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Military duty: 2005-2006
Birth date: 14 October 1981
Nationality: Greek

Georgios S. Markomanolis

Curriculum Vitae

Education

12/2009 - 07/2013 **Ph.D. in Computer Science**.
INRIA/École Normale Supérieure de Lyon (INRIA Cordi-S grant), Lyon, France

Topic: Performance evaluation and prediction of parallel applications

2006 - 2009 **M.Sc. Informatics and Tellecommunications**, *Major in Computational Science*.
Department of Informatics and Telecommunications, University of Athens, Greece

Topic: Extrapolation Diffusion method for load balancing on 2-D mesh topology networks

2000-2005 **B.Sc. in Mathematics**, *Major in Informatics*.
Department of Mathematics, University of Ioannina, Greece

Scientific Experience

Senior Engineer **Barcelona Supercomputing Center** (09/2013 - Present)

Performance evaluation and optimization of parallel application with main focus on NMMB model. The performance improvements include code modification, communication optimization, I/O scaling and exploring new technologies such as accelerators.

Engineer **CNRS, Centre de Calcul de l'Institut National de Physique Nucléaire de Physique des Particules** (10/2009 - 12/2009)

Increasing the realism of simulated applications.

Matser student internship **INRIA, Laboratoire de l'Informatique du Parallélisme (LIP), Graal team** (03/2009--08/2009)

Increasing the realism of simulated applications.

Research assistant **Wolfgang Pauli Institute, Vienna, Austria** (3/2008--2/2009)

Participation to thematic program ``Applied Analysis and Fast Computation in Phase Space''.

Research assistant **University of Athens, Department of Informatics and Telecommunications** (7/2006--12/2007)

Participation to subsidised program of European Union ``Pythagoras I'', project: ``Parallel iterative methods for numerical solution of Convection Diffusion equation, with application to atmospheric models''.

Research Interests

Performance evaluation	Monitoring the behavior of parallel scientific applications in order to identify performance issues through the usage of hardware counters
Performance modeling and prediction	Modeling the performance of an application and using simulators for predicting its performance
Benchmarks	Understanding how various benchmarks perform on different HPC architectures
Instrumentation intrusion	Handling different measurement techniques for decreasing the instrumentation overhead
Optimization	Optimize code in order to scale on large clusters
Parallel Computing	Developing parallel scientific applications
Accelerators	Integrate new technologies and porting parallel applications on accelerators
Load Balancing	Study and solve load balancing issues
Big Data	Study various methods to create big data in more efficient way

Parallel Programming

MareNostrum Supercomputer	Expertize on efficient execution of parallel applications with appropriate mapping of processes 09/2013 - Present
Grid'5000 platform	Experience on running parallel programs across multiple clusters 02/2008 - Present
C - MPI	Excellent skills of programming C with MPI library for parallel programs 02/2005 - Present
Fortran - MPI	Excellent skills of programming Fortran with MPI library for parallel programs 03/2010 - Present
C - OpenMP	Very Good skills of programming C with OpenMP and Hybrid programming (MPI with OpenMP) 06/2010 - Present
Performance Evaluation	Very Good skills for evaluating the performance of parallel applications and identifying bottlenecks 12/2009 - Present

Computer skills

Programming	Advanced Level: C, Fortran, Python. Intermediate Level: C++, Java, R, Jython	Scripting	Advanced Level: bash, awk/sed, perl, xml
RDBMS	Advanced Level: MySQL, Firebird	OS	Unix, Linux, Windows
Typesetting	LaTeX	Web	Advanced Level: Html, PHP
Profiling Tools	Advanced Level: TAU, Scalasca, Vampir-Trace, Score-P, MpiP, Extrae, HPCToolkit, SCALEA, PerfSuite, MPE, IPM, PerfExpert	Debugging Tools	Intermediate Level: Valgrind, Strace. Basic Level: DDT
Parallel Programming	Advanced Level: MPI, OpenMP	Benchmarks	NAS Parallel Benchmarks suite, ScaLAPACK, LINPACK

Packages	Advanced Level: Paraver, Matlab, Gnuplot, SimGrid, GNU Scientific Library (GSL), Fastest Fourier Transform in the West (FFTW). Intermediate Level: Mathematica, Visit	Development Tools	Make, SVN, GIT

Professional Activities & Service

Reviewer

SBAC-PAD 2013	International Symposium on Computer Architecture and High Performance Computing	(2013)
Euro-Par 2010	International European Conference on Parallel and Distributed Computing	(2010)

Research Collaborations

Research Associate	Parallel Scientific Computing Laboratory, University of Athens, Department of Informatics, Greece

Invited Talks

February 2012 **Studying the behavior of parallel applications and identifying bottlenecks by using performance analysis tools**

School of computing ``Méthodologie et outils d'optimisation en développement logiciel''

organized by National Institute of Nuclear and Particle Physics (IN2P3), Frejus, France, 9 February 2012

