Dr. Javier NAVARIDAS PALMA

Lecturer

Advanced Processor Technologies Group
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EDUCATION

CERTIFIED STUDIES	INSTITUTION	DATE
MEng in Computer Science.	The University of the Basque Country.	Jun. 28, 2005.
Master thesis: *Simulation of a message router for parallel systems*. (In Spanish)		
PhD in Computer Engineering.	The University of the Basque Country.	Nov. 13, 2009.
PhD dissertation: *Performance Evaluation of Interconnection Networks using Simulation: Tools and Case Studies*. **Supervisor**: Prof. J. Miguel-Alonso		

ACADEMIC POSITIONS

POSITION	INSTITUTION	DATE
Research Assistant	University of Manchester	Oct. 2009-Nov. 2009.
Research Associate	University of the Basque Country	Jan. 2010-Dec. 2010.
Royal Society Newton International Fellow	University of Manchester	Jan. 2011-Dec. 2012.
Lecturer	University of Manchester	Jan. 2013-

RESEARCH EXPERTISE

AREAS OF INTEREST

- Interconnection networks
- Performance evaluation
- Networks-on-chip
- Large-scale simulation
- High Performance Computing
- Characterization of application traffic
- Design and modelling of parallel and distributed systems

ACADEMIC COLLABORATIONS

- Visiting Student at *IBM Zürich Research Laboratory* from November 2006 to February 2007 under the supervision of *Dr. Wolfgang Denzel* in the Interconnect Fabrics group led by *Ronald P. Luitjen*. The research work carried out during this stay included sharing experience with the simulation tools available from the different partners and developing a deadlock-avoidance scheme for a novel topology.

- Honorary Visiting Research Assistant at the *University of Manchester*, from February 2008 to May 2008, under the supervision of *Dr. Mikel Luján* in the Advanced Processor Technologies group, working in the SpiNNaker project led by *Prof. Steve Furber*. The purpose of this stay was to analyze the theoretical properties of the bespoke interconnection network implemented in SpiNNaker

- Research visit to the Advanced Processor Technologies group of the *University of Manchester*, from October 2010 to December 2010, funded by a *HiPEAC Collaboration Grant*. In this visit the multicast nature of SpiNNaker's interconnection network was studied.

PUBLICATIONS

INTERNATIONAL JOURNALS

1. FJ Ridruejo, J Miguel-Alonso, J **Navaridas**. "Full-System Simulation of Distributed Memory Multicomputers". International Journal on Cluster Computing. Volume 12, Issue 3 (Sept. 2009), pp. 309-322. DOI: 10.1007/s10586-009-0086-y. (JCR-IF: 0.679, citations: 4)

2. J Miguel-Alonso, J **Navaridas**, FJ Ridruejo. "Interconnection network simulation using traces of MPI applications". International Journal of Parallel Programming. Volume 37, Issue 2 (Oct. 2009), pp. 153-174. DOI 10.1007/s10766-008-0089-y. (JCR-IF: 0.554, citations: 15)

3. J **Navaridas**, J Miguel-Alonso, FJ Ridruejo, W Denzel. "Reducing Complexity in Tree-like Computer Interconnection Networks". Parallel Computing. Volume 36, Issue 2-3 (Feb. 2010), pp. 71-85. DOI: 10.1016/j.parco.2009.12.004. (JCR-IF: 1.086, citations: 13)

4. JM Camara, M Moretó, E Vallejo, R Beivide, J Miguel, C Martínez, J **Navaridas**. "Twisted Torus Topologies for Enhanced Interconnection Networks". IEEE Transactions on Parallel and Distributed Systems, Volume 21, Issue 12 (Dec. 2010). pp. 1765-1778. DOI: 10.1109/TPDS.2010.30. (JCR-IF: 1.571, citations: 12)

5. J **Navaridas**, J Miguel-Alonso, JA Pascual and FJ Ridruejo. "Simulating and Evaluating Interconnection Networks with INSEE". Elsevier's Simulation Modelling Practice and Theory. Volume 19, Issue 1 (Jan. 2011), pp. 494-515. DOI: 10.1016/j.simpat.2010.08.008. (JCR-IF: 0.728, citations: 4)

