PAVAN BALAJI

Mathematics and Computer Science (MCS) Division, Argonne National Laboratory (ANL)
Address: Bldg. 240, Rm. 3146, Argonne, IL 60439 **Phone:** 630.252.3017 **Fax:** 630.252.5986
Email: balaji@anl.gov **Web:** http://www.mcs.anl.gov/∼balaji

DEGREES ATTAINED

Ph.D., Computer Science and Engg., Ohio State University	2006
M.S., Computer Science and Engg., Ohio State University	2003
B.Tech., Computer Science and Engg., Indian Institute of Technology (IIT), Madras	2001

POSITIONS HELD

Argonne National Laboratory, Argonne, IL

Group Lead	2012 – present
Senior Computer Scientist	2020 – present
Computer Scientist	2012 – 2020
RD5	2017 – 2020
RD4	2015 – 2017
RD3	2012 – 2015
Assistant Computer Scientist	2008 – 2011
Postdoctoral Researcher	2006 – 2008

Northwestern-Argonne Institute of Science and Engineering, Northwestern University, Chicago, IL

Senior Fellow	2012 – present

Computation Institute, University of Chicago, Chicago, IL

Fellow	2007 – 2018

RESEARCH INTERESTS

My research broadly falls into the general areas of parallel and distributed computing, including runtime systems for communication and I/O on extreme-scale supercomputing systems, modern system architecture, cloud computing systems, data-intensive computing, and big-data sciences. I lead the MPICH implementation of MPI (http://www.mpich.org/). MPICH is the root of most of the vendor derived MPI implementations in the world including IBM (for their Blue Gene systems), Cray, Intel, Microsoft, Ohio State University (for their MVAPICH implementation), and many others. MPICH and its derivatives are the most widely used MPI implementations. I also lead a number of other projects including the Argobots (http://www.argobots.org/) and BOLT (http://www.bolt-omp.org/) libraries, and have contributed to dozens of other open-source projects.

KEY ACTIVITIES, AWARDS AND ACCOMPLISHMENTS

1. *R&D 100 Award Finalist for Argobots.* Virtual event, 2020. (jointly with University of Illinois, Urbana-Champaign, and Ground X).
2. *R&D 100 Award for Open UCX.* San Francisco, California, 2019. (jointly with Los Alamos National Laboratory, ARM, Mellanox Technologies, AMD, and various others).
3. *Best Paper Award.* International Conference on Parallel Architectures and Compilation Techniques (PACT), 2019.

4. *Award for Editorial Excellence.* IEEE Transactions on Parallel and Distributed Systems (TPDS), 2019.
5. *Best Poster Award.* IEEE International Conference on Parallel and Distributed Systems (ICPADS). Sentosa, Singapore, 2018.
6. *Best Student Poster Award.* International Conference on Parallel Processing (ICPP). Eugene, Oregon, 2018.
7. *Best Paper Award.* ACM International Conference on High Performance Distributed Computing (HPDC). Tempe, Arizona, 2018.
8. *Scalable Computing Challenge Finalist.* IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid). Madrid, Spain, 2017.
9. *Inventors' Award.* Argonne National Laboratory, Argonne, USA, 2016.
10. *IEEE TCSC Award for Excellence in Scalable Computing (Middle Career Researcher).* 2015.
11. *Scalable Computing Challenge Winner.* IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid). Shenzhen, China, 2015.
12. *Scalable Computing Challenge Finalist.* IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid). Shenzhen, China, 2015. (not including the one listed above as the winner)
13. *Best Paper Finalist.* IEEE/ACM International Conference for High-Performance Computing, Networking, Storage and Analysis (SC). New Orleans, Louisiana, 2014.
14. *Best Poster Finalist.* IEEE/ACM International Conference for High-Performance Computing, Networking, Storage and Analysis (SC). New Orleans, Louisiana, 2014.
15. *Best Paper Award.* IEEE International Conference on Scalable Computing and Communications (ScalCom). Chengdu, China, 2013.
16. *TEDxMidwest Emerging Leader.* 2013.
17. *Crain's Chicago Business' Annual 40 Under 40 Award.* Chicago, IL, 2012.
18. *U.S. Department of Energy (DOE) Early Career Award.* 2012.
19. *IEEE Technical Committee on Scalable Computing (TCSC) Chair.* Term: 2012–2013.
20. *Outstanding Paper Award.* European PVM/MPI Users' Group Conference (Euro PVM/MPI). Espoo, Finland, 2009.
21. *Best Paper Award.* International Supercomputing Conference (ISC). Hamburg, Germany, 2009.
22. *Best Paper Award.* IEEE International Conference on Cluster Computing (Cluster). Tsukuba, Japan, 2008.
23. *Outstanding Paper Award.* European PVM/MPI Users' Group Conference (Euro PVM/MPI). Dublin, Ireland, 2008.
24. *Outstanding Paper Award.* International Supercomputing Conference (ISC). Dresden, Germany, 2008.
25. *Storage Challenge Award (Large Systems Category).* IEEE/ACM International Conference for High-Performance Computing, Networking, Storage and Analysis (SC). Reno, Nevada, 2007.
26. *Los Alamos Director's Technical Achievement Award.* Los Alamos National Laboratory. Los Alamos, New Mexico, 2005.
27. *Outstanding Research Award of Excellence.* Computer Science and Engineering, Ohio State University. Columbus, Ohio, 2005.

PATENTS

1. *Remote Direct Memory Access (RDMA) Over Ethernet Using Datagrams.* Patent no.: 8,903,935 B2. Date of patent: Dec. 2nd, 2014.
2. *Parallel Metadata Apparatus and Method for Distributed Computation, Communication, and Input-Output.* 2009. (pending).

RESEARCH GRANTS

Active Grants

1. **PI:** *Analyzing and Improving the Suitability of MPI as an OpenSHMEM Runtime.* Department of Defense (DOD). Period: 08/01/2018 to 09/30/2021. Amount (single institute grant): $1,200,000.
2. **PI:** *Exascale MPI.* Department of Energy (DOE), Advanced Scientific Computing Research (ASCR), Exascale Computing Project (ECP). Period: 10/01/2016 to 09/30/2024. Amount (single institute grant): $13,949,984.78.
3. **Co-PI** (PI: Barbara Chapman, Brookhaven National Laboratory): *SOLLVE: Scaling OpenMP with LLVM for Exascale performance and portability.* Department of Energy (DOE), Advanced Scientific Computing Research (ASCR), Exascale Computing Project (ECP). Period: 10/01/2016 to 09/30/2024. Funding share (collaborative grant): $3,442,202.
4. **Co-PI** (PI: Galen Shipman, Los Alamos National Laboratory): *Enhancing and Hardening the Legion Programming System for the Exascale Computing Project.* Department of Energy (DOE), Advanced Scientific Computing Research (ASCR), Exascale Computing Project (ECP). Period: 10/01/2016 to 09/30/2024. Funding share (collaborative grant): $325,361.

Completed Grants

1. **PI** (original PI: Sangmin Seo, Argonne National Laboratory; transferred in 03/2017): *BOLT: OpenMP over Lightweight Threads.* Argonne National Laboratory, Laboratory Directed Research and Development (LDRD) program. Period: 10/01/2016 to 09/30/2018. Amount (single institute grant): $420,000.
2. **Co-PI** (PI: Paul Messina, Argonne National Laboratory): *Pilot project for library readiness on next generation ASCR facilities.* Department of Energy (DOE), Advanced Scientific Computing Research (ASCR). Period: 09/01/2015 to 09/31/2017. Funding share (collaborative grant): $943,082 (total amount: $1,300,000).
3. **Co-PI** (PI: Peter H. Beckman, Argonne National Laboratory): *ARGO: An Exascale Operating System and Runtime.* Department of Energy (DOE), Advanced Scientific Computing Research (ASCR), OS/R Research program. Period: 08/01/2013 to 07/31/2016. Argonne amount (collaborative grant): $4,800,000.
4. **Co-PI** (PI: Mohammad Javad Rashti, RNet Technologies): *Virtual Accelerator Support for High Performance Computing Clouds.* Department of Energy (DOE), Small Business Technology Transfer (STTR) program, Phase I. Period: 02/19/2013 to 02/18/2014. Argonne Amount (collaborative grant): $75,000.
5. **Co-PI** (PI: Peter H. Beckman, Argonne National Laboratory): *Exploring a New Approach for Parallel Programming at Exascale*. Argonne National Laboratory, Laboratory Directed Research and Development (LDRD) program. Period: 10/01/2012 to 09/30/2013. Amount (single institute grant): $150,000.
6. **PI** (original PI: Ewing L. (Rusty) Lusk, Argonne National Laboratory; transferred in 05/2013): *System Software for Scalable Applications*. NCSA/Illinois Enhanced Intellectual Services for Petascale Performance (NEIS-P^2) program. Period: 06/01/2012 to 09/30/2013. Amount (single institute grant): $75,000.
7. **Co-PI** (PI: Rajeev S. Thakur, Argonne National Laboratory): *Evolving MPI to Address the Challenges of Exascale Systems*. Department of Energy (DOE), Advanced Scientific Computing Research (ASCR), Base program. Period: 10/01/2012 to 09/30/2015. Amount (single institute grant): $3,000,000.
8. **Co-PI** (PI: Andrew A. Chien, University of Chicago): *Exploiting Global View for Resilience (GVR)*. Department of Energy (DOE), Advanced Scientific Computing Research (ASCR), X-Stack Software Research program. Period: 10/01/2012 to 09/30/2015. Argonne amount (collaborative grant): $765,000.
9. **PI:** *Implementation of MPICH2 over Portals 4*. Department of Energy (DOE), National Nuclear Security Administration (NNSA), Base program. Period: 06/01/2012 to 09/30/2012. Amount (single institute grant): $150,000.
10. **PI:** *Exploring Efficient Data Movement Strategies For Exascale Systems with Deep Memory Hierarchies*. Department of Energy (DOE), Advanced Scientific Computing Research (ASCR), Early Career program. Period: 07/01/2012 to 06/30/2017. Amount (single institute grant): $2,500,000.
11. **Co-PI** (PI: Marc Snir, Argonne National Laboratory): *Tools for Semi-Automatic Conversion of Current HPC Codes to a Task Parallel Model*. Department of Energy (DOE), Advanced Scientific Computing Research (ASCR), Base program. Period: 10/01/2011 to 09/30/2012. Amount (single institute grant): $2,500,000.

