

Edgar Gabriel

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Professional Experience

- Sept 2011 – present Associate Professor, Department of Computer Science, University of Houston.
- Sept 2011 – present Director of Graduate Studies, Department of Computer Science, University of Houston.
- Sept 2006 – present Director, Parallel Software Technologies Laboratory, Department of Computer Science, University of Houston.
- Sept 2005 – Aug. 2011 Assistant Professor at the University of Houston, Department of Computer Science.
- Sept. 2004 – Aug 2005 Leader of the working group on '*Clusters and Distributed Units*' at the High Performance Computing Center Stuttgart (HLRS), University of Stuttgart, Stuttgart, Germany.
- Oct. 2003 – Oct. 2005 *Adjunct Assistant Professor* in the Department of Computer Science, University of Tennessee, Knoxville, USA.
- Jan. 2003 – Aug.2004: *Senior Research Associate* at the Innovative Computing Laboratory, University of Tennessee, Knoxville, USA.
- Jan. 2001 – Dec. 2002: Leader of the working group '*Parallel and Distributed Systems*' at the High Performance Computing Center Stuttgart (HLRS), University of Stuttgart, Stuttgart, Germany.
- Jan. 1999 – Dec. 2000: Research Associate in the Department for Parallel Computing, Computing Center of the University of Stuttgart (RUS), Stuttgart, Germany.
- Aug. 2000 – Sept. 2000: Internship at *Argonne National Laboratory* in the *Mathematics and Computer Science Division* (MCS).

Education

- June 1998 – May 2002 Dr.-Ing. (equiv. PhD) in Mechanical Engineering, University of Stuttgart. Thesis: "Optimization and Use of a communication library for Metacomputing" (german).
- Sept. 1994 – Apr. 1998 Diploma (equiv. MS.) in Mechanical Engineering, University of Stuttgart, Germany. Major subjects: Control Theory and Applied Computer Science. Master Thesis: "Analysis of efficient parallel equation solvers for usage in a CFD-application" (german).
- Sept. 1992 – Aug. 1994 Pre-Diploma in Mechanical Engineering, University of Stuttgart, Germany.

Honors and Awards

- Academic excellence award, University of Houston, Department of Computer Science, December 2009.
- ISC Award 2004 in the area "Requirements for HPC System Software", International Supercomputer Conference, Heidelberg, Germany, June 23-27 2004. "*Extending the MPI Specification for Process Fault Tolerance on HPC Systems*"
- Winner of the HPC challenge at the Supercomputing Conference 1999 in Portland (USA): *High Performance Computing Award for Transatlantic Metacomputing*
- Best-Paper Award at the High Performance Computing and Networking (HPCN) 2000 conference: Steven Pickles, Fumie Costen, John Brooke, Edgar Gabriel, Matthias Müller, Michael Resch and Steven Ord, *The problems and the solutions of the metacomputing experiment in SC'99, HPCN'2000, Mai, 2000, Amsterdam (The Netherlands)*.

Teaching and Student Learning

COSC 6385: Computer Architecture, graduate course, Spring 2012, Spring 2011, Spring 2010, Fall 2009, Fall 2008, Fall 2007, Fall 2006.

COSC 6374: Parallel Computation, graduate course, Fall 2011, Fall 2010, Fall 2009, Spring 2009, Spring 2008, Spring 2007,

COSC 4397: Parallel Computation, undergraduate course, Spring 2010, Spring 2006

COSC 7364: Advanced Parallel Computation, graduate course, Fall 2009

COSC 3351: Software Design, undergraduate course, Spring 2008

COSC 3361: Numerical Methods I, undergraduate course, Fall 2005 (jointly with Dr. Marc Garbey).

Cluster Computing, University of Stuttgart, Germany, graduate course, Spring 2005.

CS 594: Distributed, Parallel and Practical High Performance Computing Issues, joint course with Dr. Graham E. Fagg, Dr. Felix Wolf and Dr. George Bosilca, University of Tennessee, Knoxville, graduate course, Spring 2004.

Simulation with Supercomputers, joint course with Dr. Michael Resch, University of Stuttgart, graduate course, Spring 2002.

