R. Penas, Julio R. Banga, Patricia González, Ramon Doallo. Enhanced parallel Differential Evolution algorithm for problems in computational systems biology. Appl. Soft Comput. 33: 86-99, 2015.
4. Jorge F. Fabeiro, Diego Andrade, Basilio B. Fraguela, Ramón Doallo: Automatic Generation of Optimized OpenCL Codes Using OCLoptimizer. Comput. J. 58(11): 3057-3073, 2015.
5. Roberto R. Expósito, Guillermo L. Taboada, Sabela Ramos, Juan Touriño, Ramon Doallo: Low-latency Java communication devices on RDMA-enabled networks. Concurrency and Computation: Practice and Experience 27(17): 4852-4879, 2015.
6. Jacobo Lobeiras, Margarita Amor, Ramon Doallo: BPLG: A Tuned Butterfly Processing Library for GPU Architectures. International Journal of Parallel Programming 43(6): 1078-1102, 2015.
7. Moisés Viñas, Zeki Bozkus, Basilio B. Fraguela, Diego Andrade, Ramon Doallo: Developing adaptive multi-device applications with the Heterogeneous Programming Library. The Journal of Supercomputing 71(6): 2204-2220, 2015.
8. Roberto R. Expósito, Sabela Ramos, Guillermo L. Taboada, Juan Touriño, Ramon Doallo. FastMPJ: a scalable and efficient Java message-passing library. Cluster Computing 17(3): 1031-1050, 2014.
9. Ramon Doallo, Oscar G. Plata: Multicore cache hierarchies: design and programmability issues. Concurrency and Computation: Practice and Experience 26(6): 1326-1327, 2014.
10. Dyer Rolán, Diego Andrade, Basilio B. Fraguela, Ramon Doallo. A fine-grained thread-aware management policy for shared caches. Concurrency and Computation: Practice and Experience 26(6): 1355-1374, 2014.
11. Diego Darriba, Guillermo L. Taboada, Ramon Doallo, David Posada: High-performance computing selection of models of DNA substitution for multicore clusters. IJHPCA 28(1): 112-125, 2014.
12. Diego Andrade, Basilio B. Fraguela, Ramon Doallo: Address independent estimation of the boundaries of cache performance. Microprocessors and Microsystems - Embedded Hardware Design 38(2): 137-151, 2014.
13. S. Ramos, G. L. Taboada, R. R. Expósito, Juan Touriño, Ramon Doallo: Design of Scalable Java Communication Middleware for Multi-Core Systems. Comput. J. 56(2): 214-228, 2013.
14. Margarita Amor, Ramon Doallo, Basilio B. Fraguela, José R. Herrero, Enrique S. Quintana-Ortí, Robert Strzodka: Graphics processing unit computing and exploitation of hardware accelerators. Concurrency and Computation: Practice and Experience 25(8): 1104-1106, 2013.
15. M. Viñas, Jacobo Lobeiras, Basilio B. Fraguela, Manuel Arenaz, Margarita Amor, José A. García, Manuel J. Castro, Ramon Doallo: A multi-GPU shallow-water simulation with transport of contaminants. Concurrency and Computation: Practice and Experience 25(8): 1153-1169, 2013.
16. Roberto R. Expósito, Guillermo L. Taboada, Sabela Ramos, Juan Touriño, Ramon Doallo: General-purpose computation on GPUs for high performance cloud computing. Concurrency and Computation: Practice and Experience 25(12): 1628-1642, 2013.
17. Juan Porta, Jorge Parapar, Paula García, Gracia Fernández, Juan Touriño, Ramon Doallo, Francisco Ónega, Inés Santé, Pablo Díaz, David Miranda-Barrós, Rafael Crecente: Web-GIS tool for the management of rural land markets - Application to the Land Bank of Galicia (NWSpain). Earth Science Informatics 6(4): 209-226, 2013.
18. Roberto R. Expósito, Guillermo L. Taboada, Sabela Ramos, Juan Touriño, Ramon Doallo: Performance analysis of HPC applications in the cloud. Future Generation Comp. Syst. 29(1): 218-229, 2013.
19. Jose Rodrigo Sanjurjo, Margarita Amor, Montserrat Bóo, Ramon Doallo: Parallel Monte Carlo radiosity using scene partitioning. IJHPCA 27(3): 318-334, 2013.
20. Gabriel Rodríguez, María J. Martín, Patricia González, Juan Touriño, Ramon Doallo: Compiler-Assisted Checkpointing of Parallel Codes: The Cetus and LLVM Experience. International Journal of Parallel Programming 41(6): 782-805, 2013.
21. Carlos Teijeiro, Guillermo L. Taboada, Juan Touriño, Ramon Doallo, José Carlos Mouriño, Damián A. Mallón,

Brian Wibecan: Design and Implementation of an Extended Collectives Library for Unified Parallel C. J. Comput. Sci. Technol. 28(1): 72-89, 2013.