12. **Co-PI** (PI: Rajeev S. Thakur, Argonne National Laboratory): *Programming Libraries and Tools*. Department of Energy (DOE), Advanced Scientific Computing Research (ASCR), Base program. Period: 11/01/2011 to 09/30/2012. Amount (single institute grant): $825,000.
13. **Co-PI** (PI: Robert Harrison, Oak Ridge National Laboratory): *Chemistry Exascale Co-design Center (CECC)* (planning award). Department of Energy (DOE), Advanced Scientific Computing Research (ASCR), X-Stack Software Research program. Period: 08/15/2010 to 09/30/2011. Argonne amount (collaborative grant): $50,000.
14. **Co-PI** (PI: Rajeev S. Thakur, Argonne National Laboratory): *Runtime Support for Integrating MPI and Accelerator Programming Models for Exascale Systems*. Argonne National Laboratory, Laboratory Directed Research and Development (LDRD) program. Period: 10/01/2010 to 09/30/2013. Amount (single institute grant): $500,000.
15. **Co-PI** (PI: Peter H. Beckman, Argonne National Laboratory): *An Open Integrated Software Stack for Extreme Scale Computing (planning award).* Department of Energy (DOE), Advanced Scientific Computing Research (ASCR), X-Stack Software Research program. Period: 08/15/2010 to 09/30/2011. Argonne amount (collaborative grant): $1,870,000.
16. **PI:** *Open GATS: An Open Unified Framework for Global Address and Task Space Computing in the Exascale Era.* Argonne National Laboratory, Laboratory Directed Research and Development (LDRD) program. Period: 08/01/2010 to 07/31/2013. Amount (single institute grant): $962,000.
17. **Co-PI** (PI: Wu-chun Feng, Virginia Tech): *Acquisition of a Heterogeneous Supercomputing Instrument for Transformative Interdisciplinary Research.* National Science Foundation (NSF), Major Research Instrumentation (MRI) program. Period: 09/01/2010 to 08/31/2015. Total amount (collaborative grant): $2,000,000.
18. **Co-PI** (PI: Dhabaleswar K. Panda, Ohio State University): *Designing Next Generation Communication and I/O Subsystems with Multicore Architectures.* National Science Foundation (NSF), Computing Processes and Artifacts (CPA) program. Period: 07/01/07 to 06/30/10. Argonne amount (collaborative grant): $87,512 (total: $462,512).
19. **PI:** *Experimental Testbed for System Software Research.* Associate Lab Director Discretionary Funds for Research and Development. Period: 01/01/07 to 12/31/07. Amount (single institute grant): $100,000.

SELECTED PUBLICATIONS

Edited Books

1. Pavan Balaji. *Programming Models for Parallel Computing.* MIT Press. 2015. (Chapter contributors: William D. Gropp, Rajeev S. Thakur, Paul Hargrove, Jeffrey A. Kuehn, Stephen W. Poole, Katherine Yelick, Yili Zheng, Sriram Krishnamoorthy, Jeff Daily, Abhinav Vishnu, Bruce Palmer, Bradford L. Chamberlain, Laxmikant Kale, Nikhil Jain, Jonathan Lifflander, Ewing Lusk, Ralph Butler, Steven C. Pieper, James S. Dinan, Timothy Armstrong, Justin M. Wozniak, Michael Wilde, Ian T. Foster, Kath Knobe, Michael G. Burke, Frank Schlimbach, Barbara Chapman, Deepak Eachempati, Sunita Chandrasekaran, Arch D. Robison, Charles E. Leiserson, Alexey Kukanov, Wen-mei Hwu, David Kirk, Tim Mattson).

Book Chapters

2. James S. Dinan and Pavan Balaji. *Scalable Computing and Communications: Theory and Practice.* Chapter on *Parallel Programming Models for Scalable Computing.* Editors: Samee Ullah Khan, Lizhe Wang, and Albert Y. Zomaya. John Wiley & Sons Publishing, 2012.
3. Pavan Balaji, Darius T. Buntinas and Dries Kimpe. *Scalable Computing and Communications: Theory and Practice.* Chapter on *Fault Tolerance Techniques for Scalable Computing.* Editors: Samee Ullah Khan, Lizhe Wang, and Albert Y. Zomaya. John Wiley & Sons Publishing, 2012.
4. Pavan Balaji, Wu-chun Feng and Qian Zhu. *Scalable Computing and Communications: Theory and Practice.* Chapter on *Virtualization Techniques for Graphics Processing Units.* Editors: Samee Ullah Khan, Lizhe Wang, and Albert Y. Zomaya. John Wiley & Sons Publishing, 2012.
5. Dhabaleswar K. Panda, Pavan Balaji, Sayantan Sur and Matthew Koop. *Attaining High Performance Communication: A Vertical Approach.* Chapter on *Commodity High Performance Interconnects.* Editor: Ada Gavrilovska. CRC Press, 2009.

6. Wu-chun Feng and Pavan Balaji. *Attaining High Performance Communication: A Vertical Approach.* Chapter on *Ethernet vs. Ethernot.* Editor: Ada Gavrilovska. CRC Press, 2009.

7. Pavan Balaji, P. Sadayappan and Mohammad Kamrul Islam. *Market-Oriented Grid and Utility Computing.* Chapter on *Techniques on Providing Hard Quality of Service Guarantees in Job Scheduling.* Editors: Rajkumar Buyya and Kris Bubendorfer. Wiley Publishers, 2008.

Refereed Journal Articles

8. Jianqiu Ge, Jintao Meng, Ning Guo, Yanjie Wei, Pavan Balaji, and Shengzhong Feng. *Counting Kmers for Biological Sequences at Large Scale.* International Journal of Interdisciplinary Sciences: Computational Life Sciences (INSC). pp. 99-108, March, 2020.

9. Adrián Castelló, Rafael Mayo Gual, Sangmin Seo, Pavan Balaji, Enrique S. Quintana-Ortí, and Antonio J. Peña. *Analysis of Threading Libraries for High Performance Computing.* IEEE Transactions on Computers (TC), Vol. 69, Issue 9, pp. 1279–1292, 2020. [pdf]

10. Tao Gao, Yanfei Guo, Pietro Cicotti, Yutong Lu, Pavan Balaji, and Michela Taufer. *Memory-Efficient and Skew-Tolerant MapReduce over MPI for Supercomputing Systems.* IEEE Transactions on Parallel and Distributed Systems (TPDS), Vol. 31, Issue 12, pp. 2734–2748, 2020. [pdf]

11. Sarunya Pumma, Min Si, Wu-chun Feng, and Pavan Balaji. *Scalable Deep Learning via I/O Analysis and Optimization.* ACM Transactions on Parallel Computing (ToPC), Vol. 6, Issue 2, 2019. [pdf]

12. Abdelhalim Amer, Huiwei Lu, Pavan Balaji, Milind Chabbi, Yanjie Wei, Jeff Hammond, and Satoshi Matsuoka. *Lock Contention Management in Multithreaded MPI.* ACM Transactions on Parallel Computing (ToPC), Vol. 5, Issue 3, 2018. [pdf]

13. Min Si, Antonio J. Peña, Jeffrey R. Hammond, Pavan Balaji, Masamichi Takagi, and Yutaka Ishikawa. *Dynamic Adaptable Asynchronous Progress Model for MPI RMA Multiphase Applications.* IEEE Transactions on Parallel and Distributed Systems (TPDS), Vol. 29, Issue 9, pp. 1975–1989, 2018. [pdf]

14. Sangmin Seo, Abdelhalim Amer, Pavan Balaji, Cyril Bordage, George Bosilca, Alex Brooks, Philip Carns, Adrián Castelló, Damien Genet, Thomas Herault, Shintaro Iwasaki, Prateek Jindal, Laxmikant V. Kale, Sriram Krishnamoorthy, Jonathan Lifflander, Huiwei Lu, Esteban Meneses, Marc Snir, Yanhua Sun, Kenjiro Taura, and Peter H. Beckman. *Argobots: A Lightweight Low-Level Threading and Tasking Framework.* IEEE Transactions on Parallel and Distributed Systems (TPDS), Vol. 29, Issue 3, pp. 512–526, 2018. [pdf]

15. Adrián Castelló, Rafael Mayo Gual, Kevin Sala, Vicenç Beltran, Pavan Balaji and Antonio J. Peña. *On the Adequacy of Lightweight Thread Approaches for High-Level Parallel Programming Models.* International Journal of Future Generation Computer Systems (FGCS), Vol. 84, pp. 22–31, 2018. [pdf]

16. Adrián Castelló, Antonio J. Peña, Rafael Mayo Gual, Judit Planas, Enrique S. Quintana-Ortí, and Pavan Balaji. *Exploring the Interoperability of Remote GPGPU Virtualization using rCUDA and Directive-based Programming Models.* Elsevier Journal of Supercomputing (JoS), Vol. 74, Issue 11, pp. 5628–5642, 2018. [pdf]

17. Andrew A. Chien, Pavan Balaji, Nan Dun, Aiman Fang, Hajime Fujita, Kamil Iskra, Zachary A. Rubenstein, Ziming Zheng, Jeffrey R. Hammond, Ignacio Laguna, David F. Richards, Anshu Dubey, Brian van Straalen, Mark Hoemmen, Michael A. Heroux, Keita Teranishi, and Andrew R. Siegel. *Exploring Versioned Distributed Arrays for Resilience in Scientific Applications: Global View Resilience.* International Journal of High Performance Computing Applications (JHPCA), 31(6), pp. 564–590, 2017. [pdf]

18. Boyu Zhang, Trilce Estrada, Pietro Cicotti, Pavan Balaji, Michela Taufer. *Enabling Scalable and Accurate Clustering of Distributed Ligand Geometries on Supercomputers.* International Parallel Computing (ParCo) Journal, Vol. 63, pp. 38–60, 2017. [pdf]

19. Ashwin M. Aji, Antonio J. Peña, Pavan Balaji, Wu-chun Feng. *MultiCL: Enabling Automatic Scheduling for Task-Parallel Workloads in OpenCL.* International Parallel Computing (ParCo) Journal, Vol. 58, pp. 37–55, 2016. [pdf]

20. James S. Dinan, Pavan Balaji, Darius T. Buntinas, David J. Goodell, William D. Gropp, Rajeev S. Thakur. *An Implementation and Evaluation of the MPI 3.0 One-Sided Communication Interface.* Journal of Concurrency and Computation: Practice and Experience (CCPE), Vol. 28, Issue 17, pp. 4385–4404, 2016. [pdf]

21. Humayun Arafat, James S. Dinan, Sriram Krishnamoorthy, Pavan Balaji, and P. Sadayappan. *Work Stealing for GPU-accelerated Parallel Programs in a Global Address Space Framework.* Journal of Concurrency and Computation: Practice and Experience (CCPE), Vol. 28, Issue 13, pp. 3637–3654, 2016. [pdf]

22. Saif Ur-Rehman Malik, Samee Ullah Khan, Nikos Tziritas, Joanna Kolodziej, Albert Y. Zomaya, Sajjad A. Madani, Nasro Min-Allah, Lizhe Wang, Cheng-Zhong Xu, Qutaibah Marwan Malluhi, Jonathan E. Pecero, Pavan Balaji, Abhinav Vishnu, Rajiv Ranjan, Sherali Zeadally, and Hongxiang Li. *Performance Analysis of Data Intensive Cloud Systems based on Data Management and Replication: A Survey.* Journal of Distributed and Parallel Databases (DAPD). Vol. 34, No. 2, pp. 179–215, 2016. [pdf]

23. Junaid Shuja, Kashif Bilal, Sajjad A. Madani, Mazliza Othman, Rajiv Ranjan, Pavan Balaji, and Samee Ullah Khan. *Survey of Techniques and Architectures for Designing Energy Efficient Data Centers.* IEEE Systems Journal. Vol. 10, No. 2, pp. 507–519, 2016. [pdf]