Students Advised

- Mr. Mohamad Chaarawi (PhD) defense: Feb. 2011
Thesis: "Optimizing Performance of Parallel I/O Operations for High Performance Computing".
- Mr. Saber Feki (PhD) defense: Nov. 2010
Thesis: "Runtime Adaptation of High Performance Computing Applications"
- Mr. Sarat Poluri (MS) defense: Nov. 2010
Thesis: "A Recommendation System for the Abstract Data and Communication Library"
- Mr. Anup Jaya Prakash (MS) defense: April 2010
Thesis: "Parallelizing a Graph-Based Image Segmentation Algorithm"
- Mrs. Spoorthy Mareddy (MS) defense: April 2009
Thesis: "Evaluating and Optimizing the Performance of Hierarchical Collective Operations"
- Mr. Kshitij Mehta (MS) defense: April 2009
Thesis: "Exploring Parallel I/O for Multi-threaded Applications using POSIX Threads"
- Mr. Ketan Kulkarni (MS) defense: July 2008
Thesis: "Evaluating Algorithms for Efficient Handling of Shared File Pointers in MPI-IO"
- Mr. Vishwanath Venkatesan (MS) defense: July 2008
Thesis: "Exploring Shared Memory and Hybrid Parallelization Strategies for Image Processing"
- Mr. Shuo Huang (MS) defense: Dec. 2007
Thesis: "Applying Adaptive Software Technologies for Scientific Applications"
- Mr. Suneet Chandok (MS) defense: Dec. 2007
Thesis: "UHIO: Optimizing Collective File-I/O Operations for Open-MPI"
- Mr. Mohamad Chaarawi (MS) defense: Dec. 2006
Thesis: "Optimizations of Group and Communicator Operations in Open-MPI"

Scholarship and Other Creative Contributions

Grants

"CRI: A Heterogeneous Testbed for Exploring Emerging HPC Tools, Programming Languages, and Applications"

Funding Agency: National Science Foundation

Duration: 06/2010 – 06/2013

Amount: 448,000\$

PI: **Gabriel (UH)** *Co-PIs:* Chapman (UH), Subhlok (UH)

"CAREER: Dynamic Run-Time Optimization of Parallel, Adaptive and Hybrid Applications"

Funding Agency: National Science Foundation

Duration: 02/2009 – 01/2013

Amount: 410,000\$

PI: **Gabriel (UH)**

“Extreme OpenMP: A Programming Model for Productive High End Computing”

Funding Agency: National Science Foundation

Duration: 10/01/2008-09/30/2011

Amount: 628,999\$

PI: Chapman(UH) *Co-PIs:* **Gabrie(UH)**, Tafti(Virginia Tech), Straka (UIUC), Jin(NASA)

“VOLPEX: A Framework for Parallel Execution of Volatile Nodes”

Funding Agency: National Science Foundation

Duration: 01/01/2009-12/31/2010

Amount: 280,000\$

PI: Subhlok (UH) *Co-PIs:* **Gabriel(UH)**, Zheng(UH), Anderson(UC Berkeley)

“Heterogeneous Smart Camera Networks for Collaborative Missions”

Funding Agency: Defense University Research Instrumentation Program, Army Research Office

Duration: 06/01/2008-05/31/2009

Amount: 140,000\$

PI: Shah(UH) *Co-PIs:* **Gabriel(UH)**, Garbey(UH), Zheng(UH)

“Scalability Analysis of Applications using the Abstract Data and Communication Library”

Funding Agency: Teragrid Resource Allocation

Duration: 07/2007- 07/2008

Amount: 30,000 SU's (CPU hours)

PI: **Gabriel (UH)**

“A Wireless Network for Nonobtrusive Continuous Assessment of Astronaut Fatigue”

Funding Agency: Institute for space systems operations, University of Houston

Duration: 06/2007 – 08/2007

Amount: 41,555\$

PI: Zouridakis (UH), *Co-PIs:* **Gabriel**, Shah, Zheng, Kakadiaris, Yuan (all UH)

“Sun Center of Excellence”

Funding Agency: Sun Microsystems

Duration: 09/01/2006- 08/31/2009

Benefits: Workshop Sponsoring, Extended Hardware Warranty

PI: Chapman (UH), *Co-PIs:* **Gabriel**, Garbey, Fofanov, Zouridakis, Byun (all UH)

Gifts

“Optimizing parallel file access operations over multiple network interconnects and file-systems”

Funding Agency: Cisco System University Research Program

Duration: 11/01/2006-10/31/2007

Amount: 54,000\$

PI: **Gabriel (UH)**

“96port 4xInfiniBand switch”

Funding Agency: Cisco System

Category: Unrestricted Loaned System (Gift).

