

Francesc Guim

PhD

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<http://francesc.guim.net> Born in
Reus July 21, 1981

Studies

- 2008 **Space Studies Program 2008 - International Space University.** My attendance was supported to ISU by: **the European Space Agency.**
- Graduated Degree **PhD on Computer Architecture and Technology** (08/2004-05/2008),
Computer Architecture Department (DAC), Technical University of Catalonia (UPC).
– Teaching Period Completed: 20 Credits on High Performance Computing (2004-2005)
– Tutored Research Assignment Period and Thesis Project Completed.
– Advanced Studies Diploma (DEA), June 2006
– Title: “Job-Guided Scheduling Strategies for Multi-Site HPC Infrastructures”
- 2004 – 2006 Seminars offered by the High Performance Group about High Performance Computing, Distributed Systems and Hardware Architecture.
- Undergraduate Degree **Barcelona Engineering Degree in Computer Science (September’1998-June’2004)**,
Barcelona School of Informatics (FIB), Technical University of Catalonia (UPC)
- Sep’2005 **CoreGRID Summer School.** EPFL, Lausanne, Switzerland
- Sep’2005 **Postgraduate courses about Grid Computing and High Performance Parallel Computing.** University of Manchester, Manchester, UK
- Jul’1999 **Course on Robotics.** Robotics Department, PUE, Technical University of Catalonia

Research Activity

- Sep’09 – Present **Intel Corporation**, Barcelona Lab., Spain.
Research in green job scheduling strategies.
Research in multi-site self scheduling techniques.
Hardware Engineer.
- Jul’08 – Present **International Space University**, Barcelona, Spain.
Collaborator in research on Volcanic Activity: Processing of Observation and Remote Sensing Data.
- Sep’03 – Present **Technical University of Catalonia (UPC), Spain** UPC, Spain.
Researcher at the Computer Architecture Department
- Jul’08 – March’09 **Barcelona Supercomputing Center (BSC)**, Barcelona, Spain.
Collaborator in research on Resource Management for HPC Architectures.
- Jul’05 – Jul’08 **Barcelona Supercomputing Center (BSC)**, Barcelona, Spain.
Grid Computing and Clusters Researcher.
- Jul’04 – Jul’05 **CEPBA-IBM Research Institute**, Barcelona, Spain.
Researcher as graduate scholarship holder
- Jun’02 – Jun’03 Research in information systems for the LeanSim simulator, **Statistics Department**, Technical U. of Catalonia.
Simulation Techniques: LeanSim. Prof. Josep Casanovesia
- Oct’00 – May’02 Research collaboration, **Computer Architecture Department**, Technical U. of Catalonia.
Embedded Systems and Linux Kernel optimization. Prof. Marisa Gil

Research Projects

- Sep’06 – Jul’08 **XtreemOS** European Project, <http://www.xtreemos.org>
WP3.3: Application Execution Management

- Apr'06 – Jul'08 **Mare-incognito** Project with IBM under the grant BES-2005-7919, <http://www.bsc.es>
Designing the next generation of the Marenostum Supercomputer.
- Sep'04 – Jul'08 **CoreGRID** Network of Excellence, <http://www.coregrid.net>
Institute on Resource Management and Scheduling
- Mar'04 – Mar'08 **“Red Temática para la coordinación de actividades Middleware en GRID”**,
<http://asds.dacya.ucm.es/GridMiddleware>
- Jul'04 – Dec'06 **HPC-Europa** European Project, <http://www.hpc-europa.org>
JRA2: Single Point of Access
- Sep'03 – Present **eNANOS** Project (BSC internal), <http://www.bsc.es/projects/deepcomputing/grid/enanos>
Grid Resource Management and Scheduling

Professional Experience (no Research)