24. Abdul Hameed, Alireza Khoshkbarforoushha, Rajiv Ranjan, Prem Prakash Jayaraman, Joanna Kolodziej, Pavan Balaji, Sherali Zeadally, Qutaibah Marwan Malluhi, Nikos Tziritas, Abhinav Vishnu, Samee Ullah Khan, and Albert Y. Zomaya. *A Survey and Taxonomy on Energy Efficient Resource Allocation Techniques for Cloud Computing Systems.* Journal of Computing. Vol. 98, No. 7, pp. 751–774, 2016. [pdf]

25. Antonio J. Peña and Pavan Balaji. *A Data-oriented Profiler to Assist in Data Partitioning and Distribution for Heterogeneous memory in HPC.* International Parallel Computing (ParCo) Journal. Vol. 51, pp. 46–55, 2016. [pdf]

26. Torsten Hoefler, James S. Dinan, Rajeev S. Thakur, Brian Barrett, Pavan Balaji, William D. Gropp, and Keith Underwood. *Remote Memory Access Programming in MPI-3.* ACM Transactions on Parallel Computing (ToPC). Vol. 2, Number 2, July Issue, pages 9:1–9:26, 2015. [pdf]

27. Ashwin M. Aji, Lokendra S. Panwar, Feng Ji, Karthik Murthy, Milind Chabbi, Pavan Balaji, Keith R. Bisset, James S. Dinan, Wu-chun Feng, John Mellor-Crummey, Xiaosong Ma, and Rajeev S. Thakur. *MPI-ACC: Accelerator-Aware MPI for Scientific Applications.* IEEE Transactions on Parallel and Distributed Systems (TPDS). Vol. PP, Issue 99, pages 1–14, 2015. [pdf]

28. Ryan E. Grant, Mohammad Rashti, Pavan Balaji, and Ahmad Afsahi. *Scalable Connectionless RDMA over Unreliable Datagrams.* International Parallel Computing (ParCo) Journal. Vol. 48, pages 15–39, 2015. [pdf]

29. Jintao Meng, Bingqiang Wang, Yanjie Wei, Shengzhong Feng, and Pavan Balaji. *SWAP-Assembler: Scalable and Efficient Genome Assembly Towards Thousands of Cores.* BMC Bioinformatics Journal. Vol. 15 (Suppl. 9), 2014. [pdf]

30. James S. Dinan, Pavan Balaji, David J. Goodell, Douglas Miller, Marc Snir and Rajeev S. Thakur. *Enabling Communication Concurrency Through Flexible MPI Endpoints.* International Journal of High Performance Computing Applications (JHPCA); special issue for the Euro MPI Users' Group Meeting (Euro MPI), Vol. 28, Issue 4, pp. 390–405. [pdf]

31. Marc Snir, Robert W. Wisniewski, Jacob A. Abraham, Sarita V. Adve, Saurabh Bagchi, Pavan Balaji, Jim Belak, Pradip Bose, Franck Cappello, Bill Carlson, Andrew A. Chien, Paul Coteus, Nathan A. Debardeleben, Pedro Diniz, Christian Engelmann, Mattan Erez, Saverio Fazzari, Al Geist, Rinku K. Gupta, Fred Johnson, Sriram Krishnamoorthy, Sven Leyffer, Dean Liberty, Subhashish Mitra, Todd Munson, Robert Schreiber, Jon Stearley, and Eric Van Hensbergen. *Addressing Failures in Exascale Computing.* International Journal of High Performance Computing Applications (JHPCA), Vol. 28, Issue 2, pp. 129–173, 2014. [pdf]

32. John Jenkins, James S. Dinan, Pavan Balaji, Tom Peterka, Nagiza F. Somatova, Rajeev S. Thakur. *Processing MPI Derived Datatypes on Noncontiguous GPU-Resident Data.* IEEE Transactions on Parallel and Distributed Systems (TPDS), pp. 2627–2637, Vol. 25, Issue 10, 2013. [pdf]

33. Torsten Hoefler, James S. Dinan, Darius T. Buntinas, Pavan Balaji, Brian Barrett, Ronald Brightwell, William D. Gropp, Vivek Kale and Rajeev S. Thakur. *MPI+MPI: A New, Hybrid Approach to Parallel Programming with MPI Plus Shared Memory.* Springer Journal of Computing; special issue for the Euro MPI Users' Group Meeting (Euro MPI), pp. 1121–1136, Vol. 95, 2013. [pdf]

34. Hameed Hussain, Nasro Min-Allah, Samee Ullah Khan, Abdul Hameed, Saif Ur-Rehman Malik, Limin Zhang, Nasir Ghani, Joanna Kolodziej, Albert Y. Zomaya, Cheng-Zhong Xu, Pavan Balaji, Abhinav Vishnu, Fredric Pinel, Jonathan

E. Pecero, Pascal Bouvry, and Ammar Rayes. *A Survey on Resource Allocation in High Performance Distributed Computing Systems.* International Parallel Computing (ParCo) Journal, pp. 709–736, Vol. 39, Issue 11, 2013. [pdf]

35. Jue Hong, Pavan Balaji, Gaojin Wen, Bibo Tu, Junming Yan, Cheng-Zhong Xu, and Shengzhong Feng. *Implementation and Evaluation of Container-based Job Management for Fair Resource Sharing.* Lecture Notes in Computer Science and General Issues; special issue for the International Supercomputing Conference (ISC), pp. 290–301, Vol. 7905, 2013. (conference: Jun. 16–20, 2013, Leipzip, Germany.) [pdf] [slides]

36. Abhinav Vishnu, Shuaiwen Song, Andres Marquez, Kevin Barker, Darren Kerbyson, Kirk W. Cameron and Pavan Balaji. *Designing Energy Efficient Communication Runtime Systems: A View from PGAS Models.* Journal of Supercomputing (JoS), pp. 691-709, Vol. 63, Issue 3, 2013. [pdf]

37. Giorgio Luigi Valentini, Walter Lassonde, Samee Ullah Khan, Nasro Min-Allah, Sajjad A. Madani, Juan Li, Limin Zhang, Lizhe Wang, Nasir Ghani, Joanna Kolodziej, Hongxiang Li, Albert Y. Zomaya, Cheng-Zhong Xu, Pavan Balaji, Abhinav Vishnu, Frédéric Pinel, Jonathan E. Pecero, Dzimitry Kliazovich, and Pascal Bouvry. *An Overview of Energy Efficiency Techniques in Cluster Computing Systems.* Springer Journal of Cluster Computing; special issue on Green Computing and Communications, pp. 3-15, Vol. 16, Issue 1, 2013. [pdf]

38. Pavan Balaji, Rinku K. Gupta, Abhinav Vishnu and Peter H. Beckman. *Mapping Communication Layouts to Network Hardware Characteristics on Massive-Scale Blue Gene Systems.* Springer Journal of Computer Science on Research and Development; special issue for the International Supercomputing Conference (ISC), pp. 247-256, Vol. 26, Issue 3-4, 2011. (conference: Jun. 18–23, 2011, Hamburg, Germany.) [pdf] [slides]

39. Pavan Balaji, Darius T. Buntinas, David J. Goodell, William D. Gropp, Torsten Hoefler, Sameer Kumar, Ewing L. (Rusty) Lusk, Rajeev S. Thakur and Jesper Larsson Träff. *MPI on Millions of Cores.* Parallel Processing Letters (PPL) Journal; special issue for the Euro MPI Users' Group Meeting (Euro MPI), pp. 45–60, Vol. 21, Issue 1, 2011. [pdf]

40. Pavan Balaji, Wu-chun Feng, Heshan Lin, Jeremy Archuleta, Satoshi Matsuoka, Andrew Warren, João Carlos Setubal, Ewing L. (Rusty) Lusk, Rajeev S. Thakur, Ian Foster, Daniel S. Katz, Shantenu Jha, Kevin Shinpaugh, Susan Coghlan, and Daniel A. Reed. *Global-scale Distributed I/O with ParaMEDIC.* Journal of Concurrency and Computation: Practice and Experience (CCPE), pp. 2266–2281, Vol. 22, Issue 16, 2010. [pdf]

41. Pavan Balaji, Anthony K. Chan, William D. Gropp, Rajeev S. Thakur and Ewing L. (Rusty) Lusk. *The Importance of Non-Data-Communication Overheads in MPI.* International Journal of High Performance Computing Applications (IJHPCA); special issue for the Euro MPI Users' Group Meeting (Euro MPI), pp. 5–15, Vol. 24, Issue 1, 2010. [pdf]

42. Pavan Balaji, Darius T. Buntinas, David J. Goodell, William D. Gropp and Rajeev S. Thakur. *Fine-Grained Multithreading Support for Hybrid Threaded MPI Programming.* International Journal of High Performance Computing Applications (IJHPCA); special issue for the Euro MPI Users' Group Meeting (Euro MPI), pp. 49–57, Vol. 24, Issue 1, 2010. [pdf]

43. Jesper Larsson Träff, Andreas Ripke, Christian Siebert, Pavan Balaji, Rajeev S. Thakur and William D. Gropp. *A Pipelined Algorithm for Large, Irregular All-gather Problems.* International Journal of High Performance Computing Applications (IJHPCA); special issue for the Euro MPI Users' Group Meeting (Euro MPI), pp. 58–68, Vol. 24, Issue 1, 2010. [pdf]

44. Pavan Balaji, Anthony K. Chan, Rajeev S. Thakur, William D. Gropp and Ewing L. (Rusty) Lusk. *Toward Message Passing for a Million Processes: Characterizing MPI on a Massive Scale Blue Gene/P.* Springer Journal of Computer Science on Research and Development; special issue for the International Supercomputing Conference (ISC), pp. 11–19, Vol. 24, Issue 1, 2009. **Best Paper Award at ISC.** (conference: June 23–26, 2009, Hamburg, Germany.) [pdf] [slides]

45. Ping Lai, Pavan Balaji, Rajeev S. Thakur and Dhabaleswar K. Panda. *ProOnE: A General Purpose Protocol Onload Engine for Multi- and Many-Core Architectures.* Springer Journal of Computer Science on Research and Development; special issue for the International Supercomputing Conference (ISC), pp. 133–142, Vol. 23, Issue 3, 2009. (conference: June 23–26, 2009, Hamburg, Germany.) [pdf] [slides]

46. Pavan Balaji, Wu-chun Feng and Dhabaleswar K. Panda. *Bridging the Ethernet-Ethernot Performance Gap.* IEEE Micro Journal; special issue on High-Performance Interconnects, pp. 24–40, Vol. 26, Issue 3, 2006. [pdf]

47. Hyun-Wook Jin, Pavan Balaji, Chuck Yoo, Jin-Young Choi and Dhabaleswar K. Panda. *Exploiting NIC Architectural Support for Enhancing IP based Protocols on High Performance Networks.* Journal of Parallel and Distributed Com-

puting (JPDC); special issue on Design and Performance of Networks for Super-, Cluster- and Grid-Computing, pp. 1348–1365, Vol. 65, Issue 11, 2005. [pdf]

48. Mohammad Kamrul Islam, Pavan Balaji, P. Sadayappan and Dhabaleswar K. Panda. *QoPS: A QoS based scheme for Parallel Job Scheduling (extended journal version).* IEEE Springer LNCS Journal Series, pp. 252–268, Vol. 2862, 2003. [pdf]

Refereed Conference Publications

49. Kaiming Ouyang, Min Si, Atsushi Hori, Zizhong Chen and Pavan Balaji. *CAB-MPI: Exploring Interprocess Work-Stealing towards Balanced MPI Communication.* IEEE/ACM International Conference on High Performance Computing, Networking, Storage, and Analysis (SC). Nov. 9–19, 2020, virtual event. [pdf] [slides] [video]

50. Rohit Zambre, Aparna Chandramowlishwaran and Pavan Balaji. *How I Learned to Stop Worrying about User-Visible Endpoints and Love MPI.* International Conference on Supercomputing (ICS). June 29–July 2, 2020, Barcelona, Spain. [pdf] [slides] [video]

51. Shintaro Iwasaki, Abdelhalim Amer, Kenjiro Taura, Sangmin Seo, and Pavan Balaji. *BOLT: Optimizing OpenMP Parallel Regions with User-Level Threads.* International Conference on Parallel Architectures and Compilation Techniques (PACT). Sep. 21–25, 2019, Seattle, Washington. **Best Paper Award.** [pdf] [slides]

52. Xiaomin Zhu, Yunhui Zeng, Yanjie Wei, Shengzhong Feng, and Pavan Balaji. *An Auto Code Generator for Stencil on SW26010.* IEEE International Conference High Performance Computing and Communications (HPCC). Aug. 10–12, 2019, Zhangjiajie, China.