6. J **Navaridas**, J Miguel-Alonso. "Indirect cube: A power-efficient topology for compute clusters". Elsevier's Journal on Optical Switching and Networking. Volume 8, Issue 3 (June 2011), pp. 162-170. DOI: 10.1016/j.osn.2011.03.004. (JCR-IF: 0.962, citations: 1)

7. MM Khan, AD Rast, J **Navaridas**, X Jin, LA Plana, M Lujan, S Temple, C Patterson, D Richards, JV Woods, J Miguel-Alonso, SB Furber. "Event-driven configuration of a neural network CMP system over an homogeneous interconnect fabric". Parallel Computing Volume 37, Issue 8 (August 2011), ISSN 0167-8191, DOI: 10.1016/j.parco.2011.02.003. (JCR-IF: 1.086, citations: 7)

8. AD Rast, J **Navaridas**, X Jin, F Galluppi, LA Plana, J Miguel-Alonso, C Patterson, M Luján, S Furber. "Managing Burstiness and Scalability in Event-Driven Models on the SpiNNaker Neuromimetic System". International Journal of Parallel Programming. In press. (JCR-IF: 0.554, citations: 2)

9. C Patterson, J Garside, E Painkras, S Temple, LA Plana, J **Navaridas**, T Sharp, S Furber "Scalable Communications for a Million-Core Neural Processing Architecture". Journal of Parallel and Distributed Computing. In press. (JCR-IF: 1.078, citations: 1)

INTERNATIONAL CONFERENCES

10. J **Navaridas**, FJ Ridruejo, J Miguel-Alonso. "Evaluation of Interconnection Networks Using Full-System Simulators: Lessons Learned". Proceedings of the 40th Annual Simulation Symposium (ANSS'07). March 26 to 28, 2007. Norfolk, VA, USA. (ERA: C, citations: 9)

11. JM Camara, M Moreto, E Vallejo, R Beivide, J Miguel-Alonso, C Martinez, J **Navaridas**. "Mixed-radix Twisted Torus Interconnection Networks". Proceedings of the 21st IEEE International Parallel & Distributed Processing Symposium (IPDPS'07). March 26 to 30, 2007. Long Beach, CA, USA. (ERA: A, citations: 13)

12. FJ Ridruejo, J Miguel-Alonso, J **Navaridas**. "Concepts and Components of Full-System Simulation of Distributed Memory Parallel Computers". Poster presentation. Proceedings of the 16th IEEE International Symposium on High Performance Distributed Computing (HPDC'07). June 25 to 29, 2007. Monterey, CA, USA. (ERA: A, citations: 2)

13. FJ Ridruejo, J **Navaridas**, J Miguel-Alonso, C Izu, "Realistic Evaluation of Interconnection Network Performance at High Loads", 8th International Conference on Parallel and Distributed Computing Applications and Technologies (PDCAT'07). December 3 to 6, 2007. Adelaide, Australia. (ERA: B, citations: 8)

14. J **Navaridas**, J Miguel-Alonso, FJ Ridruejo. "On synthesizing workloads emulating MPI applications". The 9th IEEE International Workshop on Parallel and Distributed Scientific and Engineering Computing (PDSEC-08). April 14 to 18, 2008, Miami, Florida, USA. (ERA: N/A, citations: 12)

15. J **Navaridas**, JA Pascual, J Miguel-Alonso. "Effects of Job and Task Placement on the Performance of Parallel Scientific Applications". Proceedings of the 17th Euromicro International Conference on Parallel, Distributed, and Network-Based Processing (PDP'09). February 18 to 20, 2009. Weimar, Germany. (ERA: C, citations: 12)

16. JA Pascual, J **Navaridas**, J Miguel-Alonso. "Effects of Topology-Aware Allocation Policies on Scheduling Performance". 14th Workshop on Job Scheduling Strategies for Parallel Processing. May 29, 2009.Rome, Italy. Lecture Notes in Computer Science Series. Volume 5798 (Oct. 2009), pp. 138-156. Springer Berlin / Heidelberg. DOI: 10.1007/978-3-642-04633-9_8. (ERA: B, citations: 12)

17. J **Navaridas**, M Luján, J Miguel-Alonso, LA Plana, SB Furber. "Understanding the Interconnection Network of SpiNNaker". Proceedings of the 23rd International Conference on Supercomputing (ICS'09), June 8 to 12, 2009, York Town Heights, New York, USA. (ERA: A, citations: 18)

