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### Professional Experience

- Sept 2011 – present *Associate Professor*, Department of Computer Science, University of Houston
- April 2017 – present Associate Director, Center for Advanced Computing & Data Systems (CACDS), University of Houston.
- Sept 2006 – present *Director*, 'Parallel Software Technologies Laboratory', Department of Computer Science, University of Houston
- Sept 2011 – Aug. 2015 *Director of Graduate Studies*, 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 (Maschinenwesen) , University of Stuttgart. Dissertation: Optimization and Use of a communication library for Metacomputing“ (German).
- Sept. 1992 – Apr. 1998 Diploma in Mechanical Engineering, University of Stuttgart, Germany. Major subjects: Applied Computer Science, Control Theory. Thesis: “Analysis of efficient parallel equation solvers for usage in a CFD-application” (German).

## Honors and Awards

- Academic excellence award, University of Houston, Department of Computer Science, December 2014, 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)*.

## Grants & Funding

### “SI2-SSI: EVOLVE: Enhancing the Open MPI Software for Next Generation Architectures and Applications”

*Funding Agency:* National Science Foundation

*Duration:* 06/2017 – 05/2021

*Amount:* \$308,785

*PI:* **Gabriel**

### “MRI: Acquisition of a High Performance Computing System for Science and Engineering Research and Education at the University of Houston”

*Funding Agency:* National Science Foundation

*Duration:* 08/2015 – 07/2018

*Amount:* \$950,000

*PI:* *Cheung*

*Co-PIs:* Bittner, **Gabriel (replacing Chapman)**, Grabow, Sharma

### “SI2-SSE: ADAPT: Next Generation MPI Library – Open MPI”

*Funding Agency:* National Science Foundation

*Duration:* 09/2013 – 08/2016

*Amount:* \$140,203

*PI:* **Gabriel (UH)**

**“SI2-SSI: A Glass Box Approach to Enabling Open, Deep Interactions in the HPC Tool chain”**

*Funding Agency:* National Science Foundation

*Duration:* 06/2012 – 12/2016

*Amount:* \$989,206

*PI:* Chapman

*Co-PI until 08/2016:* **Gabriel**

**PI from 09/2016 -12/2016: Gabriel (UH)**

**“XPRESS”**

*Funding Agency:* Department of Energy, Office of Science

*Duration:* 09/2012 – 08/2015

*Amount:* \$650,000

*PI:* Chapman

*Co-PI:* **Gabriel**

**“CAREER: Dynamic Run-Time Optimization of Parallel, Adaptive and Hybrid Applications”**

*Funding Agency:* National Science Foundation

*Duration:* 02/2009 – 01/2016

*Amount:* \$410,000

*PI:* **Gabriel**

**“CRI: A Heterogeneous Testbed for Exploring Emerging HPC Tools, Programing Languages, and Applications”**

*Funding Agency:* National Science Foundation

*Duration:* 06/2010 – 06/2013

*Amount:* \$448,000

*PI:* **Gabriel**

*Co-PIs:* Chapman, Subhlok

**“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

*Co-PIs:* **Gabriel**

**“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

*Co-PIs:* **Gabriel**, Zheng

**“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

*Co-PIs:* **Gabriel**, Garbey, Zheng

**“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

*Co-PIs:* **Gabriel**, Shah, Zheng, Kakadiaris, Yuan

**Industrial Grants and Gifts**

**128 node Compute Cluster**

TOTAL Research & Development, Houston

*Date:* August 2012

*Value:* est. \$250,000

*PI:* **Gabriel (UH)**

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

Cisco System University Research Program

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

*Amount:* \$54,000

*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 17<sup>th</sup> European MPI Users’ Group Meeting, EuroMPI 2010, Springer, LNCS 6305, 2010.