53. Seonmyeong Bak, Yanfei Guo, Pavan Balaji and Vivek Sarkar. *Optimized Execution of Parallel Loops via User-Defined Scheduling Policies.* International Conference on Parallel Processing (ICPP). Aug. 5–8, 2019, Kyoto, Japan. [pdf] [slides]

54. Joshua Davis, Tao Gao, Sunita Chandrasekaran, Heike Jagode, Anthony Danalis, Pavan Balaji, Jack Dongarra, and Michela Taufer. *Characterization of Power Usage and Performance in Data-Intensive Applications using MapReduce over MPI.* International Conference on Parallel Computing (ParCo). Sep. 10–13, 2019, Prague, Czech Republic. [pdf] [slides]

55. Abdelhalim Amer, Charles Archer, Michael Blocksome, Chongxiao Cao, Michael Chuvelev, Hajime Fujita, and Maria Garzaran, Yanfei Guo, Jeffrey R. Hammond, Shintaro Iwasaki, Kenneth J. Raffenetti, Mikhail Shiryaev, Min Si, Kenjiro Taura, Sagar Thapaliya, and Pavan Balaji. *Software Combining to Mitigate Multithreaded MPI Contention.* ACM International Conference on Supercomputing (ICS). Jun. 26–28, 2019, Phoenix, Arizona. [pdf] [slides]

56. Tao Gao, Yanfei Guo, Boyu Zhang, Pietro Cicotti, Yutong Lu, Pavan Balaji, and Michela Taufer. *On the Power of Combiner Optimizations in MapReduce over MPI Workflows.* IEEE International Conference on Parallel and Distributed Systems (ICPADS). Dec. 11–13, 2018, Sentosa, Singapore. [pdf] [slides]

57. Rohit Zambre, Aparna Chandramowlishwaran and Pavan Balaji. *Scalable Communication Endpoints for MPI+Threads Applications.* IEEE International Conference on Parallel and Distributed Systems (ICPADS). Dec. 11–13, 2018, Sentosa, Singapore. **Best Poster Award.** [pdf] [slides] [poster]

58. Giuseppe Congiu and Pavan Balaji. *Evaluating the Impact of High-Bandwidth Memory on MPI Communications.* IEEE International Conference on Computer and Communications (ICCC). Dec. 7–10, 2018, Chengdu, China. [pdf] [slides]

59. Kenneth J. Raffenetti, Neelima Bayyapu, and Pavan Balaji. *Locality-Aware PMI Usage for Efficient MPI Startup.* IEEE International Conference on Computer and Communications (ICCC). Dec. 7–10, 2018, Chengdu, China [pdf] [slides]

60. Shintaro Iwasaki, Abdelhalim Amer, Kenjiro Taura, and Pavan Balaji. *Lessons Learned from Analyzing Dynamic Promotion for User-level Threading.* IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC). Nov. 11–16, 2018, Dallas, Texas. [pdf] [slides]

61. Sudheer Chunduri, Scott Parker, Pavan Balaji, Kevin Harms, and Kalyan Kumaran. *Characterization of MPI Usage on a Production Supercomputer.* IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC). Nov. 11–16, 2018, Dallas, Texas. [pdf] [slides]

62. Atsushi Hori, Min Si, Balazs Gerofi, Masamichi Takagi, Jai Dayal, Pavan Balaji, and Yutaka Ishikawa. *Process-in-Process: Techniques for Practical Address-Space Sharing.* ACM International Conference on High Performance Distributed Computing (HPDC). **Best Paper Award.** Jun. 11–15, 2018, Tempe, Arizona. [pdf] [slides]

63. Seyed Hessamedin Mirsadeghi, Jesper Larsson Traff, Pavan Balaji and Ahmad Afsahi. *Exploiting Common Neighborhoods to Optimize MPI Neighborhood Collectives.* IEEE International Conference on High Performance Computing, Data, and Analytics (HiPC). Dec. 18–21, 2017, Jaipur, India. [pdf] [slides]
64. Tao Gao, Yanfei Guo, Yanjie Wei, Bingqiang Wang, Yutong Lu, Pietro Cicotti, Pavan Balaji and Michela Taufer. *Bloomfish: A Highly Scalable Distributed K-mer Counting Framework.* IEEE International Conference on Parallel and Distributed Systems (ICPADS). Dec. 15–17, 2017, Shenzhen, China. [pdf] [slides]
65. Sarunya Pumma, Min Si, Wu-chun Feng and Pavan Balaji. *Parallel I/O Optimizations for Scalable Deep Learning.* IEEE International Conference on Parallel and Distributed Systems (ICPADS). Dec. 15–17, 2017, Shenzhen, China. [pdf] [slides]
66. Robert Latham, Leonardo Arturo Bautista Gomez and Pavan Balaji. *Portable Topology-Aware MPI-I/O.* IEEE International Conference on Parallel and Distributed Systems (ICPADS). Dec. 15–17, 2017, Shenzhen, China. [pdf] [slides]
67. Lena Oden and Pavan Balaji. *Hexe: A Toolkit for Heterogeneous Memory Management.* IEEE International Conference on Parallel and Distributed Systems (ICPADS). Dec. 15–17, 2017, Shenzhen, China. [pdf] [slides]
68. Min Si and Pavan Balaji. *Process-based Asynchronous Progress Model for MPI Point-To-Point Communication.* IEEE International Conference on High Performance Computing and Communications (HPCC). Dec. 18–20, 2017, Bangkok, Thailand. [pdf] [slides]
69. Sarunya Pumma, Min Si, Wu-chun Feng and Pavan Balaji. *Towards Scalable Deep Learning via I/O Analysis and Optimization.* IEEE International Conference on High Performance Computing and Communications (HPCC). Dec. 18–20, 2017, Bangkok, Thailand. [pdf] [slides]
70. Kenneth J. Raffenetti, Abdelhalim Amer, Lena Oden, Charles Archer, Wesley Bland, Hajime Fujita, Yanfei Guo, Tomislav Janjusic, Dmitry Durnov, Michael Blocksome, Min Si, Sangmin Seo, Akhil Langer, Gengbin Zheng, Masamichi Takagi, Paul Coffman, Jithin Jose, Sayantan Sur, Alexander Sannikov, Sergey Oblomov, Michael Chuvelev, Masayuki Hatanaka, Xin Zhao, Paul Fischer, Thilina Rathnayake, Matt Otten, Misun Min, and Pavan Balaji. *Why is MPI so Slow? Analyzing the Fundamental Limits in Implementing MPI-3.1.* IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC). Nov. 12–17, 2017, Denver, Colorado. [pdf] [slides]
71. Xiaohui Duan, Kai Xu, Yuandong Chan, Christian Hundt, Bertil Schmidt, Pavan Balaji and Weiguo Liu. *S-Aligner: Ultrascalable read mapping on Sunway Taihu Light.* IEEE International Conference on Cluster Computing (Cluster). Sep. 5–8, 2017, Hawaii, USA. [pdf] [slides]
72. Adrián Castelló, Sangmin Seo, Rafael Mayo Gual, Pavan Balaji, Enrique S. Quintana-Ortí, and Antonio J. Peña. *GLT: A Unified API for Lightweight Thread Libraries.* International European Conference on Parallel and Distributed Computing (EuroPar). Aug. 28–Sep. 1, 2017, Santiago, Spain. [pdf] [slides]
73. Adrián Castelló, Sangmin Seo, Rafael Mayo Gual, Pavan Balaji, Enrique S. Quintana-Ortí, and Antonio J. Peña. *GLTO: On the Adequacy of Lightweight Thread Approaches for OpenMP Implementations.* International Conference on Parallel Processing (ICPP). Aug. 14–17, 2017, Bristol, United Kingdom. [pdf] [slides]
74. Hoang-Vu Dang, Sangmin Seo, Abdelhalim Amer, and Pavan Balaji. *Advanced Thread Synchronization for Multithreaded MPI Implementations.* IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid). May 14–17, 2017, Madrid, Spain. [pdf] [slides]
75. Nikela Papadopoulou, Lena Oden, and Pavan Balaji. *A Performance Study of UCX over InfiniBand.* IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid). May 14–17, 2017, Madrid, Spain. [pdf] [slides]
76. Yanfei Guo, Charles Archer, Michael Blocksome, Scott Parker, Wesley Bland, Kenneth J. Raffenetti, and Pavan Balaji. *Memory Compression Techniques for Network Address Management in MPI.* IEEE International Parallel and Distributed Processing Symposium (IPDPS). May 29–June 2, 2017, Orlando, Florida. [pdf] [slides]
77. Tao Gao, Yanfei Guo, Boyu Zhang, Pietro Cicotti, Yutong Lu, Pavan Balaji, and Michela Taufer. *Mimir: Memory-Efficient and Scalable MapReduce for Large Supercomputing Systems.* IEEE International Parallel and Distributed Processing Symposium (IPDPS). May 29–June 2, 2017, Orlando, Florida. [pdf] [slides]
78. Jichi Guo, Qing Yi, Jiayuan Meng, Junchao Zhang, and Pavan Balaji. *Compiler-Assisted Overlapping of Communication and Computation in MPI Applications.* IEEE International Conference on Cluster Computing (Cluster). Sep. 12–16, 2016, Taipei, Taiwan. [pdf] [slides]

79. Adrián Castelló, Antonio J. Peña, Sangmin Seo, Rafael Mayo, Pavan Balaji, and Enrique S. Quintana-Ortí. *A Review of Lightweight Thread Approaches for High Performance Computing.* IEEE International Conference on Cluster Computing (Cluster). Sep. 12–16, 2016, Taipei, Taiwan. [pdf] [slides]

80. Xin Zhao, Pavan Balaji, and William D. Gropp. *Scalability Challenges in Current MPI One-Sided Implementations.* International Symposium on Parallel and Distributed Computing (ISPDC). Jul. 8–10, 2016, Fuzhou, China. [pdf] [slides]