Value: 111,000\$ (List price as of December 2007)

PI: **Gabriel (UH)**

Publications

Edited Books

1. Rainer Keller, Edgar Gabriel, Michael Resch, Jack Dongarra (Eds.) "Recent Advances in Message Passing Interface", Proceedings of the 17th European MPI Users' Group Meeting, EuroMPI 2010, Springer, LNCS 6305, 2010.

Book Chapters

1. Edgar Gabriel, "Runtime Adaption Techniques for HPC Applications" in Kuan-Ching Li, Ching-Hsien Hsu, Laurence Tianruo Yang, Jack Dongarra, Hans Zima, 'Handbook of Research on Scalable Computing Technologies, IGI Global, 2009.
2. Edgar Gabriel and Shishir Shah, 'Parallelizing Image Analysis Applications for Spectral Microscopy', in Ch. Collte , J. Chanussot, K. Chedi, (Eds.) 'Multivariate image processing: methods and applications', John Wiley & Sons, Inc., 2009.
3. Shishir Shah and Edgar Gabriel, 'Parallel Multispectral Image Segmentation for Computer Aided Thyroid Cytology', in Marc Garbey, Barbara Lee Bass, Christoph Collet, Michel de Mathelin, Roger Tran-Son-Tay, (Eds.) 'Computational Surgery and Dual Training', Springer, 2009.

Journal Articles

1. * Rakhi Anand, Troy LeBlanc, Edgar Gabriel and Jaspal Subhlok, 'A Robust and Efficient Message Passing Library for Volunteer Computing Environments', Journal of Grid Computing, vol. 9, no. 3, pp. 325-344, 2011.
2. * Edgar Gabriel, Saber Feki, Katharina Benkert, and Michael M. Resch, 'Towards Performance Portability through Runtime Adaption for High Performance Computing Applications', in 'Concurrency and Computation - Practice and Experience', vol. 22, no. 16, pp. 2230-2246, 2010.
3. * Edgar Gabriel, Vishwanath Venkatesan, Shishir Shah, 'Towards High Performance Cell Segmentation in Multispectral Fine Needle Aspiration Cytology of Thyroid Lesions', in 'Computer Methods and Programs in Biomedicine', Elsevier Science, vol. 98, no. 3, pp.231-240, 2010.
4. Michael Resch, Edgar Gabriel, 'Supercomputers in Grids', International Journal of Grid and High Performance Computing (IJGHPC), (invited article) .vol. 1, no. 1, pp. 1-9, 2009.
5. * Hatem Ltaief, Edgar Gabriel and Marc Garbey, 'Fault Tolerant Algorithms for Heat Transfer Problems', Journal of Parallel and Distributed Computing, vol. 68, no. 5, pp. 663-677, 2008.
6. * Edgar Gabriel, Saber Feki, Katharina Benkert and Mohamad Chaarawi, 'The Abstract Data and Communication Library', Journal of Algorithms and Computational Technology, vol. 2, no.4, pp. 581-600, 2008.
7. * Jelena Pjesivac-Grbovic, Thara Angskun, George Bosilca, Graham E. Fagg, Edgar Gabriel and Jack J. Dongarra, 'Performance Analysis of MPI Collective Operations', in 'Cluster Computing', vol. 10, no. 2, pp. 127-143, Springer, 2007.
8. * Graham Fagg, Edgar Gabriel, Zizhong Chen, Thara Angskun, George Bosilca, Jelena Pjesivac Grbovic, and Jack J. Dongarra, "Process Fault Tolerance: Semantics, Design and Applications for High Performance Computing" , in 'International Journal of High Performance Computing Applications', Volume 19, No. 4, pp. 465-477, Sage Publications 2005.

9. *Edgar Gabriel, Graham E. Fagg, Jack J. Dongarra, '*Evaluating dynamic communicators and one-sided operations for current MPI libraries*', in 'International Journal of High Performance Computing Applications', Volume 19, No. 1, pp. 67-79, Sage Publications 2005.
10. *Peggy Lindner, Edgar Gabriel, Michael M. Resch, '*GCM: a Grid Configuration Manager for heterogeneous Grid environments*', in 'International Journal of Grid and Utility Computing', Volume 1, No. 1, pp. 4-12, Inderscience Publishers, 2005.
11. *Rainer Keller, Edgar Gabriel, Bettina Krammer, Matthias S. Müller, and Michael M. Resch, '*Towards efficient execution of MPI applications on the Grid: porting and optimization issues*', in 'Journal of Grid Computing', Volume 1, Issue 2, pp 133-149, 2003.
12. *Matthias Müller, Edgar Gabriel, Michael Resch: "*A Software Development Environment for Grid-Computing*", 'Concurrency and Computers – Practice and Experience', Vol. 14:1543-1551, 2002.
13. *Steven Pickles, Fumie Costen, John Brooke, Edgar Gabriel, Matthias Müller, Michael Resch and Steven Ord: "*Metacomputing across intercontinental networks*", Future Generation Computer Systems (17) 2001, pp. 911-918, Elsevier Science.