**Book Chapters**

1. Edgar Gabriel, Rahma Smaoui, Vishwanath Venkatesan, Shishir Shah, ‘Hardware and Performance Considerations for Computational Medicine’, in M. Garbey, B. L. Bass, S. Beceli, C. Collet and P. Cerveri (Eds.) Computational Surgery and Dual Training: Computing Robotics and Imaging, Springer-Verlag, 2013.
2. 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.
3. 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.
4. 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**

(Impact Factors as of May 2017; citation counts based on google scholar, May 2017)

1. \*Yucef Barigou and Edgar Gabriel, 'Maximizing Communication-Computation Overlap through Automatic Parallelization and Run-Time Tuning of Non-blocking Collective Operations', accepted for publication at International Journal of Parallel Programming, Springer, 2016. DOI: 10.1007/s10766-016-0477-7 **(Impact Factor: 0.680)**
2. \*Vishwanath Venkatesan, Mohamad Chaarawi, Quincy Koziol, Neil Fortner and Edgar Gabriel, 'A Framework for Collective I/O Style Optimizations at Staging I/O nodes', International Journal of Big Data Intelligence, vol. 3, no. 2, pp. 79-91, Inderscience Publishers, 2016.
3. \*Kshitij Mehta, Edgar Gabriel, 'Multi-threaded Parallel I/O for OpenMP Applications', International Journal of Parallel Programming, vol. 43, no. 2, pp. 286-309, DOI 10.1007/s10766-014-0306-9, 2014. **(Impact Factor: 0.680, citations: 1)**
4. \*Christof Karmonik, Christopher Yen, Edgar Gabriel, Sasan Partovi, Marc Horner, Yi J Zhang, Richard P Kluczniak, Orlando Diaz, Robert G Grossman, 'Quantification of speed-up and accuracy of multi-CPU computational flow dynamics simulations of hemodynamics in a posterior communicating artery aneurysm of complex geometry', Journal of Neuro Interventional Surgery, 2013. **(Impact Factor: 2.959, citations: 6)**
5. \*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. **(Impact Factor: 1.561, citations: 4)**
6. \*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. **(Impact Factor: 0.997, citations: 17)**
7. \*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. **(Impact Factor: 1.862, citations: 18)**
8. 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. **(citations: 13)**
9. \*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. **(Impact Factor: 1.179, citations: 29)**
10. \*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. **(citations: 6)**
11. \*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. **(Impact Factor: 1.514)**
12. \*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. **(Impact Factor: 1.081, citations: 67)**

13. \*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. **(Impact Factor: 1.081, citations: 12)**
14. \*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. **(citations: 10)**
15. \*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. **(Impact Factor: 1.561, citations: 64)**
16. \*Matthias Müller, Edgar Gabriel, Michael Resch: "A Software Development Environment for Grid-Computing", 'Concurrency and Computers – Practice and Experience', Vol. 14:1543-1551, 2002. **(Impact Factor: 0.942, citations: 10)**
17. \*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. **(Impact Factor: 2.430, citations: 34)**

#### Journal Articles in submission:

18. Jaspal Subhlok, Hien Nguyen, Edgar Gabriel, and Mohamad Tanvir Rahman, "Resilient Parallel Computing on Volunteer PC Grids", submitted to Concurrency and Computation: Practice and Experience, 2017.

#### Refereed Conference and Workshop Publications

(Citation counts based on google scholar, May 2017)

1. Shweta Jha, Edgar Gabriel, 'Performance Models for Communication in Collective I/O Operations', 2nd International Workshop on Theoretical Approaches to Performance Evaluation, Modeling and Simulation (TAPEMS), CCGRID Workshops, Madrid, Spain, May 14-17, 2017.
2. Shweta Jha, Edgar Gabriel, 'Impact and Limitations of Point-to-Point Performance on Collective Algorithms' (short paper), 16th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid), pp. 261-266, IEEE, Cartagena, Colombia, 2016.
3. Haripriya Ayyalasomayajula, Edgar Gabriel, Peggy Lindner, Daniel Price, 'Air Quality Simulations Using Big Data Programming Models', (short paper), Second International Conference on Big Data Computing Service and Applications (BigDataService), pp. 182-184, IEEE, Oxford, GB, 2016.
4. Youcef Barigou, Vishwanath Venkatesan, Edgar Gabriel, 'Autotuning Non-blocking Collective Communication Operations', Tenth International Workshop on Automatic Performance Tuning (iWAPT) 2015, IPDPS 2015 Workshops, Hyderabad, India, pp. 1204-1213, 2015. **(citations: 1)**
5. Md Tarikul Islam, Hien Nguyen, Jaspal Subhlok and Edgar Gabriel, 'Efficient Message Logging to Support Process Replicas in a Volunteer Computing Environment', Heterogeneous Computing Workshop (HWC), IPDPS 2015 Workshops, Hyderabad, India, 2015.