81. Sayan Ghosh, Jeffrey R. Hammond, Antonio J. Peña, Pavan Balaji, Assefaw Gebremedhin, and Barbara Chapman. *One-Sided Interface for Matrix Operations using MPI-3 RMA: A Case Study with Elemental.* International Conference on Parallel Processing (ICPP). Aug. 16–19, 2016, Philadelphia, Pennsylvania. [pdf] [slides]

82. Jintao Meng, Sangmin Seo, Pavan Balaji, Yanjie Wei, Bingqiang Wang and Shengzhong Feng. *SWAP-Assembler 2: Optimization of De Novo Genome Assembler at Extreme Scale.* International Conference on Parallel Processing (ICPP). Aug. 16–19, 2016, Philadelphia, Pennsylvania. [pdf] [slides]

83. Hajime Fujita, Kamil Iskra, Pavan Balaji, and Andrew A. Chien. *Versioning Architectures for Local and Global Memory.* IEEE International Conference on Parallel and Distributed Systems (ICPADS). Dec. 16–19, 2015, Melbourne, Australia. [pdf] [slides]

84. Antonio J. Peña, Wesley Bland, and Pavan Balaji. *VOCL-FT: Introducing Techniques for Efficient Soft Error Coprocessor Recovery.* IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC). Nov. 15–20, 2015, Austin, Texas. [pdf] [slides]

85. Yanfei Guo, Wesley Bland, Pavan Balaji, and Xiaobo Zhou. *Fault Tolerant MapReduce-MPI for HPC Clusters.* IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC). Nov. 15–20, 2015, Austin, Texas. [pdf] [slides]

86. Karthikeyan Vaidyanathan, Dhiraj D. Kalamkar, Kiran Pamnany, Jeffrey R. Hammond, Pavan Balaji, Dipankar Das, Jongsoo Park, and Bálint Joó. *Improving Concurrency and Asynchrony in Multithreaded MPI Applications using Software Offloading.* IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC). Nov. 15–20, 2015, Austin, Texas. [pdf]

87. Huiwei Lu, Sangmin Seo, and Pavan Balaji. *MPI+ULT: Overlapping Communication and Computation with User-Level Threads.* IEEE International Conference on High Performance Computing and Communications (HPCC). Aug. 24–26, 2015, New York, USA. [pdf] [slides]

88. Ashwin M. Aji, Antonio J. Peña, Pavan Balaji and Wu-chun Feng. *Automatic Command Queue Scheduling for Task-Parallel Workloads in OpenCL.* IEEE International Conference on Cluster Computing (Cluster). Sep. 8–11, 2015, Chicago, USA. [pdf] [slides]

89. Adrián Castelló, Antonio J. Peña, Rafael Mayo Gual, Pavan Balaji and Enrique S. Quintana-Ortí. *Exploring the Suitability of Remote GPGPU Virtualization for the OpenACC Programming Model Using rCUDA.* Short paper. IEEE International Conference on Cluster Computing (Cluster). Sep. 8–11, 2015, Chicago, USA. [pdf] [slides]

90. Hajime Fujita, Kamil Iskra, Pavan Balaji and Andrew A. Chien. *Empirical Comparison of Three Versioning Architectures.* Short paper. IEEE International Conference on Cluster Computing (Cluster). Sep. 8–11, 2015, Chicago, USA. [pdf] [slides]

91. Andrew A. Chien, Pavan Balaji, Peter H. Beckman, Nan Dun, Aiman Fang, Hajime Fujita, Kamil Iskra, Zachary A. Rubenstein, Ziming Zheng, Robert Schreiber, Jeffrey R. Hammond, James S. Dinan, Ignacio Laguna, David F. Richards, Anshu Dubey, Brian van Straalen, Mark Hoemmen, Michael Heroux, Keita Teranishi and Andrew R. Siegel. *Versioned Distributed Arrays for Resilience in Scientific Applications: Global View Resilience.* International Conference on Computational Science (ICCS). June 1–3, 2015, Reykjavik, Iceland. [pdf] [slides]

92. Min Si, Antonio J. Peña, Jeffrey R. Hammond, Pavan Balaji, Masamichi Takagi and Yutaka Ishikawa. *Casper: An Asynchronous Progress Model for MPI RMA on Many-Core Architectures.* IEEE International Parallel and Distributed Processing Symposium (IPDPS). May 25–29, 2015, Hyderabad, India. [pdf] [slides]

93. Abdelhalim Amer, Huiwei Lu, Yanjie Wei, Pavan Balaji and Satoshi Matsuoka. *MPI+Threads: Runtime Contention and Remedies.* ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP). Feb. 7–11, 2015, San Francisco, California. [pdf] [slides]

94. David Ozog, Allen D. Malony, Jeffrey R. Hammond and Pavan Balaji. *WorkQ: A Many-Core Producer/Consumer Execution Model Applied to PGAS Computations.* IEEE International Conference on Parallel and Distributed Systems (ICPADS). Dec. 16–19, 2014, Hsinchu, Taiwan. [pdf] [slides]

95. Judicael A. Zounmevo, Xin Zhao, Pavan Balaji, William D. Gropp, and Ahmad Afsahi. *Nonblocking Epochs in MPI One-Sided Communication.* IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC). **Best Paper Finalist.** Nov. 16–21, 2014, New Orleans, Louisiana. [pdf] [slides]

96. Zhezhe Chen, James S. Dinan, Zhen Tang, Pavan Balaji, Hua Zhong, Jun Wei, Tao Huang, and Feng Qin. *MC-Checker: Detecting Memory Consistency Errors in MPI One-Sided Applications.* IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC). Nov. 16–21, 2014, New Orleans, Louisiana. [pdf] [slides]

97. Antonio J. Peña and Pavan Balaji. *Toward the Efficient Use of Multiple Explicitly Managed Memory Subsystems.* IEEE International Conference on Cluster Computing (Cluster). Sep. 22–26, 2014, Madrid, Spain. [pdf] [slides]

98. Junchao Zhang, Bill Long, Kenneth J. Raffenetti, and Pavan Balaji. *Implementing the MPI-3.0 Fortran 2008 Binding.* The Euro MPI Users' Group Conference (Euro MPI/Asia). Sep. 9–12, 2014, Kyoto, Japan. [pdf] [slides]

99. Min Si, Antonio J. Peña, Pavan Balaji, Masamichi Takagi and Yutaka Ishikawa. *MT-MPI: Multithreaded MPI for Many-core Environments.* ACM International Conference on Supercomputing (ICS). June 10–13, 2014, Munich, Germany. [pdf] [slides]

100. Chaoran Yang, Wesley Bland, Pavan Balaji, and John Mellor-Crummey. *Portable, MPI-Interoperable Coarray Fortran.* ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP). Feb. 15–19, 2014, Orlando, Florida. [pdf] [slides]

101. Xin Zhao, Pavan Balaji, William D. Gropp, Rajeev S. Thakur. *Optimization Strategies for MPI-Interoperable Active Messages.* IEEE International Conference on Scalable Computing and Communications (ScalCom). **Best Paper Award.** Dec. 21–22, 2013, Chengdu, China. [pdf] [slides]

102. Lokendra S. Panwar, Ashwin M. Aji, Jiayuan Meng, Pavan Balaji, and Wu-chun Feng. *Online Performance Projection for Clusters with Heterogeneous GPUs.* IEEE International Conference on Parallel and Distributed Systems (ICPADS). Dec. 15–18, 2013, Seoul, Korea. [pdf] [slides]

103. Xin Zhao, Pavan Balaji, William D. Gropp, and Rajeev S. Thakur. *MPI-Interoperable Generalized Active Messages.* IEEE International Conference on Parallel and Distributed Systems (ICPADS). Dec. 15–18, 2013, Seoul, Korea. [pdf] [slides]

104. Pavan Balaji and Dries Kimpe. *On the Reproducibility of MPI Reduction Operations.* IEEE International Conference on High Performance Computing and Communications (HPCC). Nov. 13–15, 2013, Zhangjiajie, China. [pdf] [slides]

105. David Ozog, Jeffrey R. Hammond, James S. Dinan, Pavan Balaji, Sameer Shende, and Allen D. Malony. *Inspector-Executor Load Balancing Algorithms for Block-Sparse Tensor Contractions.* International Conference on Parallel Processing (ICPP). Oct. 1–4, 2013, Lyon, France. [pdf] [slides]

106. Md. Ziaul Haque Olive, Qing Yi, James S. Dinan, and Pavan Balaji. *Enhancing Performance Portability of MPI Applications Through Annotation-Based Transformations.* International Conference on Parallel Processing (ICPP). Oct. 1–4, 2013, Lyon, France. [pdf] [slides]

107. Antonio J. Peña, Ralf Gunter Correa Carvalho, James S. Dinan, Pavan Balaji, Rajeev S. Thakur and William D. Gropp. *Analysis of Topology-Dependent MPI Performance on Gemini Networks.* The Euro MPI Users' Group Conference (EuroMPI). Sep. 15–18, 2013, Madrid, Spain. [pdf] [slides]

108. James S. Dinan, Pavan Balaji, David J. Goodell, Douglas Miller, Marc Snir and Rajeev S. Thakur. *Enabling MPI Interoperability Through Flexible Communication Endpoints.* The Euro MPI Users' Group Conference (EuroMPI). Sep. 15–18, 2013, Madrid, Spain. [pdf] [slides]

109. Palden Lama, Yan Li, Ashwin M. Aji, Pavan Balaji, James S. Dinan, Shucai Xiao, Yunquan Zhang, Wu-chun Feng, Rajeev S. Thakur and Xiaobo Zhou. *pVOCL: Power-Aware Dynamic Placement and Migration in Virtualized GPU Environments.* International Conference on Distributed Computing Systems (ICDCS). July 8–11, 2013, Philadelphia, Pennsylvania. [pdf] [slides]

110. Ashwin M. Aji, Lokendra S. Panwar, Feng Ji, Milind Chabbi, Karthik Murthy, Pavan Balaji, Keith R. Bisset, James S. Dinan, Wu-chun Feng, John Mellor-Crummey, Xiaosong Ma and Rajeev S. Thakur. *On the Efficacy of GPU-Integrated MPI for Scientific Applications.* ACM International Symposium on High Performance Parallel and Distributed Computing (HPDC). Jun. 17–21, 2013, New York, New York. [pdf] [slides]

111. Xin Zhao, Darius T. Buntinas, Judicael A. Zounmevo, James S. Dinan, David J. Goodell, Pavan Balaji, Rajeev S. Thakur, Ahmad Afsahi and William D. Gropp. *Towards Asynchronous, MPI-Interoperable Active Messages.* IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid). May 13–16, 2013, Delft, Netherlands. [pdf] [slides]

112. Jing Zhang, Heshan Lin, Pavan Balaji and Wu-chun Feng. *Optimizing Burrows-Wheeler Transform-Based Sequence Alignment on Multicore Architectures.* IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid). May 13–16, 2013, Delft, Netherlands. [pdf]

113. Jeffrey R. Hammond, James S. Dinan, Pavan Balaji, Ivo Kabadshow, Sreeram Potluri and Vinod Tipparaju. *OSPRI: An Optimized One-Sided Communication Runtime for Leadership-Class Machines.* International Conference on Partitioned Global Address Space Programming Models (PGAS). Oct. 10–12, 2012, Santa Barbara, California. [pdf] [slides]