22. Diego Andrade, Basilio B. Fraguela, Ramon Doallo: Accurate prediction of the behavior of multithreaded applications in shared caches. Parallel Computing 39(1): 36-57, 2013.
23. Guillermo L. Taboada, Sabela Ramos, Roberto R. Expósito, Juan Touriño, Ramon Doallo: Java in the High Performance Computing arena: Research, practice and experience. Sci. Comput. Program. 78(5): 425-444, 2013.
24. Jacobo Lobeiras, Margarita Amor, Ramon Doallo: Influence of memory access patterns to small-scale FFT performance. The Journal of Supercomputing 64(1): 120-131, 2013.
25. Juan Porta, Jorge Parapar, Ramon Doallo, Francisco F. Rivera, Inés Santé, Rafael Crecente: High performance genetic algorithm for land use planning. Computers, Environment and Urban Systems 37: 45-58, 2013.
26. Juan Porta, Jorge Parapar, Ramon Doallo, Vasco Barbosa, Inés Santé, Rafael Crecente, Carlos Díaz: A population-based iterated greedy algorithm for the delimitation and zoning of rural settlements. Computers, Environment and Urban Systems 39: 12-26, 2013.
27. R.R. Expósito, G.L. Taboada, S. Ramos, J. Touriño, R. Doallo. Evaluation of Messaging Middleware for High-Performance Cloud Computing. Personal and Ubiquitous Computing 17(8): 1709-1719, 2013.
28. C. Teijeiro, G.L. Taboada, J. Touriño, R. Doallo, J.C. Mouriño, D.A. Mallón, B. Wibecan. Design and Implementation of an Extended Collectives Library for Unified Parallel C. Journal of Computer Science and Technology 28(1): 72-89, 2013.
29. D. Rolán, B.B. Fraguela, R. Doallo. Adaptive Set-Granular Cooperative Caching. *18th International Symposium on High Performance Computer Architecture, HPCA2012,* pp. 213-224*,* 2012.
30. D. Andrade, B.B. Fraguela, R. Doallo. Static Analysis of the Worst-case Memory Performance for Irregular Codes with Indirections. *ACM Transactions on Architecture and Code Optimization*, 9(3):20:1-20:32, 2012.
31. D. Darriba, G.L. Taboada, R. Doallo, D. Posada. jModelTest2: More Models, New Heuristics and Parallel Computing. *Nature Methods*, 9(8):772, 2012.
32. J. González-Domínguez, M.J. Martín, G.L. Taboada, J. Touriño, R. Doallo, D.A. Mallón, B. Wibecan. UPCBLAS: A Library for Parallel Matrix Computations in Unified Parallel C. *Concurrency and Computation: Practice and Experience* , 24(14):1645-1667, 2012.
33. R. Doallo, M. Amor, B.B. Fraguela. Exploitation of Hardware Accelerators (Guest Editorial). *Microprocessors and Microsystems* 36(2):63-64*,* 2012.
34. J.R. Sanjurjo, M. Amor, M. Bóo, R. Doallo. High-performance Monte Carlo Radiosity on GPU based on Scene Partitioning. *Microprocessors and Microsystems* 36(2):88-95*,* 2012.
35. R.R. Expósito, G.L. Taboada, J. Touriño, R. Doallo. Design of Scalable Java Message-Passing Communications over Infiniband. *Journal of Supercomputing* 61(1):141-165*,* 2012.
36. G.L. Taboada, J. Touriño, R. Doallo. F-MPJ: Scalable Java Message-Passing Communications on Parallel Systems. *Journal of Supercomputing* 60(1):117-140, 2012.
37. R. Doallo, B.B. Fraguela. Accelerators for High-Performance Computing (Guest Editorial). *Journal of Parallel and Distributed Computing,* 72(9):1055-1056, 2012
38. G.L. Taboada, J. Touriño, R. Doallo, A. Shafi, M. Baker, B. Carpenter. Device Level Communication Libraries for High Performance Computing in Java. *Concurrency and Computation: Practice and Experience,* 23(18): 2382-2403*,* 2011.
39. Diego Darriba, Guillermo L. Taboada, Ramon Doallo, David Posada. ProtTest 3: fast selection of best-fit models of protein evolution. Bioinformatics 27(8): 1164-1165, 2011.