6. Shweta Jha, Edgar Gabriel, Saber Feki, 'A Personalized MPI library for Exascale Applications and Environments' (Hot topic paper), Workshop on Exascale MPI, Supercomputing Conference, New Orleans, LA, USA, 2014.
7. Vishwanath Venkatesan, Mohamad Chaarawi, Quincey Koziol, and Edgar Gabriel, 'Compactor: Optimization Framework at Staging I/O nodes', Workshop on High Performance Data Intensive Computing (HPDIC), IPDPS 2014 Workshops, Phoenix, AR, pp. 1689-1697, 2014.
8. Vishwanath Venkatesan, Rakhi Anand, Edgar Gabriel and Jaspal Subhlok, 'Optimized Process Placement for Collective I/O Operations', in J. G. Blas, J. Carretero, J. Dongarra (Eds.) 'Recent Advances in the Message Passing Interface', pp. 31-36, ACM International Conference Proceedings Series, EuroMPI 2013. **(citations: 5)**
9. Kshitij Mehta, John Bent, Aaron Torres, Gary Grider, and Edgar Gabriel, 'A Plugin for HDF5 Using PLFS for Improved I/O Performance and Semantic Analysis', High Performance Computing, Networking, Storage and Analysis (SCC), 2012 SC Companion, pp. 746-752, 2012, IEEE. **(citations: 6)**
10. Hien Nguyen, Eshwar Rohit, Jaspal Subhlok, Edgar Gabriel, Qian Wang, Margaret S. Cheung and David Anderson, 'An Execution Environment for Robust Parallel Computing on Volunteer PC Grids', Proceedings of the 41st International Conference on Parallel Processing (ICPP), pp. 158-167, 2012. **(citations: 2)**
11. Kshitij Mehta, Edgar Gabriel, and Barbara Chapman, 'Specification and Performance Evaluation of Parallel I/O Interfaces for OpenMP', Proceedings of the 8th international conference on OpenMP in a Heterogeneous World (IWOMP), pp. 1-14, Springer-Verlag Berlin, Heidelberg, 2012. **(citations: 7)**
12. 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 2011 Workshops, Austin, TX, 2011. **(citations: 28)**
13. Girish Nandagudi, Jaspal Subhlok, Edgar Gabriel and Judit Gimenez, 'Estimation of MPI Application Performance on Volunteer Environments', Heteropar 2011, Europar Workshops, Bordeaux, France, 2011.
14. 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. **(citations: 6)**
15. 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, EuroMPI 2011, pp. 81-89, Springer, 2011. **(citations: 12)**
16. 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, EuroMPI 2011, pp. 90-98, Springer, 2011. **(citations: 14)**
17. Chung-Sheng Chen, Naful Shaikh, Panitee Charoenrattanak, Christoph F. Eick, Nouhad Rizk, and Edgar Gabriel, 'Design and Evaluation of a Parallel Execution Framework for the CLEVER Clustering Algorithm', Advances in Parallel Computing (PARCO), vol .22, pp. 73-80, IOS Press, 2011. **(citations: 6)**

18. 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.  
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19. 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, EuroMPI 2010, pp. 198-207, Springer, 2010. **(citations: 5)**
20. Katharina Benkert and Edgar Gabriel, '*Measuring Execution Times of Collective Communications in an Empirical Optimization Framework*', (poster presentation), in R. Keller, E. Gabriel, M. Resch, J. Dongarra (Eds.), '*Recent Advances in the Message Passing Interface*', LNCS 6305, pp. 294-297, Springer, 2010.
21. 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), CCGRID 2010 Workshops, Melbourne, Australia, 2010. **(citations: 4)**
22. 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. **(citations: 3)**
23. 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, Espoo, Finland, 2009. **(citations: 47)**
24. Saber Feki and Edgar Gabriel, '*A Historic Knowledge Based Approach for Dynamic Optimization*', International Conference on Parallel Computing (PARCO), Lyon, France, 2009. **(citations: 3)**
25. 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. **(citations: 5)**
26. 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. **(citations: 10)**
27. 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 (SASO), pp. 265-274, IEEE Computer Society, 2008. **(citations: 5)**
28. 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. **(citations: 33)**
29. 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. **(citations: 10)**