Refereed Conference and Workshop Publications

1. Mohamad Chaarawi and Edgar Gabriel, 'Automatically Selecting the Number of Aggregators for Collective I/O Operations', Workshop on Interfaces and Abstractions for Scientific Data Storage, IEEE Cluster 201, Austin, TX, Sept. 30, 2011.
2. Girish Nandagudi, Jaspal Subhlok, Edgar Gabriel and Judit Gimenez, 'Estimation of MPI Application Performance on Volunteer Environments', accepted for publication at Heteropar 2011, Euro-par 201, Bordeaux, France, August 29, 2011.
3. Eshwar Rohit, Hien Nguyen, Nagarajan Kanna, Jaspal Subhlok, Edgar Gabriel, Qian Wang, Margaret S. Cheung, David Anderson, 'A Robust Communication Framework for Parallel Execution on Volunteer PC Grids', 11th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGRID) 2011, Newport Beach, CA, USA 2011.
4. Mohamad Chaarawi, Edgar Gabriel, Rainer Keller, Richard Graham, George Bosilca and Jack Dongarra, 'OMPIO: A Modular Software Architecture for MPI I/O', in Y. Cotronis, A. Danalis, D. Nikolopoulos, J. Dongarra, (Eds.) 'Recent Advances in Message Passing Interface', LNCS vol. 6960, pp. 81-89, Springer, 2011.
5. Vishwanath Venkatesan, Mohamad Chaarawi, Edgar Gabriel, and Torsten Hoefler 'Design and Evaluation of Nonblocking Collective I/O Operations', in Y. Cotronis, A. Danalis, D. Nikolopoulos, J. Dongarra, (Eds.) 'Recent Advances in Message Passing Interface', LNCS vol. 6960, pp. 90-98, Springer, 2011.
6. Chung-Sheng Chen, Naufal Shaikh, Panitee Charoenrattanak, Christoph F. Eick, Nouhad Rizk, and Edgar Gabriel, 'Design and Evaluation of a Parallel Execution Framework for the CLEVER Clustering Algorithm', accepted for presentation at the International Conference on Parallel Computing (ParCo), Aug 30. - Sept. 2, Ghent, Belgium, 2011.
7. Katharina Benkert, Edgar Gabriel, Sabine Roller, '*Timing Collective Communications in an Empirical Optimization Framework*', Second International Conference on Parallel, Distributed, Grid and Cloud Computing for Engineering (PARENG), Ajaccio, Corsica, France, 12-15 April 2011.
8. Rakhi Anand, Edgar Gabriel, and Jaspal Subhlok, '*Communication Target Selection for Replicated MPI Processes*', in R. Keller, E. Gabriel, M. Resch, J. Dongarra (Eds.), 'Recent Advances in the Message Passing Interface', LNCS 6305, pp. 198-207, Springer, 2010.