- Sep'08 – Present **Intel Corporation**, Barcelona Lab., Spain.
Working in the Larrabe project.
Hardware Engineer.
- Mar'00 – Apr'03 Department of Computer Architecture, <http://www.ati.net>
Computer and Communication Department Manager at the ATInet network
- Jun'03 – Jul'04 Computing Laboratory of Computer Science University of UPC,
<http://www.univers.upc.edu>
Developer of the LeanSim general purpose simulator.
- Jun'99 – Aug'99 WorldOnline <http://www.worldonline.com>
Developer of web sites.
- May'99 – Aug'99 RA Interactius <http://www.rainteractius.com>
Developer of web sites.
- Jun'97 – Sep'05 Web Site Developer <http://francesc.guim.net>
Developer of more than 6 enterprise web sites. (For more information see the long CV version)

Teaching Experience

- Sep'09 – present Consultant and Master Project Advisor, Open University of Catalunya (UOC)
Operating System and Processor Architecture
- Sep'07 – Sep'08 Part-time Assistant Professor, Computer Architecture Department (UPC)
Operating System (SO) undergraduate course, Barcelona School of Informatics.
- 2005–2006 Final year project supervision of the students:
– Miquel Ozalla: “The Palantir meta-information system”
– Jordi Castellano: “Dataminig Techniques in the Alvio Workload Simulator”
Barcelona School of Informatics (FIB).
- 2004 Lecturer. Computing Laboratory of the Computer Science Faculty of the UPC
Enterprise Courses *XML Technologies and Data Management*.
- 2001–2004 Lecturer. Teaching, BIT Computer Science Academy
Courses in *XML Technologies and Encryption technologies*.

Current Hot Research Topics

- GPU HPC Processing:
- Architectural GPU Design
 - Memory interconnection in Multi-Many Core Architectures
 - Usage of GPU in large scale HPC systems
 - Usage of GPU in scientific computing
 - Design of Large HPC Systems based on GPU/CPUS heterogeneous systems
 - Using virtual Machines in top of GPUs systems: Uniform Access

High Performance Computing:

- Job Scheduling Strategies
- Local Resource Management Policies
- Co-allocation on clusters and SMP architectures
- Prediction techniques of HPC performance variables.
- Modelization of Resource Sharing in HPC architectures

Grid Computing:

- Brokering Scheduling Policies
- Meta-scheduling and Grid interoperability (meta-brokering)
- Resource management
- Grid standardization
- Non-centralized Job Scheduling Strategies for large infrastructures.
- Prediction Techniques for estimate job runtime variables.

R+D Projects Management

Publications

Refereed
International
Conference and
Workshop
Proceedings

2009

- [26] I. Rodero, **F. Guim**, J. Corbalan, "Broker Selection Strategies in Interoperable Grid Systems" , 36th International Conference on Parallel Processing 2009, Viena
- [25] **F. Guim**, E. Ozalap, E. Chester, A. Sanchez, "Volcano Disaster Risk Reduction: A detailed GAP Analysis and System Architecture for Data Archiving and Distribution" , The 60th International Astronautical Congress, 2009, Corea.
- [24] I. Rodero, **F. Guim**, J. Corbalan, "Evaluation of Coordinated Grid Scheduling Strategies" , The 11th IEEE International Conference on High Performance Computing and Communications, 2009, Corea.
- [23] **F. Guim**, I. Rodero, J. Corbalan, "The resource Usage Aware Backfilling" . Job Scheduling Strategies for Parallel Processing 2009, Rome.
- [22] **F. Guim**, E. Ozalap, Ed Chester, I. Rodero, "A Novel Framework for a unified international system of Volcano Early Warning and Hazard Tracking", International Conference on Recent Advances in Space Technologies , 2009.
- [21] E. Ozalap, **F. Guim**, "A conceptual framework for enhancing the international cooperation in a developing space market Harmonization of International Standards for Space Industry", International Conference on Recent Advances in Space Technologies , 2009.
- [20] **F. Guim**, E. Ozalap, S. Madry, I. Rodero, "A Google Earth Based Distributed Infrastructure to Face Natural Disaster Catastrophes", International Conference on Recent Advances in Space Technologies , 2009.