114. John Jenkins, James S. Dinan, Pavan Balaji, Nagiza F. Samatova and Rajeev S. Thakur. *Enabling Fast, Noncontiguous GPU Data Movement in Hybrid MPI+GPU Environments.* IEEE International Conference on Cluster Computing (Cluster). Sep. 28–30, 2012, Beijing, China. [pdf] [slides]

115. Torsten Hoefler, James S. Dinan, Darius T. Buntinas, Pavan Balaji, Brian Barrett, Ronald Brightwell, William D. Gropp, Vivek Kale, Rajeev S. Thakur. *Leveraging MPI's One-Sided Communication Interface for Shared-Memory Programming.* The Euro MPI Users' Group Conference (EuroMPI). Sep. 23–26, 2012, Vienna, Austria. [pdf] [slides]

116. James S. Dinan, David J. Goodell, William D. Gropp, Rajeev S. Thakur, and Pavan Balaji. *Efficient Multithreaded Context ID Allocation in MPI.* The Euro MPI Users' Group Conference (EuroMPI). Sep. 23–26, 2012, Vienna, Austria. [pdf] [slides]

117. Feng Ji, Ashwin M. Aji, James S. Dinan, Darius T. Buntinas, Pavan Balaji, Rajeev S. Thakur, Wu-chun Feng and Xiaosong Ma. *DMA-Assisted, Intranode Communication in GPU Accelerated Systems.* IEEE International Conference on High Performance Computing and Communications (HPCC). June 25–27, 2012, Liverpool, UK. [pdf] [slides]

118. Ashwin M. Aji, James S. Dinan, Darius T. Buntinas, Pavan Balaji, Wu-chun Feng, Keith R. Bisset and Rajeev S. Thakur. *MPI-ACC: An Integrated and Extensible Approach to Data Movement in Accelerator-Based Systems.* IEEE International Conference on High Performance Computing and Communications (HPCC). June 25–27, 2012, Liverpool, UK. [pdf] [slides]

119. James S. Dinan, Pavan Balaji, Jeffrey R. Hammond, Sriram Krishnamoorthy and Vinod Tipparaju. *Supporting the Global Arrays PGAS Model Using MPI One-Sided Communication.* IEEE International Parallel and Distributed Processing Symposium (IPDPS). May 21–25, 2012, Shanghai, China. [pdf] [slides]

120. Shucai Xiao, Pavan Balaji, James S. Dinan, Qian Zhu, Rajeev S. Thakur, Susan Coghlan, Heshan Lin, Gaojin Wen, Jue Hong and Wu-chun Feng. *Transparent Accelerator Migration in a Virtualized GPU Environment.* IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid). May 13–16, 2012, Ottawa, Canada. [pdf] [slides]

121. Shucai Xiao, Pavan Balaji, Qian Zhu, Rajeev S. Thakur, Susan Coghlan, Heshan Lin, Gaojin Wen, Jue Hong and Wu-chun Feng. *VOCL: An Optimized Environment for Transparent Virtualization of Graphics Processing Units.* International Conference on Innovative Parallel Computing (InPar). May 12–14, 2012, San Jose, California. [pdf] [slides]

122. Rui Wang, Erlin Yao, Pavan Balaji, Darius T. Buntinas, Mingyu Chen and Guangming Tan. *Building Algorithmically Nonstop Fault Tolerant MPI Programs.* IEEE International Conference on High Performance Computing (HiPC). Dec. 18–21, 2011, Bangalore, India. [pdf] [slides]

123. Gaojin Wen, Jue Hong, Cheng-Zhong Xu, Pavan Balaji, Shengzhong Feng and Pingchuang Jiang. *Energy-aware Hierarchy Scheduling of Applications in Large Scale Data Centers.* International Conference on Cloud and Service Computing (CSC). Dec. 12–14, 2011, Hong Kong, China. [pdf] [slides]

124. James S. Dinan, Sriram Krishnamoorthy, Pavan Balaji, Jeffrey R. Hammond, Manoj Krishnan, Vinod Tipparaju and Abhinav Vishnu. *Noncollective Communicator Creation in MPI.* The Euro MPI Users' Group Conference (EuroMPI);

special session on Improving MPI User and Developer Interaction (IMUDI). Sep. 18–21, 2011, Santorini, Greece. [pdf] [slides]

125. Mohammad J. Rashti, Jonathan Green, Pavan Balaji, Ahmad Afsahi and William D. Gropp. *Multi-core and Network Aware MPI Topology Functions.* The Euro MPI Users' Group Conference (EuroMPI). Sep. 18–21, 2011, Santorini, Greece. [pdf] [slides]

126. Ryan E. Grant, Mohammad J. Rashti, Pavan Balaji and Ahmad Afsahi. *RDMA Capable iWARP over Datagrams.* IEEE International Parallel and Distributed Processing Symposium (IPDPS). May 16–20, 2011, Anchorage, Alaska. [pdf] [slides]

127. Mohammad J. Rashti, Ryan E. Grant, Pavan Balaji and Ahmad Afsahi. *iWARP Redefined: Scalable Connectionless Communication over High-Speed Ethernet.* IEEE International Conference on High Performance Computing (HiPC). Dec. 19–22, 2010, Goa, India. [pdf] [slides]

128. Abhinav Vishnu, Huub Van Dam, Wibe De Jong, Pavan Balaji and Shuaiwen Song. *Fault Tolerant Communication Runtime Support for Data Centric Programming Models.* IEEE International Conference on High Performance Computing (HiPC). Dec. 19–22, 2010, Goa, India. [pdf] [slides]

129. Yang Jiao, Heshan Lin, Pavan Balaji and Wu-chun Feng. *Power and Performance Characterization of Computational Kernels on the GPU.* IEEE/ACM International Conference on Green Computing and Communications (GreenCom). Dec. 18–20, 2010, Hangzhou, China. [pdf] [slides]

130. Abhinav Vishnu, Shuaiwen Song, Andres Marquez, Kevin Barker, Darren Kerbyson, Kirk W. Cameron, Pavan Balaji. *Designing Energy Efficient Communication Runtime Systems for Data Centric Programming Models.* IEEE/ACM International Conference on Green Computing and Communications (GreenCom). Dec. 18–20, 2010, Hangzhou, China. [pdf] [slides]

131. David J. Goodell, Pavan Balaji, Darius T. Buntinas, Gabor Dózsa, William D. Gropp, Sameer Kumar, Bronis R. de Supinski and Rajeev S. Thakur. *Minimizing MPI Resource Contention in Multithreaded Multicore Environments.* IEEE International Conference on Cluster Computing (Cluster). Sep. 20–24, 2010, Heraklion, Crete, Greece. [pdf] [slides]

132. Pavan Balaji, Darius T. Buntinas, David J. Goodell, William D. Gropp, Jayesh Krishna, Ewing L. (Rusty) Lusk and Rajeev S. Thakur. *PMI: A Scalable Parallel Process-Management Interface for Extreme-Scale Systems.* The Euro MPI Users' Group Conference (Euro MPI). Sep. 12–15, 2010, Stuttgart, Germany. [pdf] [slides]

133. Gabor Dózsa, Sameer Kumar, Pavan Balaji, Darius T. Buntinas, David J. Goodell, William D. Gropp, Joseph Ratterman and Rajeev S. Thakur. *Enabling Concurrent Multithreaded MPI Communication on Multicore Petascale Systems.* The Euro MPI Users' Group Conference (Euro MPI). Sep. 12–15, 2010, Stuttgart, Germany. [pdf] [slides]

134. Jayesh Krishna, Pavan Balaji, Ewing L. (Rusty) Lusk, Rajeev S. Thakur and Fab Tiller. *Implementing MPI on Windows: Comparison with Common Approaches on Unix.* The Euro MPI Users' Group Conference (Euro MPI). Sep. 12–15, 2010, Stuttgart, Germany. [pdf] [slides]

135. Ryan E. Grant, Pavan Balaji and Ahmad Afsahi. *A Study of Hardware Assisted IP over InfiniBand and its Impact on Enterprise Data Center Performance.* IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS). Mar. 28–30, 2010, White Plains, NY. [pdf] [slides]

136. James S. Dinan, Pavan Balaji, Ewing L. (Rusty) Lusk, P. Sadayappan and Rajeev S. Thakur. *Hybrid Parallel Programming with MPI and Unified Parallel C.* ACM International Conference on Computing Frontiers (CF). May 17–19, 2010, Bertinoro, Italy. [pdf] [slides]

137. Pavan Balaji, Harish Naik and Narayan Desai. *Understanding Network Saturation Behavior on Large-Scale Blue Gene/P Systems.* IEEE International Conference on Parallel and Distributed Systems (ICPADS). Dec. 8–10, 2009, Shenzhen, China. [pdf] [slides]

138. Ryan E. Grant, Ahmad Afsahi and Pavan Balaji. *An Evaluation of ConnectX Virtual Protocol Interconnect for Data Centers.* IEEE International Conference on Parallel and Distributed Systems (ICPADS). Dec. 8–10, 2009, Shenzhen, China. [pdf] [slides]

139. Ajeet Singh, Pavan Balaji and Wu-chun Feng. *GePSeA: A General-Purpose Software Acceleration Framework for Lightweight Task Offloading.* International Conference on Parallel Processing (ICPP). Sep. 22–25, 2009, Vienna, Austria. [pdf] [slides]

140. Narayan Desai, Darius T. Buntinas, Daniel Buettner, Pavan Balaji and Anthony K. Chan. *Improving Resource Availability by Relaxing Network Allocation Constraints on the Blue Gene/P.* International Conference on Parallel Processing (ICPP). Sep. 22–25, 2009, Vienna, Austria. [pdf] [slides]

141. Pavan Balaji, Darius T. Buntinas, David J. Goodell, William D. Gropp, Sameer Kumar, Ewing L. (Rusty) Lusk, Rajeev S. Thakur and Jesper Larsson Träff. *MPI on a Million Processors.* The Euro PVM/MPI Users' Group Conference (Euro PVM/MPI). **Outstanding Paper Award.** Sep. 7–10, 2009, Espoo, Finland. [pdf] [slides]

142. Gopalakrishnan Santhanaraman, Pavan Balaji, Karthik Gopalakrishnan, Rajeev S. Thakur, William D. Gropp and Dhabaleswar K. Panda. *Natively Supporting True One-sided Communication in MPI on Multi-core Systems with InfiniBand.* IEEE International Symposium on Cluster Computing and the Grid (CCGrid). May 18–21, 2009, Shanghai, China. [pdf] [slides]

143. Pavan Balaji, Sitha Bhagvat, Rajeev S. Thakur and Dhabaleswar K. Panda. *Sockets Direct Protocol for Hybrid Network Stacks: A Case Study with iWARP over 10G Ethernet.* International Conference on High Performance Computing (HiPC). Dec. 17–20, 2008, Bangalore, India. [pdf] [slides]

144. Anthony K. Chan, Pavan Balaji, William D. Gropp and Rajeev S. Thakur. *Communication Analysis of Parallel 3D FFT for Flat Cartesian Meshes on Large Blue Gene Systems.* International Conference on High Performance Computing (HiPC). Dec. 17–20, 2008, Bangalore, India. [pdf] [slides]