30. 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.
31. 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. **(citations: 19)**
32. 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, IPDPS 2008 Workshops, Miami, FL, USA. **(citations: 6)**
33. 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. **(citations: 9)**
34. Edgar Gabriel and Shuo Huang, '*Runtime Optimization of Application Level Communication Patterns*', 12th International Workshop on High-Level Parallel Programming Models and Supportive Environments, IPDPS 2007 Workshops, pp. 185, Long Beach, CA, March 26th 2007. **(citations: 15)**
35. 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. **(citations: 2)**
36. 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. **(citations: 5)**
37. 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. **(citations: 2)**
38. 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. **(citations: 104)**
39. Jelena Pjesivac-Grbovic, Thara Angskun, George Bosilca, Graham E. Fagg, Edgar Gabriel, Jack J. Dongarra, '*Performance Analysis of MPI Collective Operations*', 4th International Workshop on Performance Modeling, Evaluation, and Optimization of Parallel and Distributed Systems (PMEOPDS 05), IPDPS 2005 Workshops, Denver, CO, April 2005, IEEE Computer Society. **(citations: 240)**
40. Jelena Pjesivac-Grbovic, Thara Angskun, George Bosilca, Graham E. Fagg, Edgar Gabriel, Jack J. Dongarra, '*MPI Collective Operation Performance Analysis*', (poster presentation) LACSI Symposium 2004, October 12-14, Santa Fe, New Mexico, USA, 2004.

41. 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 Dieter Kranzlmüller, Peter Kacsuk, Jack J. Dongarra (Eds.), 'Recent Advances in Parallel Virtual Machine and Message Passing Interface', Lecture Notes in Computer Science vol. 3241, EuroPVM/MPI 2004, pp. 97 - 104, Springer 2004. **(citations: 1210)**
42. 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 Dieter Kranzlmüller, Peter Kacsuk, Jack J. Dongarra (Eds.), 'Recent Advances in Parallel Virtual Machine and Message Passing Interface', Lecture Notes in Computer Science vol. 3241, EuroPVM/MPI 2004, pp. 303-310, Springer 2004. **(citations: 30)**
43. 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 Dieter Kranzlmüller, Peter Kacsuk, Jack J. Dongarra (Eds.), 'Recent Advances in Parallel Virtual Machine and Message Passing Interface', Lecture Notes in Computer Science vol. 3241, EuroPVM/MPI 2004, pp. 105-111, Springer 2004. **(citations: 19)**
44. 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. **(citations: 73)**
45. 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 Orlande (Eds.), 'Recent Advances in Parallel Virtual Machine and Message Passing Interface', Lecture Notes in Computer Science vol. 2840, EuroPVM/MPI 2003, pp.88-97, Springer 2003. **(citations: 14)**
46. 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.**(citations: 44)**
47. 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. **(citations: 14)**
48. 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. **(citations: 40)**
49. 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. **(citations: 5)**

50. 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. **(citations: 11)**
51. 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. **(citations: 42)**
52. 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. **(citations: 35)**
53. 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. **(citations: 6)**
54. 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.
55. 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. **(citations: 9)**
56. 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. **(citations: 8)**
57. 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 10<sup>th</sup> IEEE International Symposium on High Performance Distributed Computing, pp. 431-432 (short paper for poster-presentation), August 7-9, 2001, San Francisco, USA. **(citations: 2)**
58. 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. **(citations: 12)**
59. 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. **(citations: 54)**
60. 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.
61. 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.

62. 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. **(citations: 230)**
63. 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. **(citations: 74)**