2008

- [19] I. Rodero, **F. Guim**, J. Corbalan, "Modeling and Evaluating Interoperable Grid Systems", International Grid Interoperability and Interoperation Workshop 2008 (IGIIW 2008) in conjunction with IEEE International Conference on e-Science, Indianapolis, USA, December 2008, pp. 508-515.
- [18] I. Rodero, **F. Guim**, J. Corbalan, "Modeling and Evaluating Interoperable Grid Systems", International Grid Interoperability and Interoperation Workshop 2008 (IGIIW 2008) in conjunction with IEEE International Conference on e-Science, Indianapolis, USA, December 2008, pp. 508-515.
- [17] A. Kertesz, I. Rodero, **F. Guim**, "Meta-Brokering requirements and research directions in state-of-the-art Grid Resource Management", Accepted in CoreGRID Integration Workshop, 2008.
- [16] A. Kertesz, I. Rodero, **F. Guim**, "Meta-Brokering Solutions for Expanding Grid Middleware Limitations", Workshop on Secure, Trusted, Manageable and Controllable Grid Services, in conjunction with Euro-Par, 2008.
- [15] **F. Guim**, J. Corbalan, J. Labarta, "Resource Sharing Usage Aware Resource Selection Policies for Backfilling Strategies", The 2008 High Performance Computing & Simulation Conference (HPCS 2008).

- [14] **F. Guim**, I. Rodero, M. Garcia, J. Corbalan, "The XtreamOS JScheduler: Using Self-Scheduling Techniques in Large Computing Architectures", Workshop on Large-Scale Computing (LASCO'08), co-located in the 2008 USENIX Annual Technical Conference, 2008.

2007

- [13] **F. Guim**, J. Corbalan, J. Labarta, "Prediction based Models for Evaluating Backfilling Scheduling Policies", The 8th International Conference on Parallel and Distributed Computing, Applications and Technologies, Adelaide (Australia), December 2007.
- [12] **F. Guim**, J. Corbalan, J. Labarta, "Modeling the impact of resource sharing in Backfilling Policies using the Alvio Simulator", 5th Annual Meeting of the IEEE International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems, Istanbul, November 2007.
- [11] **F. Guim**, J. Corbalan, J. Labarta, "Job Self-Scheduling Policy for HPC Infrastructures", Job 12th Scheduling Strategies for Parallel Processing, Seattle, June 2007.
- [10] I. Rodero, **F. Guim**, J. Corbalan, J. Labarta, "Design and Implementation of a General-Purpose API of Progress and Performance Indicators", Parallel Computing'07, Julich, September 2007.
- [9] I. Rodero, **F. Guim**, J. Corbalan, L.L. Fong, Y.G. Liu, S.M. Sadjadi, "Looking for an Evolution of Grid Scheduling: Meta-brokering", Coregrid Workshop in Grid Middleware'07, Dresden, June 2007.
- [8] **F. Guim**, I. Rodero, J. Corbalan, J. Labarta, "Towards Uniform and Transparent Access to the Grid Universe Information Using the Palantir", Coregrid Workshop in Grid Middleware'07, Dresden, June 2007.
- [7] A. Kertész, I. Rodero, **F. Guim**, "Data Model for Describing Grid Resource Broker Capabilities", Coregrid Workshop in Grid Middleware'07, Dresden, June 2007.
- [6] **F. Guim**, I. Rodero, J. Corbalan, A. Goyeneche, "The Grid Backfilling: a Multi-Site Scheduling Architecture with Data Mining Prediction Techniques", Coregrid Workshop in Grid Middleware'07, Dresden, June 2007.