9. Troy LeBlanc, Jaspal Subhlok, and Edgar Gabriel, '*A High-Level Interpreted MPI Library for Parallel Computing in Volunteer Environments*', 4th Workshop on Desktop Grids and Volunteer Computing Systems (PCGRID 2010), held in conjunction with CCGRID conference 2010, Melbourne, Australia.
10. Nagarajan Kanna, Jaspal Subhlok, Edgar Gabriel, Eshwar Rohit and David Anderson, '*A Communication Framework for Fault-tolerant Parallel Execution*', 22nd International Workshop on Languages and Compilers for Parallel Computing (LCPC), Newark, Delaware, Oct. 8-10, 2009.
11. Troy LeBlanc, Rakhi Anand, Edgar Gabriel, and Jaspal Subhlok, '*VolpexMPI: an MPI Library for Execution of Parallel Applications on Volatile Nodes*', in M. Ropo, J. Westerholm, J. Dongarra (Eds.) '*Recent Advances in Parallel Virtual Machine and Message Passing Interface*', LNCS 5759, pp. 124-134, 16th European PVM/MPI Users' Group Meeting, Espoo, Finland, 2009.
12. Saber Feki and Edgar Gabriel, '*A Historic Knowledge Based Approach for Dynamic Optimization*', accepted for publication at the International Conference on Parallel Computing (ParCo), Lyon, France, 2009.
13. Ketan Kulkarni, Edgar Gabriel, '*Evaluating Algorithms for Shared File Pointer Operations in MPI I/O*', in G. Allen, J. Nabrzyski, E. Seidel, G. D. van Albada, J. Dongarra, and P. M. A. Sloot (Eds.) '*Computational Science - ICCS 2009*', LNCS vol. 5544, pp. 280-289, Springer, 2009.
14. Mohamad Chaarawi, Suneet Chandok, Edgar Gabriel, '*Performance Evaluation of Collective Write Algorithms in MPI I/O*', in G. Allen, J. Nabrzyski, E. Seidel, G. D. van Albada, J. Dongarra, and P. M. A. Sloot (Eds.) '*Computational Science - ICCS 2009*', LNCS vol. 5544, pp. 185 -194, Springer, 2009.
15. Saber Feki and Edgar Gabriel, '*Incorporating Historic Knowledge into a Communication Library for Self-Optimizing High Performance Computing Applications*', Proceedings of the Second IEEE International Conference on Self-Adaptive and Self-Organizing Systems, pp. 265-274, IEEE Computer Society, 2008.
16. Mohamad Chaarawi, Jeff Squyres, Edgar Gabriel, Saber Feki, '*A Tool for Optimizing Runtime Parameters of Open MPI*', in A. Lastovetsky et al. (Eds.): EuroPVM/MPI 2008, LNCS 5205, pp. 210-217, 2008. Springer-Verlag Berlin Heidelberg.
17. Mohamad Chaarawi, and Edgar Gabriel, '*Evaluating Sparse Data Storage Techniques for MPI Groups and Communicators*', in M. Bubak et.al. '*Proceedings of the International Conference on Computational Science*', Part I, LNCS 5101, pp.297-306, Cracow, Poland, June 2008.
18. Edgar Gabriel, Saber Feki, Katharina Benkert, and Michael M. Resch, '*Towards Performance and Portability through Runtime Adaption for High Performance Computing Applications*', International Supercomputing Conference, June 17-20, 2008, Dresden, Germany.
19. Edgar Gabriel, Vishwanath Venkatesan, and Shishir Shah, '*Towards High Performance Cell Segmentation in Multispectral Fine Needle Aspiration Cytology of Thyroid Lesions*', High-Performance Medical Image Computing and Computer Aided Intervention Workshop, a MICCAI 2008 Workshop, New York, NY, September 10, 2008.
20. Katharina Benkert, Edgar Gabriel, and Michael M. Resch, '*Outlier Detection in Performance Data of Parallel Applications*', in Proceedings of the 9th IEEE International Workshop on Parallel and Distributed Scientific and Engineering Computing, held in conjunction with the IPDPS 2008, Miami, FL, USA, March 2008. DOI 978-1-4244-1694-3.