### Selected Service to the Profession/Academic Discipline

- Tutorial '*Advanced Programming Models for High Performance Computing and Big Data Analytics*', Winter Enrichment Program, King Abdullah University of Science and Technology (KAUST), Saudi Arabia, January 2015.
- Reviewer for numerous journal, including IEEE Transactions for Parallel and Distributed Systems, International Journal of High Performance Computing; Parallel Computing; International Journal of Computational Science and Engineering; Sensors; Annals of Biomedical Engineering;
- National Science Foundation project reviewer 2014, 2013.
- Project reviewer for the Austrian Science Foundation, 2011
- Program Co-Chair, 17<sup>th</sup> European MPI Users Group Meeting 2010 (EuroMPI 2010), Stuttgart, Germany, September 2010.
- Project reviewer for the French National Research Agency, 2010.
- Program Co-Chair, International Conference on High Performance Computing and Communication (HPCC-09), Seoul, South Korea, June 2009.
- Tutorial on "*Image Computing for Digital Pathology*" with Shishir Shah at the 19<sup>th</sup> International Conference on Pattern Recognition (ICPR), Tampa, FL, December 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 30-31<sup>st</sup>, 2006.
- Project reviewer for the *Irish Science Foundation (ISF)*, January 2002.
- Head of the organizing and program committee of the "5<sup>th</sup> HLRS Metacomputing Workshop", Stuttgart (Germany), May 2002.
- Panelist and invited presentation at the "6<sup>th</sup> IEEE Symposium on Computers and Networks 2001 (ISCC2001)", in Hammamed (Tunisia), July 2001.

### Additional Program and Organizing Committees

- 17<sup>th</sup> IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGRID), Madrid, Spain, 2017.
- 14<sup>th</sup> International Workshop on Algorithms, Models and Tools for Parallel Computing on Heterogeneous Platforms (Heteropar), Grenoble, France, 2016.

- International Workshop on Legacy HPC Application Migration (LHAM) 2017, 2016, 2015
- 25th International Conference on Parallel Architectures and Compilation Techniques (PACT) San Francisco, USA, 2015.
- European MPI Users's Group Meeting (EuroMPI) 2015, 2014, 2013, 2012, 2011
- 3<sup>rd</sup> International Symposium on Computing and Networking Across Practical Development and Theoretical Research (CANDAR), Sapporo, Japan, 2015.
- The 13th International Workshop on Algorithms, Models, and Tools for Parallel Computing on Heterogeneous Platforms (HeteroPar) 2015, Vienna, Austria, 2015.
- 28<sup>th</sup> IEEE International Parallel and Distributed Processing Symposium (IPDPS) Phoenix, Arizona, 2014.
- IEEE/ACM Supercomputing conference 2013, member of Workshop committee
- 11<sup>th</sup> International Workshop on Algorithms, Models and Tools for Parallel Computing on Heterogeneous Platforms 2013 (Heteropar 2013), Aachen, Germany, August 2013.
- 11<sup>th</sup> IEEE International Symposium on Parallel and Distributed Processing with Applications 2013 (ISPA 2013), Melbourne, Australia, July 2013.
- 10<sup>th</sup> International Workshop on Algorithms, Models and Tools for Parallel Computing on Heterogeneous Platforms 2012 (Heteropar 2012), Rhosde Island, Greece, August 2012.
- Supercomputing 2012 member of the on-site poster committee review group.
- 10th IEEE International Symposium on Parallel and Distributed Processing with Applications (ISPA 2012), Madrid, Spain, July 2012.
- 5<sup>th</sup> UNICORE summit, Delft, The Netherlands, 2009.
- Conference on Parallel Computing (ParCo), Lyon, France, 2009
- 5th International Conference on Ubiquitous Intelligence and Computing (UIC-08), Oslo, Norway, June 2008.
- 9th IEEE International Workshop on Parallel and Distributed Scientific and Engineering Computing (PDSEC), Miami, FL, April 2008.
- 4<sup>th</sup> UNICORE Summit, Las Palmas, Spain, 2008
- 17th International Conference on Software Engineering and Data Engineering (SEDE) 2008.
- 3<sup>rd</sup> UNICORE Summit, Paris, France, 2007.
- 16th International Conference on Software Engineering and Data Engineering (SEDE) 2007.
- EuroPVM/MPI conference 2006, Bonn, Germany
- 2<sup>nd</sup> UNICORE Summit, Dresden, Aug. 29-Sept. 1<sup>st</sup>, 2006.
- Workshop on High Level Programming Models and Supportive Environments (HiPS 2006), Rhodes Island, Greece, April 25, 2006.
- International Conference on Computational Science 2005 (ICCS 2005), Atlanta, Georgia, May 22-25, 2005.
- 10th International Workshop on High-Level Parallel Programming Models and Supportive Environments, IPDPS 2005, Denver, Colorado, USA; April 4-8, 2005.
- Second International Workshop on Programming Paradigms for Grids and Metacomputing Systems (PGaMS'05), Atlanta, Georgia, May 22-25, 2005.