145. Mithlesh Kumar, Vineeta Chaube, Pavan Balaji, Wu-chun Feng and Hyun-Wook Jin. *Making a Case for Proactive Flow Control in Optical Circuit-Switched Networks.* International Conference on High Performance Computing (HiPC). Dec. 17–20, 2008, Bangalore, India. [pdf] [slides]

146. Heshan Lin, Pavan Balaji, Ruth Poole, Carlos Sosa, Xiaosong Ma and Wu-chun Feng. *Massively Parallel Genomic Sequence Search on the Blue Gene/P Architecture.* IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC). Nov. 15–21, 2008, Austin, Texas. [pdf] [slides]

147. Thomas R. W. Scogland, Ganesh Narayanaswamy, Pavan Balaji and Wu-chun Feng. *Asymmetric Interactions in Symmetric Multi-core Systems: Analysis, Enhancements and Evaluation.* IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC). Nov. 15–21, 2008, Austin, Texas. [pdf] [slides]

148. Narayan Desai, Pavan Balaji, P. Sadayappan and Mohammad Kamrul Islam. *Are Non-Blocking Networks Really Needed for High-End-Computing Workloads?* IEEE International Conference on Cluster Computing (Cluster). **Best Paper Award.** Sep. 29 – Oct. 1st, 2008, Tsukuba, Japan. [pdf] [slides]

149. Pavan Balaji, Anthony K. Chan, William D. Gropp, Rajeev S. Thakur and Ewing L. (Rusty) Lusk. *Non-Data-Communication Overheads in MPI: Analysis on Blue Gene/P.* The Euro PVM/MPI Users' Group Conference (Euro PVM/MPI). **Outstanding Paper Award.** Sep. 7–10, 2008, Dublin, Ireland. [pdf] [slides]

150. Pavan Balaji, Darius T. Buntinas, David J. Goodell, William D. Gropp and Rajeev S. Thakur. *Toward Efficient Support for Multithreaded MPI Communication.* The Euro PVM/MPI Users' Group Conference (Euro PVM/MPI). Sep. 7–10, 2008, Dublin, Ireland. [pdf] [slides]

151. Jesper Larsson Träff, Andreas Ripke, Christian Siebert, Pavan Balaji, Rajeev S. Thakur and William D. Gropp. *A Simple, Pipelined Algorithm for Large, Irregular All-gather Problems.* The Euro PVM/MPI Users' Group Conference (Euro PVM/MPI). Sep. 7–10, 2008, Dublin, Ireland. [pdf] [slides]

152. Ganesh Narayanaswamy, Pavan Balaji and Wu-chun Feng. *Impact of Network Sharing in Multi-core Architectures.* IEEE International Conference on Computer Communication and Networks (ICCCN). Aug. 3–7, 2008, St. Thomas, U.S. Virgin Islands. [pdf] [slides]

153. Pavan Balaji, Wu-chun Feng and Heshan Lin. *Semantics-based Distributed I/O with the ParaMEDIC Framework.* ACM/IEEE International Symposium on High Performance Distributed Computing (HPDC). Jun. 23–27, 2008, Boston, Massachusetts. [pdf] [slides]

154. Pavan Balaji, Wu-chun Feng, Heshan Lin, Jeremy Archuleta, Satoshi Matsuoka, Andrew Warren, João Carlos Setubal, Ewing L. (Rusty) Lusk, Rajeev S. Thakur, Ian Foster, Daniel S. Katz, Shantenu Jha, Kevin Shinpaugh, Susan Coghlan and Daniel A. Reed. *Distributed I/O with ParaMEDIC: Experiences with a Worldwide Supercomputer.* International Supercomputing Conference (ISC). **Outstanding Paper Award.** Jun. 17–20, 2008, Dresden, Germany. [pdf] [slides]

155. Pavan Balaji, Wu-chun Feng, Jeremy Archuleta, Heshan Lin, Rajkumar Kettimuthu, Rajeev S. Thakur and Xiaosong Ma. *Semantics-based Distributed I/O for mpiBLAST.* Short paper. ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP). Feb. 20–23, 2008, Salt Lake City, Utah. [pdf] [poster]

156. Pavan Balaji, Wu-chun Feng, Sitha Bhagvat, Dhabaleswar K. Panda, Rajeev S. Thakur and William D. Gropp. *Analyzing the Impact of Supporting Out-of-Order Communication on In-order Performance with iWARP.* IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC). Nov. 10–16, 2007, Reno, Nevada. [pdf] [slides]

157. Pavan Balaji, Wu-chun Feng, Jeremy Archuleta and Heshan Lin. *ParaMEDIC: Parallel Metadata Environment for Distributed I/O and Computing.* IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC). **Storage Challenge Award.** Nov. 10–16, 2007, Reno, Nevada. [pdf] [slides]

158. Pavan Balaji, Sitha Bhagvat, Dhabaleswar K. Panda, Rajeev S. Thakur and William D. Gropp. *Advanced Flow-control Mechanisms for the Sockets Direct Protocol over InfiniBand.* IEEE International Conference on Parallel Processing (ICPP). Sep. 10–14, 2007, Xi'an, China. [pdf] [slides]

159. Mohammad Kamrul Islam, Pavan Balaji, Gerald Sabin and P. Sadayappan. *Analyzing and Minimizing the Impact of Opportunity Cost in QoS-aware Job Scheduling.* IEEE International Conference on Parallel Processing (ICPP). Sep. 10–14, 2007, Xi'an, China. [pdf] [slides]

160. Ganesh Narayanaswamy, Pavan Balaji and Wu-chun Feng. *An Analysis of 10-Gigabit Ethernet Protocol Stacks in Multicore Environments.* IEEE International Symposium on High-Performance Interconnects (HotI). Aug. 22–24, 2007, Palo Alto, California. [pdf] [slides]

161. Pavan Balaji, Darius T. Buntinas, Satish Balay, Barry F. Smith, Rajeev S. Thakur and William D. Gropp. *Nonuniformly Communicating Noncontiguous Data: A Case Study with PETSc and MPI.* IEEE International Parallel and Distributed Processing Symposium (IPDPS). Mar. 26–30, 2007, Long Beach, California. [pdf] [slides]

162. Pavan Balaji, Wu-chun Feng, Qi Gao, Ranjit Noronha, Weikuan Yu and Dhabaleswar K. Panda. *Head-to-TOE Comparison for High Performance Sockets over Protocol Offload Engines.* IEEE International Conference on Cluster Computing (Cluster). Sep. 26–30, 2005, Boston, Massachusetts. [pdf] [slides]

163. Wu-chun Feng, Pavan Balaji, Christopher Baron, Laxmi N. Bhuyan and Dhabaleswar K. Panda. *Performance Characterization of a 10-Gigabit Ethernet TOE.* IEEE International Symposium on High Performance Interconnects (HotI). Aug. 17–19, 2005, Palo Alto, California. [pdf] [slides]

164. Sundeep Narravula, Pavan Balaji, Karthikeyan Vaidyanathan, Hyun-Wook Jin and Dhabaleswar K. Panda. *Architecture for Caching Responses with Multiple Dynamic Dependencies in Multi-Tier Data-Centers over InfiniBand.* IEEE/ACM International Symposium on Cluster Computing and the Grid (CCGrid). May 9–12, 2005, Cardiff, UK. [pdf] [slides]

165. Pavan Balaji, Karthikeyan Vaidyanathan, Sundeep Narravula, Hyun-Wook Jin and Dhabaleswar K. Panda. *On the Provision of Prioritization and Soft QoS in Dynamically Reconfigurable Shared Data-Centers over InfiniBand.* IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS). Mar. 20–22, 2005, Austin, Texas. [pdf] [slides]

166. Mohammad Kamrul Islam, Pavan Balaji, P. Sadayappan and Dhabaleswar K. Panda. *Towards Provision of Quality of Service Guarantees in Job Scheduling.* IEEE International Conference on Cluster Computing (Cluster). Sep. 20–23, 2004, San Diego, California. [pdf] [slides]

167. Pavan Balaji, Sundeep Narravula, Karthikeyan Vaidyanathan, Savitha Krishnamoorthy, Jiesheng Wu and Dhabaleswar K. Panda. *Sockets Direct Protocol over InfiniBand in Clusters: Is it Beneficial?* IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS). Mar. 10–12, 2004, Austin, Texas. [pdf] [slides]

168. Rohan Kurian, Pavan Balaji and P. Sadayappan. *Opportune Job Shredding: An Efficient Approach for Scheduling Parameter Sweep Applications.* Los Alamos Computer Science Institute (LACSI) Symposium. Oct. 12–14, 2003, Santa Fe, New Mexico. [pdf] [slides]

169. Pavan Balaji, Jiesheng Wu, Tahsin Kurc, Ümit V. Çatalyürek, Dhabaleswar K. Panda and Joel Saltz. *Impact of High Performance Sockets on Data Intensive Applications.* IEEE International Symposium on High Performance Distributed Computing (HPDC). Jun. 22–24, 2003, Seattle, Washington. [pdf] [slides]

170. Rinku K. Gupta, Pavan Balaji, Jarek Nieplocha and Dhabaleswar K. Panda. *Efficient Collective Operations using Remote Memory Operations on VIA-based Clusters.* IEEE International Parallel and Distributed Processing Symposium (IPDPS). Apr. 22–26, 2003, Nice, France. [pdf] [slides]

171. Pavan Balaji, Piyush Shivam, Peter Wyckoff and Dhabaleswar K. Panda. *High Performance User-level Sockets over Gigabit Ethernet.* IEEE International Conference on Cluster Computing (Cluster). Sep. 23–26, 2002, Chicago, Illinois. [pdf] [slides]

Refereed Workshop Publications

172. Jan Ciesko, Noah Evans, Stephen Olivier, Howard Pritchard, Shintaro Iwasaki, Kenneth J. Raffenetti, and Pavan Balaji. *Implementing Flexible Threading Support in Open MPI.* International Workshop on Exascale MPI (ExaMPI). Nov. 13th, 2020, Atlanta, Georgia.