21. Peggy Lindner, Edgar Gabriel and Michael M. Resch, '*Performance Prediction Based Resource Selection in Grid Environments*', in R. H. Perrot, B. M. Chapman, J. Subhlok, R. F. de Mello and L. T. Yang (Eds.), 'Third International Conference on High Performance Computing and Communication (HPCC 2007)', Lecture Notes in Computer Science, volume 4782, Springer, pages 228-238, Houston, TX, 2007.
22. Edgar Gabriel and Shuo Huang, '*Runtime Optimization of Application Level Communication Patterns*', 12th International Workshop on High-Level Parallel Programming Models and Supportive Environments, Workshops of the IEEE Parallel and Distributed Processing Symposium (IPDPS) 2007, pp. 185, Long Beach, CA, March 26th 2007.
23. Hatem Ltaief, Marc Garbey, Edgar Gabriel, '*Parallel Fault Tolerant Algorithms for Parabolic Problems*', in Wolfgang E. Nagel, Wolfgang V. Walter and Wolfgang Lehner (Eds.) 'Proceedings of the 12th International Euro-Par Conference', pp. 700-709, Lecture Notes in Computer Science, volume 4128, Springer, 2006.
24. Edgar Gabriel, Feng Sheng, Rainer Keller and Michael M. Resch, '*A Framework for Comparative Performance Analysis of MPI Applications*', proceedings of the "International Conference on Parallel and Distributed Techniques and Applications (PDPTA)" 2006, pp. 478-484, Las Vegas, Nevada, June 2006.
25. Hatem Ltaief, Marc Garbey, Edgar Gabriel, '*Fault Tolerant Algorithms for Parallel 3D Heat Transfer Problems*', in 'Proceedings of the the International Conference on Parallel Computational Fluid Dynamics, Busan, South Korea, May 15-18, 2006.
26. Zizhong Chen, Graham E. Fagg, Edgar Gabriel, Julien Langou, Thara Angskun, George Bosilca and Jack J. Dongarra, '*Fault tolerant computing by a coding approach*', Proceedings of the 2005 ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP) 2005, ACM Press.
27. Jelena Pjesivac-Grbovic, Thara Angskun, George Bosilca, Graham E. Fagg, Edgar Gabriel, Jack J. Dongarra, '*Performance Analysis of MPI Collective Operations*', Proceedings of the 19th International Parallel and Distributed Processing Symposium, 4th International Workshop on Performance Modeling, Evaluation, and Optimization of Parallel and Distributed Systems (PMEO-PDS 05), Denver, CO, April 2005, IEEE Computer Society.
28. Edgar Gabriel, Graham E. Fagg, George Bosilca, Thara Angskun, Jack J. Dongarra, Jeffrey M. Squyres, Vishal Sahay, Prabhanjan Kambadur, Brian Barrett, Andrew Lumsdain, Ralph H. Castain, David J. Daniel, Richar L. Graham, Timothy S. Woodall, '*Open MPI: Goals, Concept, and Design of a Next Generation MPI Implementation*', in D. Kranzlmüller, P. Kacsuk, J. J. Dongarra (Eds.), 'Recent Advances in Parallel Virtual Machine and Message Passing Interface', Lecture Notes in Computer Science vol. 3241, pp. 97 - 104, Springer 2004.
29. Timothy S. Woodall, Richar L. Graham, Ralph H. Castain, David J. Daniel, Mitch W. Sukalski, Graham E. Fagg, Edgar Gabriel, George Bosilca, Thara Angskun, Jack J. Dongarra, Jeffrey M. Squyres, Vishal Sahay, Prabhanjan Kambadur, Brian Barrett, Andrew Lumsdain, '*TEG: A High-Performance, Scalable, Multi-Network Point-to-Point Communications Methodology*', in D. Kranzlmüller, P. Kacsuk, J. J. Dongarra (Eds.), 'Recent Advances in Parallel Virtual Machine and Message Passing Interface', Lecture Notes in Computer Science vol. 3241, pp. 303-310, Springer 2004.
30. Timothy S. Woodall, Richar L. Graham, Ralph H. Castain, David J. Daniel, Mitch W. Sukalski, Graham E. Fagg, Edgar Gabriel, George Bosilca, Thara Angskun, Jack J. Dongarra, Jeffrey M. Squyres, Vishal Sahay, Prabhanjan Kambadur, Brian Barrett, Andrew Lumsdain, '*Open MPI's TEG Point-to-Point Communications Methodology: Comparison to Existing Implementations*', in D. Kranzlmüller, P. Kacsuk, J. J. Dongarra (Eds.), 'Recent Advances in Parallel Virtual Machine and