- First International Workshop on Programming Paradigms for Grids and Metacomputing Systems (PPGaMS'04), Krakow, Poland, June 7-9, 2004.
- International Workshop on Grid Computing and e-Science, San Francisco, June 21<sup>st</sup> 2003.
- ICCS Workshop on Grid Computing in Computational Science", St-Petersburg, Russia, June 2-4 2003.
- Euroweb 2002, Oxford, England, December 17-18, 2002.

### Teaching Experience

- Big Data Analytics (graduate), UH: Spring 2017, Spring 2015, Spring 2014
- Computer Organization and Architecture (undergraduate), UH: Fall 2016
- Parallel Computation (graduate), UH: Fall 2015, Fall 2014, Fall 2013, Fall 2012, Fall 2011, Fall 2010, Spring 2009, Spring 2008, Spring 2007
- Computer Architecture (graduate), UH: Spring 2014, Spring 2013, Spring 2012, Spring 2011, Spring 2010, Fall 2009, Fall 2008, Fall 2007, Fall 2006
- Advanced Parallel Computation (graduate), UH: Fall 2009
- Software Design (undergraduate), UH: Spring 2008
- Parallel Computation (undergraduate), UH: Spring 2010, Spring 2006
- Numerical Methods (undergraduate), UH: Fall 2005 (jointly with Prof. Marc Garbey)
- Cluster Computing (graduate), University of Stuttgart, Germany: Spring 2005
- Distributed, Parallel and Practical High Performance Computing, University of Tennessee: Spring 2004 (jointly with Dr. Graham Fagg, Dr. Felix Wolf and Dr. George Bosilca).

### Advisees

#### PhD

- Shweta Jha, graduated Spring 2017  
Dissertation: "Performance Tuning and Modeling of Communication in Parallel Applications"
- Youcef Barigou, graduated Spring 2016  
Dissertation: "On Communication-Computation Overlap in High-Performance Computing"
- Vishwanath Venkatesan, graduated Fall 2013  
Dissertation: "Towards High Performance Parallel I/O for Scientific Computing"
- Kshitij Mehta, graduated Spring 2013  
Dissertation: "Parallel I/O for Shared Memory Applications"
- Rakhi Anand, graduated Spring 2012  
Dissertation: "Efficient Communication for Replicated Processes in Volunteer Environments"
- Mohamad Charawi, graduated Spring 2011  
Dissertation: "Optimizing Performance of Parallel I/O Operations for High Performance Computing".
- Saber Feki, graduated Fall 2010  
Dissertation: "Runtime Adaptation of High Performance Computing Applications"  
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- Siddharta Jana, graduated Fall 2016  
Dissertation: "Optimizations for Energy Efficiency within Distributed Memory Programming Models". Student was advised by Barbara Chapman, I was acting as the chair of the dissertation committee after she left.

## MS

- Sonia Shirwadkar, graduated Spring 2017
- Hadi Montakhabi, graduated Fall 2015
- HariPriya Ayyalasomayajula, graduated Spring 2015
- Carlos Vanegas, graduated Spring 2013
- Shailesh Mangrulkar, graduated Fall 2012
- Sarat Poluri, graduated Fall 2010
- Anup Jaya Prakesh, graduated Spring 2010
- Spoorthy Mareddy, graduated Spring 2009
- Kshitij Mehta, graduated Spring 2009
- Ketan Kulkarni, graduated Summer 2008
- Vishwanath Venkatesan, graduated Summer 2008
- Shuo Huang, graduated Fall 2007
- Mohamad Chaarawi, graduated Fall 2006
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- Marcus Hervey, graduated Fall 2016. Student was advised by Barbara Chapman, I acted as the chair of the thesis committee after she left.
- Chen Shen, graduated Spring 2017. Student was advised by Barbara Chapman, I acted as the chair of the thesis committee after she left.