Volunteer Experience

17/11/2013 Duties at ACM SIGHPC booth during SC'13

1-4/09/2009 International Conference on Parallel Computing

École Normale Supérieure de Lyon, Lyon, France

Contributed Talks and Presentations

May 2014 **Optimizing an Earth Science Atmospheric Application with the OmpSs Programming Model**

PRACE Industry and Scientific conference, Barcelona, Spain, 21 May 2014 (to be presented)

March 2014 **Performance Analysis of an Earth Science Application**

University of Athens, Department of Physics, 27 March 2014)

January 2014 **Earth Sciences Applications and Collaborations with CS**

2nd BSC Severo Ochoa Retreat, Centre de Cultura Contemporanía de Barcelona, Barcelona, Spain, 23 January 2014)

December 2013 **PRACE school, PATC Course: Earth Sciences Simulation Environments**

PATC Course: Earth Sciences Simulation Environments, Barcelona, Spain, 12-13 December 2013)

December 2012 **Assessing the Performance of Large MPI Application Instances Through Time-Independent Traces**

Grid'5000 Winter school, Nantes, France)

May 2012 **Studying the behavior of parallel MPI applications**

Avalon, Working Group May 21, 2012, Lyon, France

September 2011 **Assessing the Performance of MPI Applications Through Time-Independent Trace Replay**

PSTI 2011 Second International Workshop on Parallel Software Tools and Tool Infrastructures September 13, 2011, Taipei, Taiwan

September 2009 **High Performance Profiling Tools**

Graal Working Group September 7, 2009, Lyon, France

Teaching & Tutorship Experience

2005--2007 **Teaching Assistant**, *Numerical Analysis*.
University of Athens, Department of Informatics and Telecommunications

2006--2007 **Teaching Assistant**, *Discrete Mathematics*.
University of Athens, Department of Informatics and Telecommunications

2004--2005 **Laboratory Instructor**, *Database Design*.
University of Ioannina, Department of Mathematics

Memberships

Societies

ACM SIGHPC **Member,** *ACM Special Interest Group on High Performance Computing* (2011--now)

ACM SIGMETRICS **Member,** *ACM Special Interest Group on Measurement and Evaluation* (2012--now)

Scientific Schools

February 2014 **13TH VI-HPS Tuning Workshop**
10-14 February, 2014, Barcelona, Spain

October 2013 **PRACE, Parallel Programming Workshop**
14-18 October, 2013, Barcelona, Spain

June 2013 **2nd SimGrid Sprint Code**
5-8 June, 2013, Lyon, France

June 2012 **2nd SimGrid Users' Days**
13-15 June, 2012, Lyon, France

April 2011 **Grid'5000 Spring School 2011**
April 18-21, 2011, Reims, France

April 2010 **Grid'5000 Spring School 20120**
April 6-9, 2010, Lille, France

February 2009 **Petascale Computing Winter School**
Parternship of Advanced Computing in Europe, Athens, Greece

Training Courses

December 2006 **Advanced Subjects in Grid Technology**.
Greek Research & Technology Network, Greece

October 2006 **Grid Applications**.
Greek Research & Technology Network, Greece

Languages

Greek Native Speaker

English Very good

Cambridge First Certificate in English

French Notions

Publications

(1) G. S. M. Henri Casanova, Frédéric Desprez and F. Suter, ``Simulation of mpi applications with time-independent traces,'' in *Journal, Concurrency and Computation: Practice and Experience*, 2014.

(2) G. S. Markomanolis and N. M. Missirlis, ``Optimum diffusion for load balancing in mesh networks,'' in *Euro-Par (1)*, pp. 230--241, 2010.

(3) G. Markomanolis and F. Suter, ``Time-Independent Trace Acquisition Framework -- A Grid'5000 How-to,'' Rapport Technique RT-0407, INRIA, May 2011. GRID5000.

(4) F. Desprez, G. S. Markomanolis, M. Quinson, and F. Suter, ``Assessing the performance of mpi applications through time-independent trace replay,'' in *ICPP Workshops*, pp. 467--476, 2011.

(5) F. Desprez, G. S. Markomanolis, and F. Suter, ``Improving the accuracy and efficiency of time-independent trace replay,'' in *High Performance Computing, Networking, Storage and Analysis (SCC), 2012 SC Companion*, pp. 446--455, 2012.

(6) P. Bedaride, S. Genaud, A. Degomme, A. Legrand, G. Markomanolis, M. Quinson, L. Stillwell, Mark, F. Suter, and B. Videau, ``Improving Simulations of MPI Applications Using A Hybrid Network Model with Topology and Contention Support,'' Rapport de recherche RR-8300, INRIA, May 2013.

(7) A. D. Paul Bédaride, S. Genaud, A. Legrand, G. S. Markomanolis, M. Quinson, M. Stillwell, F. Suter, and B. Videau, ``Toward better simulation of mpi applications on ethernet/tcp networks,'' in *High Performance Computing, Networking, Storage and Analysis (SCC), 2013 SC Companion*, 2013.

(8) F. Desprez, G. S. Markomanolis, and F. Suter, ``Evaluation of Profiling Tools for the Acquisition of Time Independent Traces,'' Rapport Technique RT-437, INRIA, July 2013.