5. RECENT RESEARCH GRANTS AND CONTRACTS (LAST 5 YEARS)

ROLE: PI (PRINCIPAL INVESTIGATOR), CO-PI (CO-PRINCIPAL INVESTIGATOR), MEMBER

5.1. INTERNATIONAL RESEARCH GRANTS

1. High Performance Communications for Financial Services and Big Data (European Union, Horizon 2020, Call H2020-2014-SMEINST-1-2014 (SME Instrument – Phase 1)). November 2014-April 2015. Role: Member.
2. Factories of the Future Resources, Technology, Infrastructure and Services for Simulation and Modelling (FORTISSIMO), Experiment "Improved and Optimized Design of High Temperature Exhaust Gases Concentric Chimneys" (European Union, 7th Framework Programme, Call FP7-2013-NMP-ICT-FOF, ref. 609029). October 2014-October 2016. Role: Member.
3. Network for Sustainable Ultrascale Computing (NESUS) (European Union, COST Action IC1305). March 2014-March 2018. Role: Member.
4. High-Performance Embedded Architectures and Compilers Network of Excellence, HiPEAC-3 NoE (European Union FP7, ICT-287759). February 2008-January 2012. Role: Member.

5.2. NATIONAL RESEARCH GRANTS

5. New Challenges for High Performance Computing: from Architectures to Applications (Ministry of Economy and Competitiveness of Spain, TIN2013-42148-P). January 2014-December 2017). Role: Co-PI.
6. Architectures, Systems and Tools for High Performance Computing (Ministry of Science and Innovation of Spain, TIN2010-16735). Nov. 2010-Oct. 2013. Role: PI.
7. Geographical Information Systems for Urban Planning and Land Management using Optimization Techniques on Multicore Processors (Galician Regional Government, Spain, 08SIN011291PR). November 2008-October 2011. Role: PI.
8. Hardware Systems Exploitation for Real-Time Image Synthesis (Galician Regional Government, Spain, INCITE08TIC001206PR). August 2008-August 2011. Role: Member.

5.3. PRIVATE R&D CONTRACTS

15. Development new functionalities for SITEGAL system, funded by AMTEGA (Agency for the Technological Modernization of Galicia). October 2013-October 2016. Role: Co-PI.
16. Framework for Big Data on Cloud, funded by Supercomputing Centre of Galicia. October 2014-June 2015. Role: Co-PI.
17. GIS Mobile Application for Meteorological and Oceanographic Prediction about Trajectories on Ocean and Land, funded by Meteogalicia (Ministry of Environment, Territory and Infrastructures of the Galician Government). February 2013-August 2013. Role: Co-PI.
18. HPC4HPT: High Performance Computing for High Performance Trading, funded by Fundación Barrié. July 2011-September 2013. Role: Co-PI.
19. Improving UPC Usability and Performance in Constellation Systems: Implementation/Extension of UPC Libraries, funded by Hewlett-Packard. May 2008-April 2011. Role: PI.

6. PROFESSIONAL SERVICE (SINCE 2010)

6.1. JOURNAL EDITOR

1. *Microprocessors and Microsystems*. Editor of the Special Issue on Exploitation of Hardware Accelerators, 2012
2. *Journal of Parallel and Distributed Computing*. Editor of the Special Issue on Accelerators for High Performance Computing, 2012
3. *Concurrency and Computation: Practice and Experience*. Editor of the Special Issue on Computing with Hardware Accelerators, 2013.
4. *Concurrency and Computation: Practice and Experience*. Editor of the Special Issue on Multicore Cache Hierarchies: Design and Programmability issues, 2014.

6.2. COMPANY START-UP

5. Torus Software Solutions, April 2013. Role: Founding Partner.

7. OTHER ACTIVITIES

7.1. R&D MANAGEMENT (SINCE 2010)

- Project results evaluator for the *European Commission, FP7-ICT-2011-7 Call, Information and Communication Technologies*, (2013-2015).
- Project evaluator for the *European Commission, FP7-ICT-2013-10 Call for proposals, Information and Communication Technologies*, (2013)
- Committee Member for Evaluation and Selection of Projects on the area of Computer Science (Computer Architecture subarea) for the *Ministry of Economy and Competitiveness of Spain (2011, 2014 and 2015)*
- Project evaluator for the *Ministry of Economy and Competitiveness of Spain, Ramón y Cajal Programme* (2012)