2006

- [5] I. Rodero, **F. Guim**, J. Corbalan, J. Labarta, "How the JSDL can Exploit the Parallelism?", 6th IEEE Intl. Symposium on Cluster Computing and the Grid (CCGrid'06), Singapore, May 2006.
- [4] I. Rodero, **F. Guim**, J. Corbalan, J. Labarta, A. Oleiksak, K. Kurowski, J. Nabrzyski, "Integration of the eNANOS Execution Framework with GRMS for Grid Purposes", CoreGRID Integration Workshop, Krakow, Poland, October 2006.
- [3] **F. Guim**, I. Rodero, J. Corbalan, J. Labarta, A. Oleiksak, K. Kurowski, J. Nabrzyski, "Integrating the Palantir Grid Meta-Information System with GRMS", CoreGRID Integration Workshop, Krakow, Poland, October 2006.

2005

- [2] **F. Guim**, Ariel Goyeneche, Julita Corbalan, Jesus Labarta¹, Gabor Terstyansky, Grid computing performance prediction based in historical information. Proceedings of the CoreGRID Integration Workshop, Pisa, Italy, November 2005.
- [1] I. Rodero, **F. Guim**, J. Corbalan, J. Labarta, "eNANOS: Coordinated Scheduling in Grid Environments", Parallel Computing'05, Málaga, Spain, September 2005.

Book Chapters,
Post-Proceedings
with selected
papers

2008

- [5] A. Kertesz, I. Rodero, **F. Guim**, "Data Model for Describing Grid Resource Broker Capabilities", Grid Middleware and Services: Challenges and Solutions, ISBN: 978-0-387-78445-8, Springer-Verlag, August 2008.
- [4] I. Rodero, **F. Guim**, J. Corbalan, L.L. Fong, Y.G. Liu, S.M. Sadjadi, "Looking for an Evolution of Grid Scheduling: Meta-brokering", Grid Middleware and Services: Challenges and Solutions, ISBN: 978-0-387-78445-8, Springer-Verlag, August 2008.
- [3] **F. Guim**, I. Rodero, J. Corbalan, J. Labarta, "Towards Uniform and Transparent Access to the Grid Universe Information Using the Palantir", Grid Middleware and Services: Challenges and Solutions, ISBN: 978-0-387-78445-8, Springer-Verlag, August 2008.

- [2] **F. Guim**, I. Rodero, J. Corbalan, A. Goyeneche, "The Grid Backfilling: a Multi-Site Scheduling Architecture with Data Mining Prediction Techniques", Grid Middleware and Services: Challenges and Solutions, ISBN: 978-0-387-78445-8, Springer-Verlag, August 2008.

2006

- [1] I. Rodero, **F. Guim**, J. Corbalan, J. Labarta, A. Oleksak, K. Kurowski, J. Nabrzyski, "Integration of the eNANOS Execution Framework with GRMS", Achievements in European Research on Grid Systems, CoreGRID Integration Workshop 2006 (Selected Papers), Springer-Verlag, ISBN 978-0-387-72811-7, pp. 25-39, 2008.

Journals

2009

- [5] I. Rodero, **F. Guim**, J. Corbalan, "Broker Selection Strategies Using Aggregated Resource Information" , Future Generation Computer Systems

2007

- [4] **F. Guim**, I. Rodero, J. Corbalan, J. Labarta, A. Oleksak, J. Nabrzyski, "Uniform Job Monitoring in the HPC-Europa Project: Data Model, API and Services", Intl. Journal of Web and Grid Services, 2007.
- [3] A. Goyeneche, **F. Guim**, I. Rodero, G. Terstyansky, J. Corbalan, "Extracting performance hints for Grid Users using data mining techniques: a case study in the NGS", The Mediterranean Journal of Computers and Networks, SPECIAL ISSUE on Data Mining Applications on Supercomputing and Grid Environments, Volume 3, No. 2, ISSN: 1744-2397, pp. 52-61, April 2007.

2006

- [2] I. Rodero, **F. Guim**, J. Corbalan, J. Labarta, A. Oleksak, K. Kurowski, J. Nabrzyski, "Integration of the eNANOS Execution Framework with GRMS", Post-Proceedings of the CoreGRID Integration Workshop 2006, Springer-Verlag, 2007.