- Message Passing Interface', Lecture Notes in Computer Science vol. 3241, pp. 105-111, Springer 2004.
31. Graham E. Fagg, Edgar Gabriel, George Bosilca, Thara Angskun, Zizhong Chen, Jelena Pjesivac-Grbovic, Kevin London, Jack J. Dongarra, '*Extending the MPI Specification for Process Fault Tolerance on High Performance Computing Systems*', International Supercomputer Conference, Heidelberg, Germany, June 22-25, 2004.
 32. Edgar Gabriel, Graham E. Fagg, and Jack J. Dongarra '*Evaluating the Performance of MPI-2 Dynamic Communicators and One-Sided Communication*', in Jack J. Dongarra, Domenico Laforenza, Salvatore Orlando (Eds.), 'Recent Advances in Parallel Virtual Machine and Message Passin Interface', Lecture Notes in Computer Science vol. 2840, pp.88-97, Springer 2003.
 33. Graham E. Fagg, Edgar Gabriel, Zhizhong Chen, Thara Angskun, George Bosilca, Antonin Bukovsky and Jack J. Dongarra, '*Fault Tolerant Communication Library and Applications for High Performance Computing*', Los Alamos Computer Science (LACSI) Symposium, Santa Fe, New Mexico, USA, October 27-29, 2003.
 34. Edgar Gabriel, Graham E. Fagg, Antonin Bukovsky, Thara Angskun, and Jack J. Dongarra, '*A Fault-Tolerant Communication Library for Grid Environments*', 17th Annual ACM International Conference on Supercomputing (ICS'03), International Workshop on Grid Computing and e-Science, June 21, 2003, San Francisco.
 35. Rainer Keller, Bettina Krammer, Matthias S. Müller, Michael M. Resch, and Edgar Gabriel, '*MPI Development Tools and Applications for the Grid*', Workshop on Grid Applications and Programming Tools, held in conjunction with the Global Grid Forum (GGF) 8 meeting, June 25, 2003, Seattle, WA, USA
 36. Holger Brunst, Edgar Gabriel, Marc Lange, Matthias Müller, Wolfgang E. Nagel, Michael Resch: "*Performance Analysis of a Parallel Application in the Grid*", in P. M.A. Sloot, D. Abramson, A. V. Bogdano,, J. J. Dongarra, A. Y. Zomaya and Y. E. Gorbachev (Eds.), 'Computational Science - ICCS 2003', Workshop on Grid Computing for Computational Science, Lecture Notes in Computer Science, vol. 2659, pp. 285-294, Springer, 2003.
 37. Edgar Gabriel, Rainer Keller, Peggy Lindner, Matthias S. Mueller and Michael M. Resch: "*Software Development in the Grid – the DAMIEN tool-set*", in P. M.A. Sloot, D. Abramson, A. V. Bogdano,, J. J. Dongarra, A. Y. Zomaya and Y. E. Gorbachev (Eds.), 'Computational Science - ICCS 2003', Lecture Notes in Computer Science, vol. 2659, pp. 235-244, Springer, 2003.
 38. Rosa M. Badia, Francisco Escale, Edgar Gabriel, Judit Gimenez, Rainer Keller, Jesus Labarta, Matthias Müller: "*Performance Prediction in a Grid environment*", 1st European Across Grid Conference, Santiago de Compostella, Spain, February 13-14, 2003.
 39. Matthias Müller, Matthias Hess and Edgar Gabriel: "*Grid enabled MPI solutions for Clusters*", in Sansan Lee, Satoshi Sekiguchi, Satoshi Matsuoka, and Mitsuhsa Sato (Editors), 'Proceedings of the Third IEEE/ACM International Symposium on Cluster Computing and the Grid' (CCGRID), pp. 18-25, May 12-15, 2003, Tokyo, Japan.
 40. Peggy Lindner, Natalia Currle-Linde, Michael M. Resch and Edgar Gabriel: "*Distributed Application Management in Heterogeneous Grids*", in Proceedings of the "Euroweb 2002" conference, Oxford, UK, pp. 145-154, December 17-18, 2002.
 41. Edgar Gabriel, Michael Resch and Roland Rühle: "*Implementing and Benchmarking Derived Datatypes for Metacomputing*", in B. Hertzberger, A. Hoekstra, R. Williams (Eds.), 'High Performance Computing and Networking', pp. 493-502, Springer, 2001.