**Invited Presentations**

1. "File I/O in the era of Era of Large Scale Data Analytics", seminar talk, RWTH Aachen, Germany, May 2017.
2. "Facing the I/O Challenge in High Performance Computing", seminar talk, University of Houston, Houston, TX 2015.
3. "Parallel I/O for OpenSHMEM", invited talk, 1<sup>st</sup> OpenShmem Workshop, Annapolis, MD, March 2014.
4. "Facing the I/O Challenge in High Performance Computing", Seminar presentation, University of Ulm, Germany, September 2013.
5. "Scalable and Modular Parallel I/O for High Performance Computing", IDC HPC user forum meeting, Stuttgart, Germany, 2012.
6. "Scalable and Modular Parallel I/O for High Performance Computing", Gulfcoast Academic Supercomputing, Supercomputing 2012.
7. "Scalable and Modular Parallel I/O for Open MPI", presentation at Greenplum, San Mateo, CA, December, 2012.
8. "Hardware and performance considerations for computational medicine", invited talk, Conference on Computational Surgery, Strasbourg, France, January 2011.
9. "Dynamic Optimization of Communication Operations", Gulfcoast Academic Supercomputing, Supercomputing 2011.
10. "A parallel I/O framework for Open MPI", Gulfcoast Academic Supercomputing, Supercomputing 2011.
11. "VolpexMPI: robust execution of MPI applications through process replication", invited presentation, HPC Resilience Summit, LACSI Symposium, Santa Fe, NM, October 2010.
12. "Auto-tuning Communication Operations and Libraries: Challenges and Solutions", 25<sup>th</sup> Anniversary Workshop of the Innovative Computing Laboratory (ICL), Knoxville, TN, March 2010.

13. "OMPIO: a modular architecture for parallel I/O", Supercomputing 2009, booth of Cisco Systems, Portland, OR, 2009.
14. "Incorporating historic learning into dynamic optimization approaches for HPC applications", Supercomputing 2009, booth of the Texas Learning and Computation Center, Portland, Oregon, 2009.
15. "Runtime Adaptation Techniques for High Performance Computing Applications, Supercomputing 2008, booth of the Texas Learning and Computation Center, Austin, TX, 2008.
16. "Next generation I/O architecture for Open MPI: concept and preliminary results", University of Dresden, Germany, June 2008.
17. "Towards Performance and Portability through Runtime Adaption for High Performance Computing Applications", University of Stuttgart, Germany, June 2008.
18. "Fault-Tolerant Master-worker style applications in MPI", MPI-Forum meeting, Chicago, March 2008.
19. "Optimizing Collective I/O Operations for Open MPI", Cisco CRC seminar, San Jose, CA, October 2007.
20. "Runtime Optimizations of Application Level Communication Patterns", Seminar talk at Indiana University, Bloomington, USA, May 2007.
21. "Optimizing Communication Patterns of Complex CFD applications for Grid environments", World Congress on Computational Mechanics, Mini-symposium on Complex CFD Problems in Grid Environments, Los Angeles, USA, June 2006.
22. "Open MPI and ADCL", Seminar at the University of Dresden, Dresden, Germany, April 2006.
23. "Semantic and State: Fault Tolerant Application Design for a Fault Tolerant MPI", SIAM Conference on Parallel Processing, San Francisco, USA, February 25, 2004.
24. "Fault-Tolerant MPI in High Performance Computing: Semantics and Application Scenarios", e-Seminar IFIP WG10.3, May 4th 2004, jointly given with Graham E. Fagg and Jack. J. Dongarra.
25. "Fault Tolerant MPI", Colloquium, Indiana University, Bloomington, USA, October 2003.
26. "Extending MPI: fault tolerance and MPI-2 issues", 6<sup>th</sup> HLRS Meta- and Gridcomputing Workshop, Stuttgart, May 2003.
27. "Problem Solving Environments and Application Development in the Grid", 2<sup>nd</sup> Grid Forum Korea (GFK), Seoul (South Korea), July 2002.
28. "The DAMIEN Grid Software Development Environment: Standards, Tools and Libraries", 2<sup>nd</sup> Asia-Pacific Grid Forum (APGrid), Taipei (Taiwan), May 2002.
29. "Distributed Applications and Middleware for Industrial use of European Networks", 6<sup>th</sup> IEEE Symposium on Computers and Networks 2001 (ISCC2001), Hammamed (Tunisia), July 2001.
30. "Grid-Activities at the HLRS", Colloquium at the University of Tennessee, Knoxville, August 2001.
31. "SC99, Metacomputing and PACX-MPI", UKHEC Workshop on Grid Computing, Daresbury Laboratories, UK, June 2000.
32. "PACX-MPI: a library for coupling massively parallel computing systems", presentation at the German Center for Space and Flight Technology (DLR), Cologne, September 1999.