2005

- [1] **F. Guim**, I. Rodero, J. Corbalan, J. Labarta, "Portal de acceso a recursos hpc en entornos grid", Boletín RedIRIS 80, 2005.

Technical Reports

2009

- [12] **F. Guim** S. Madry, "Google Earth Based Distributed Infrastructure to Face Natural Disaster Catastrophes", Computer Architecture Department, Technical University of Catalonia and International Space University, UPC-DAC-RR-CAP-2009-11, 2009,
- [11] **VAPOR Team**, "VAPOR - Volcanic Activity: Processing of Observation and Remote Sensing Data", International Space University - SSP08 , 2008.

2008

- [10] I. Rodero, **F. Guim**, J. Corbalan, L. Fong, S.M. Sadjadi, "Evaluation of Broker Selection Strategies", Computer Architecture Department, Technical University of Catalonia, UPC-DAC-RR-CAP-2008-41, 2008.

2007

- [9] A. Kertesz, P. Kacsuk, I. Rodero, **F. Guim**, J. Corbalan, "Meta-Brokering requirements and research directions in state-of-the-art Grid Resource Management", CoreGRID Technical Report TR-0116, Institute on Resource Management and Scheduling, 2007.
- [8] **F. Guim**, J. Corbalan, J. Labarta, "The Internals of the Alvio-Simulator: Simulator of HPC Infrastructures", Computer Architecture Department, Technical University of Catalonia, UPC-DAC-RR-2007-7, 2007.
- [7] I. Rodero, **F. Guim**, J. Corbalan, J. Labarta, A. Oleksak, K. Kurowski, J. Nabrzyski, "Using the eNANOS Low-Level Support in the GRMS Framework", CoreGRID Technical Report Number TR-0079, Institute on Resource Management and Scheduling, 2007.
- [6] A. Kertész, I. Rodero, **F. Guim**, "BPDL: A Data Model for Grid Resource Broker Capabilities", CoreGRID Technical Report TR-0074, Institute on Resource Management and Scheduling, 2007.

2006

- [5] O. Levillain, **F. Guim**, I. Rodero, J. Corbalan, J. Labarta, "Comparison of several grid monitoring tools", Computer Architecture Department, Technical University of Catalonia, UPC-DAC-RR-CAP-2006-22, 2006.

- [4] I. Rodero, **F. Guim**, J. Corbalan, J. Labarta, "Examples of JSDL 1.0 Documents for Parallel Jobs: BSC Use Case", Computer Architecture Department, Technical University of Catalonia, UPC-DAC-RR-CAP-2006-11, 2006.
- [3] I. Rodero, **F. Guim**, J. Corbalan, J. Labarta, "A Proposal for Extending the Job Submission Language (JSDL) Version 1.0 to Support the Parallelism", Computer Architecture Department, Technical University of Catalonia, UPC-DAC-RR-CAP-2006-10, 2006.
- [2] **F. Guim**, J. Corbalan, J. Labarta, "Impact of Qualitative and Quantitative errors of the job runtime estimation in backfilling based scheduling policies", Computer Architecture Department, Technical University of Catalonia, UPC-DAC-RR-2006-44, 2006.

2002

- [1] Marisa Gil, Jose Ignacio Navarro, Xavier Martorell, **Francesc Guim**, Juan Gonzalez, "Traceo de simbolos dinamicos a partir de ltrace", Computer Architecture Department, Technical University of Catalonia, UPC-DAC-2002-16, 2002

Posters

2008

- [5] **VAPOR Team**, "Volcano Hazard Tracking and Disaster Risk Mitigation: A Detailed Gap Analysis from Data Collection to User Implementation ", ISU Symposium International Space University - SSP08 , 2008.
- [4] Dohy Faied, Aurora Sanchez (**behalf of VAPOR Team**), "The VIDA Framework as an Education Tool: Leveraging Volcanology Data for Educational Purposes", European Geosciences Union Conference - SSP08 , 2008.
- [3] Dohy Faied, Aurora Sanchez (**behalf of VAPOR Team**), "Volcano Hazard Tracking and Disaster Risk Mitigation: A Detailed Gap Analysis from Data-Collection to User Implementation", European Geosciences Union Conference - SSP08 , 2008.