42. Graham Fagg, Edgar Gabriel, Michael Resch and Jack Dongarra: "*Parallel IO support for Meta-Computing Applications: MPI_Connect IO applied to PACX-MPI*", in Yiannis Cotronis, Jack Dongarra (Eds.), 'Recent Advances in Parallel Virtual Machine and Message Passing Interface', Lecture Notes in Computer Science, pp. 135-147, Springer, 2001.
43. Edgar Gabriel, Marc Lange and Roland Rühle: "*Direct Numerical Simulation of Turbulent Reactive Flows in a Metacomputing Environment*", in Proceedings of the 2001 International Conference on Parallel Processing (ICPP) Workshops, pp. 237-244, 2001.
44. Steven Pickles, Fumie Costen, John Brooke, Edgar Gabriel, Matthias Müller, Michael Resch and Steven Ord: "*The problems and the solutions of the metacomputing experiments in SC'99*", High Performance Computing and Networking, Springer, 2000. Best paper award.
45. Edgar Gabriel, Michael Resch and Roland Rühle: "*Implementing MPI with Optimized Algorithms for Metacomputing*", in Anthony Skjellum, Purushotham V. Bangalore, Yoginder S. Dandaas, 'Proceedings of the Third MPI Developer's and Users Conference', MPI Software Technology Press, Starkville Mississippi, 1999.
46. Michael Resch, Dirk Rantzau, Holger Berger, Katrin Bidmon, Rainer Keller, Edgar Gabriel : "*A Metacomputing Environment for Computational Fluid Dynamics*", in C. A. Lin, A. Ecer, N. Satofuka, P. Fox, J. Periaux (Eds.) 'Parallel Computational Fluid Dynamics', pp. 135-144, North Holland, 1999.
47. Edgar Gabriel, Michael Resch, Paul Christ, Alfred Geiger and Ulrich Lang: "*High Performance Metacomputing in a Transatlantic Wide Area Application Testbed*", in G. Cooperman, E. Jensen and G. Michler (Eds.), 'Workshop on Distributed High Performance Computing', 'Lecture Notes in Control and Information Science', 249, pp. 131-142, Springer, 1999.
48. Edgar Gabriel, Michael Resch, Thomas Beisel, Rainer Keller: "*Distributed Computing in a heterogeneous computing environment*", in Vassil Alexandrov, Jack Dongarra (Eds.), 'Recent Advances in Parallel and Virtual Machine and Message Passing Interface', Lecture Notes in Computer Science, pp. 180-188, Springer, 1998.
49. Thomas Beisel, Edgar Gabriel, Michael Resch : "*An Extension to MPI for Distributed Computing on MPP's*", in Marian Bubak, Jack Dongarra, Jerzy Wasniewski (Eds.), 'Recent Advances in Parallel Virtual Machine and Message Passing Interface', Lecture Notes in Computer Science, pp. 75-83, Springer, 1997.

Refereed Poster Abstracts

1. Katharina Benkert and Edgar Gabriel, '*Measuring Execution Times of Collective Communications in an Empirical Optimization Framework*', in R. Keller, E. Gabriel, M. Resch, J. Dongarra (Eds.), 'Recent Advances in the Message Passing Interface', LNCS 6305, pp. 294-297, Springer, 2010.
2. Jelena Pjesivac-Grbovic, Thara Angskun, George Bosilca, Graham E. Fagg, Edgar Gabriel, Jack J. Dongarra, '*MPI Collective Operation Performance Analysis*', poster presentation at the LACSI Symposium 2004, October 12-14, Santa Fe, New Mexico, USA, 2004.
3. Brian Toonen, David Ashton, Ian Foster, William Gropp, Ewing Lusk, Edgar Gabriel, Ralph Buttler, Nicholas Karonis: "*Interfacing Parallel Jobs to Process Managers*", in Proceedings of the 10th IEEE International Symposium on High Performance Distributed Computing, pp. 431-432 (short paper for poster-presentation), August 7-9, 2001, San Francisco, USA.

Selected Service to the Profession/Academic Discipline

- Program Co-Chair, 17th European MPI Users Group Meeting 2010 (EuroMPI 2010), Stuttgart, Germany, September 2010.
- Program Co-Chair, International Conference on High Performance Computing and Communication (HPCC-09), Seoul, South Korea, June 2009.
- Member of the Program Committee of the European MPI Users Group Meeting (EuroMPI) 2012, 2011, 2009, 2008, 2007, 2006.
- Member of the Program Committee, The 10th IEEE International Symposium on Parallel and Distributed Processing with Applications (ISPA 2012), Madrid, Spain, July 2012.
- Member of the Program Committee of the UNICORE summit, 2009, 2008, 2007, 2006.
- Member of the Program Committee of the Conference on Parallel Computing (ParCo), Lyon, France, 2009
- Joint tutorial on “Image Computing for Digital Pathology” with Shishir Shah at the 19th International Conference on Pattern Recognition (ICPR), Tampa, FL, December 2008.
- Member of the Program Committee of the 5th International Conference on Ubiquitous Intelligence and Computing (UIC-08), Oslo, Norway, June 2008.
- Chair for the topic area ‘Cluster Computing’ for the High Performance Computing Conference (HPCC) 2007, Houston, Texas, Sept 26-28, 2007.
- Vice chair for the topic area “Distributed Systems and Algorithms” for the EuroPar 2006 conference, Dresden, Germany, Aug 30-31st, 2006.
- Member of the program committee of the “International Conference on Computational Science 2005” (ICCS 2005), Atlanta, Georgia, May 22-25, 2005.
- Head of the organizing and program committee of the “5th HLRS Metacomputing Workshop“, Stuttgart (Germany), May 2002.
- Panelist and invited presentation at the “6th IEEE Symposium on Computers and Networks 2001 (ISCC2001)“, in Hammamed (Tunisia), July 2001.