18. J **Navaridas**, J Miguel-Alonso. "Realistic Evaluation of Interconnection Networks Using Synthetic Traffic". 8th International Symposium on Parallel and Distributed Computing. June 30 to July 4 2009. Lisbon, Portugal. (ERA: C, citations: 6)

19. MM Khan, J **Navaridas**, AD Rast, X Jin, LA Plana, M Luján, JV Woods, J Miguel-Alonso, SB Furber. "Event-Driven Configuration of a Neural Network CMP System over a Homogeneous Interconnect Fabric". 8th International Symposium on Parallel and Distributed Computing. June 30 to July 4 2009. Lisbon, Portugal. (ERA: C, citations: 1)

20. J **Navaridas**, LA Plana, J Miguel-Alonso, M Luján, S Furber. "SpiNNaker: Impact of Traffic Locality, Causality and Burstiness on the Performance of the Interconnection Network". Proceedings of the International Conference on Computing Frontiers (CF'10), May 17 to 19, 2010, Bertinoro, Italy. (ERA: N/A , citations: 4)

21. J **Navaridas**, B Khan, S Khan, M Luján. "Reservation-based Network-on-Chip timing models for large-scale architectural simulation". International Symposium on Networks-on-Chip (NOCS'2012), pp. 91-98, May 9-11, 2012, Copenhagen, Denmark. (ERA: N/A, citations:0, Nominated for the Best Paper Award)

22. S Davies, J **Navaridas**, F Galluppi and S Furber. "Population-Based Routing in the SpiNNaker Neuromorphic Architecture". International Joint Conference on Neural Networks (IJCNN 2012), June 10-15, 2012, Brisbane, Australia. (ERA: A, citations: 0)

23. J **Navaridas**, M Luján, LA Plana, J Miguel-Alonso, SB Furber "Analytical Assessment of the Suitability of Multicast Communications for the SpiNNaker Neuromimetic System". IEEE International Conference on High Performance Computing and Communications (HPCC 2012), June 25-27, 2012, Liverpool, United Kingdom. (ERA: B, citations 0)

EXTERNAL REVIEWER

➢ 2007 - 20th Intl. Conf. for High Performance Computing, Networking, Storage and Analysis – SC'07

➢ 2011 - 20th Intl. Conf. on Parallel Architectures and Compilation Techniques – PACT'11

➢ 2011 - IEEE Transactions on Computers

➢ 2012 - Simulation Modelling Practice and Theory

ATTRACTED FUNDING

RESEARCH PROJECTS	BODY	BUDGET
➢ CoI - Advanced analytics for extremely large European databases (AXLE)	EU FP7	€747K
➢ CoI - Interconnection Networks: Practice unites with Theory (INPUT)	EPSRC	£394K

GRANTS AND SMALL FUNDING	FUNDS	DATE
➢ Doctoral grant awarded by the University of the Basque Country.	€52K	Oct. 2005-Sep. 2009
➢ Postdoctoral grant awarded by the University of the Basque Country.	€26K	Jan. 2010-Dec. 2010
➢ HiPEAC Collaboration Grant to visit the University of Manchester.	€5K	Oct. 2010-Dec. 2010

➢ Newton International Fellowship awarded by the Royal Society	£87K	Jan. 2011-Dec. 2012
➢ EPSRC Small Equipment Grant	£17K	Dec. 2012

OTHER MERITS

AWARDS AND OTHER ACHIEVEMENTS

Extraordinary Doctorate award from the University of the Basque Country - Top 16 out of 306 theses

Candidate to the Best Paper award in the NOCS-12 conference

Awarded a Newton International Fellowship (7% success rate)

COMPUTING RESOURCES | **DATES**

Administrator and user of the *APT* group cluster Stella	2012 –
User of the *Mare Nostrum* supercomputer at Barcelona Supercomputing Centre	2006 – 2010
User of the *i2Basque* clusters – Basque Government	2005 – 2010
User of the Intelligent System Group cluster *Kalimero*	2007 – 2010
Administrator and user of the *Computer Architecture and Technology* department clusters	2005 – 2010
Administrator and user of the *PTech* group clusters	2005 – 2009

SOFTWARE DEVELOPMENT

➢ In charge of the development and maintenance of the INSEE simulator and several related tools.

➢ Developed a custom-made simulator for the boot-up process of SpiNNaker

➢ Development of timing modules for the COTSON simulator

➢ Experience with Bash scripting