2006

- [1] **F. Guim**, I. Rodero, J. Corbalan, J. Labarta, "The palantir grid meta-information system", 7th IEEE/ACM Intl. Conference on Grid Computing (Grid'06), Barcelona, Spain, September 2006.

National Conferences

2006

- [2] I. Rodero, F. Guim, J. Corbalan, J. Labarta, "Extensión of the JSDL for Parallel Jobs", XVII Jornadas de Paralelismo, Albacete, Spain, September 2006.

2005

- [1] **F. Guim**, J. Corbalan, J. Labarta, "Analyzing LoadLeveler historical information for performance prediction", XVI Jornadas de Paralelismo, Granada, Spain, September 2005.

Other Contributions

Contribution in the definition of the "CRISP" EU Project, 2007.

Contribution in the "JSDL SPMD Application Extension, v.1.0", OGF, 2006.

Participation in the JSDL Working Group of the OGF.

Some Technical Computer Skills

programming	C/C++, Java, Perl, Shell script, Ant, Modula-2, Pascal, Delphi, Prolog, Assembler, Basic
OS	Linux (kernel developer), Unix (developer+admin), AIX (developer), IRIX (developer), Solaris (developer), Windows (developer), Embedded (kernel developer)
web technologies	HTML, XHTML, CSS, CGI, Javascript
xml technologies	XML, XSD, XSLT, etc.
web services	Axis/Axis2/secure web services
grid technologies	Globus Toolkit 2/3/4, OGSA, WSRF, Myproxy, Gridsphere, etc.
queueing systems	Loadleveler (developer profile), PBS, OenPBS, SLURM
optimization	Scheduling and optimization techniques

administration	Apache, Tomcat, Axis, DNS, Squid, MS Server
database	MySQL, PostgreSQL, MS SQL Server
scientific	Matlab, Mathematica, SPSS, Witness, Autocad, Powerdraft, Rational Rose
typography	L ^A T _E X, MS Office, OpenOffice, MS Visio, etc.

Awards

Abr 2003 Winner of the 6th award of environmental ideas. Technical University of Catalonia (UPC).
<http://www.upc.es/mediambient>

Languages

Spanish **Native**

Catalan **Native**

English **Proficiency**

Almost one year in Manchester.

Other Information

Wep Page <http://francesc.guim.net/>

Sport I am training in elite level in athletics and duathlons. I'm currently racing in catalan, spanish and international duathlons for the Club Natacio Barcelona. On the other hand, in the Cross Country national league, including some of the International Cross Country Crosses and in the catalan track atheltic league for the ISS-Hospitalet team.

Sport Dedication Usually, i train around 3 hours per day the 7 days per week. My trainer is Manel Pla and the doctors that follow my healthy control are Jordi Composada and Teresa Pomers. Usually i have the year split in three different seasons: Cross Country season, duathlon season and athletic track season. I have the training of all the days of the year planed and i follow a strict control about all information concerning my progress, times and sensations in each of my trainings.

Traveling I love traveling around the world and discovering different cultures and ways of life. I've been in: Paris, Nice, Toulouse, Amsterdam, Lausanne, Geneva, Scotland, Edinburgh, Aberdeen, Glasgow, Nord of Scotland (including Isle of Skye) , Manchester, London, York, Dublin, ,Bologna, Pisa, Milan, Florence, Venice, Rome, Bari, Poznan, Krakow , Prague, Toulouse, Stuttgart, Dresden, Dusseldorf, Munich, Singapore, Seattle (states), Istanbul, Melbourne, Adelaide (Australia)