173. Abdelhalim Amer, Satoshi Matsuoka, Miquel Pericas, Naoya Maruyama, Kenjiro Taura, Rio Yokota and Pavan Balaji. *Scaling FMM with Data-Driven OpenMP Tasks on Multicore Architectures.* International Workshop on OpenMP (IWOMP). Oct. 5-7, 2016, Nara, Japan. [pdf] [slides]

174. Xiaomin Zhu, Junchao Zhang, Kazutomo Yoshii, Shigang Li, Yunquan Zhang, and Pavan Balaji. *Analyzing MPI-3.0 Process-Level Shared Memory: A Case Study with Stencil Computations.* Workshop on Parallel Programming Model for the Masses (PPMM); held in conjunction with IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid). May 4, 2015, Shenzhen, China. [pdf] [slides]

175. Abdelhalim Amer, Huiwei Lu, Pavan Balaji, and Satoshi Matsuoka. *Characterizing MPI and Hybrid MPI+Threads Applications at Scale: Case Study with BFS.* Workshop on Parallel Programming Model for the Masses (PPMM); held in conjunction with IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid). May 4, 2015, Shenzhen, China. [pdf] [slides]

176. Sangmin Seo, Robert Latham, Junchao Zhang, and Pavan Balaji. *Implementation and Evaluation of MPI Nonblocking Collective I/O.* Workshop on Parallel Programming Model for the Masses (PPMM); held in conjunction with IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid). May 4, 2015, Shenzhen, China. [pdf] [slides]

177. Akio Shimada, Atsushi Hori, Yutaka Ishikawa and Pavan Balaji. *User-level Process towards Exascale Systems.* Information Processing Society of Japan (IPSJ) workshop. Dec. 9th, 2014. [pdf] [slides]

178. Wesley Bland, Kenneth J. Raffenetti and Pavan Balaji. *Simplifying the Recovery Model of User-Level Failure Mitigation.* International Workshop on Exascale MPI (ExaMPI); held in conjunction with the IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC). Nov. 17th, 2014, New Orleans, Louisiana. [pdf] [slides]

179. Antonio J. Peña and Pavan Balaji. *A Framework for Tracking Memory Accesses in Scientific Applications.* International Workshop on Parallel Programming Models and Systems Software for High-End Computing (P2S2); held in conjunction with the International Conference on Parallel Processing (ICPP). Sep. 12th, 2014, Minneapolis, Minnesota. [pdf] [slides]

180. Ralf Gunter Correa Carvalho, David J. Goodell, James S. Dinan, and Pavan Balaji. *Optimizing Charm++ over MPI.* Annual Workshop on Charm++ and its Applications. April 15-16, 2013, Urbana-Champaign, Illinois. [pdf] [slides]

181. Ashwin M. Aji, Pavan Balaji, James S. Dinan, Wu-chun Feng and Rajeev S. Thakur. *Synchronization and Ordering Semantics in Hybrid MPI+GPU Programming.* Workshop on Accelerators and Hybrid Exascale Systems (AsHES); held in conjunction with the IEEE International Parallel and Distributed Processing Symposium (IPDPS). May 20th, 2013, Boston, Massachusetts. [pdf] [slides]

182. Rinku K. Gupta, Kamil Iskra, Kazutomo Yoshii, Peter H. Beckman and Pavan Balaji. *Introspective Fault Tolerance for Exascale Systems.* U.S. Department of Energy Advanced Scientific Computing Research, OS and Runtime Technical Council Workshop. Oct. 4–5, 2012, Washington, DC. [pdf] [slides]

183. Feng Ji, James S. Dinan, Darius T. Buntinas, Pavan Balaji, Xiaosong Ma and Wu-chun Feng. *Optimizing GPU-to-GPU intra-node communication in MPI.* Workshop on Accelerators and Hybrid Exascale Systems (AsHES); held in conjunction with the IEEE International Parallel and Distributed Processing Symposium (IPDPS). May 25th, 2012, Shanghai, China. [pdf] [slides]

184. Jeffrey A. Stuart, Pavan Balaji, and John D. Owens. *Extending MPI to Accelerators.* Workshop on Architectures and Systems for Big Data (ASBD); held in conjunction with the International Conference on Parallel Architectures and Compilation Techniques (PACT). Oct. 10th, 2011, Galveston Island, Texas. [pdf] [slides]

185. Abhinav Vishnu, Manoj Krishnan and Pavan Balaji. *Dynamic Time-Variant Connection Management for PGAS Models on InfiniBand.* Workshop on Communication Architecture for Scalable Systems (CASS); held in conjunction with the IEEE International Parallel and Distributed Processing Symposium (IPDPS). May 16th, 2011, Anchorage, Alaska. [pdf] [slides]

186. Pavan Balaji, Sitha Bhagvat, Hyun-Wook Jin and Dhabaleswar K. Panda. *Asynchronous Zero-copy Communication for Synchronous Sockets in the Sockets Direct Protocol (SDP) over InfiniBand.* Workshop on Communication Architecture for Clusters (CAC); held in conjunction with the IEEE International Parallel and Distributed Processing Symposium (IPDPS). Apr. 25th, 2006, Rhodes Island, Greece. [pdf] [slides]

187. Venkatram Vishwanath, Pavan Balaji, Wu-chun Feng, Jason Leigh, Dhabaleswar K. Panda. *A Case for UDP Offload Engines in LambdaGrids.* Workshop on Protocols for Fast Long-Distance Networks (PFLDnet). Feb. 2-3, 2006, Nara, Japan. [pdf] [slides]

188. Pavan Balaji, Hyun-Wook Jin, Karthikeyan Vaidyanathan and Dhabaleswar K. Panda. *Supporting iWARP Compatibility and Features for Regular Network Adapters.* Workshop on Remote Direct Memory Access (RDMA): Applications, Implementations and Techniques (RAIT); held in conjunction with IEEE International conference on Cluster Computing (Cluster). Sep. 26th, 2005, Boston, Massachusetts. [pdf] [slides]

189. Hyun-Wook Jin, Sundeep Narravula, Gregory Brown, Karthikeyan Vaidyanathan, Pavan Balaji and Dhabaleswar K. Panda. *Performance Evaluation of RDMA over IP Networks: A Study with the Ammasso Gigabit Ethernet NIC.* Workshop on High Performance Interconnects for Distributed Computing (HPI-DC); held in conjunction with IEEE International Symposium on High Performance Distributed Computing (HPDC). Jul. 24th, 2005, Research Triangle Park, North Carolina. [pdf] [slides]

190. Karthikeyan Vaidyanathan, Pavan Balaji, Hyun-Wook Jin and Dhabaleswar K. Panda. *Workload driven analysis of File Systems in Shared Multi-Tier Data-Centers over InfiniBand.* Workshop on Computer Architecture Evaluation using Commercial Workloads (CAECW); held in conjunction with IEEE International Symposium on High Performance Computer Architecture (HPCA). Feb. 12th, 2005, San Francisco, California. [pdf] [slides]

191. Pavan Balaji, Hemal V. Shah and Dhabaleswar K. Panda. *Sockets vs. RDMA Interface over 10-Gigabit Networks: An In depth Analysis of the Memory Traffic Bottleneck.* Workshop on Remote Direct Memory Access (RDMA): Applications, Implementations and Technologies (RAIT); held in conjunction with IEEE International Conference on Cluster Computing (Cluster). Sep. 20th, 2004, San Diego, California. [pdf] [slides]

192. Pavan Balaji, Karthikeyan Vaidyanathan, Sundeep Narravula, Savitha Krishnamoorthy, Hyun-Wook Jin and Dhabaleswar K. Panda. *Exploiting Remote Memory Operations to Design Efficient Reconfiguration for Shared Data-Centers over InfiniBand.* Workshop on Remote Direct Memory Access (RDMA): Applications, Implementations and Technologies (RAIT); held in conjunction with IEEE International Conference on Cluster Computing (Cluster). Sep. 20th, 2004, San Diego, California. [pdf] [slides]

193. Sundeep Narravula, Pavan Balaji, Karthikeyan Vaidyanathan, Savitha Krishnamoorthy, Jiesheng Wu and Dhabaleswar K. Panda. *Supporting Strong Coherency for Active Caches in Multi-Tier Data-Centers over InfiniBand.* Workshop on System Area Networks (SAN); held in conjunction with IEEE International Symposium on High Performance Computer Architecture (HPCA). Feb. 14th, 2004, Madrid, Spain. [pdf] [slides]

194. Mohammad Kamrul Islam, Pavan Balaji, P. Sadayappan and Dhabaleswar K. Panda. *QoPS: A QoS based scheme for Parallel Job Scheduling.* Job Scheduling Strategies for Parallel Processing (JSSPP) workshop; held in conjunction with IEEE International Symposium on High Performance Distributed Computing (HPDC). Jun. 24th, 2003, Seattle, Washington. [pdf] [slides]

Refereed Poster Papers

195. Sarunya Pumma, Min Si, Wu-chun Feng and Pavan Balaji. *I/O Bottleneck Investigation in Deep Learning Systems.* International Conference on Parallel Processing (ICPP). **Best Student Poster Award.** Aug. 13–16, 2018, Eugene, Oregon. [pdf] [poster]

196. Sarunya Pumma, Min Si, Wu-chun Feng and Pavan Balaji. *Parallel I/O Optimizations for Scalable Deep Learning.* The Euro MPI Users' Group Conference (Euro MPI/USA). Sep. 25–28, 2017, Chicago, USA.

197. Shintaro Iwasaki, Abdelhalim Amer, Kenjiro Taura and Pavan Balaji. *Optimistic Threading Techniques for MPI+ULT.* The Euro MPI Users' Group Conference (Euro MPI/USA). Sep. 25–28, 2017, Chicago, USA.

198. Rohit Zambre, Abdelhalim Amer, Aparna Chandramowlishwaran and Pavan Balaji. *Evaluating Multiple Endpoints for MPI with libibverbs.* The Euro MPI Users' Group Conference (Euro MPI/USA). Sep. 25–28, 2017, Chicago, USA.

199. Wesley Bland, Huiwei Lu, Sangmin Seo, and Pavan Balaji. *Lessons Learned Implementing User Level Failure Mitigation in MPICH.* IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid). May 4–7, 2015, Shenzhen, China. [pdf] [slides] [poster]

200. Kenneth J. Raffenetti, Antonio J. Peña, and Pavan Balaji. *Toward Implementing Robust Support for Portals 4 Networks in MPICH.* IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid). May 4–7, 2015, Shenzhen, China. [pdf] [slides] [poster]

201. Antonio J. Peña and Pavan Balaji. *Understanding Data Access Patterns Using Object-Differentiated Memory Profiling.* IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid). May 4–7, 2015, Shenzhen, China. [pdf] [slides] [poster]

202. Xin Zhao, Pavan Balaji and William D. Gropp. *Runtime Support for Irregular Computation in MPI-Based Applications.* Doctoral Symposium. IEEE/ACM International Symposium on Cluster,Cloud, and Grid Computing (CCGrid). May 4–7, 2015, Shenzhen, China. [pdf] [slides] [poster]

203. Min Si, Pavan Balaji and Yutaka Ishikawa. *Techniques for Enabling Highly Efficient Message Passing on Many-Core Architectures.* Doctoral Symposium. IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid). May 4–7, 2015, Shenzhen, China. [pdf] [slides] [poster]

204. Jintao Meng, Yanjie Wei, Sangmin Seo, and Pavan Balaji. *SWAP-Assembler 2: Scalable Genome Assembler towards Millions of Cores – Practice and Experience.* Doctoral Symposium. IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid). May 4–7, 2015, Shenzhen, China.

205. Hajime Fujita, Nan Dun, Aiman Fang, Zachary A. Rubenstein, Ziming Zheng, Kamil Iskra, Jeffrey R. Hammond, Anshu Dubey, Pavan Balaji, Andrew A. Chien. *Using Global View Resilience (GVR) to add Resilience to Exascale Applications.* IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC). **Best Poster Finalist.** Nov. 16–21, 2014, New Orleans, Louisiana. [pdf] [poster]

206. Min Si, Yutaka Ishikawa, and Pavan Balaji. *Optimizing MPI Implementation on Massively Parallel Many-Core Architectures.* IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC). Doctoral Symposium Early Research Showcase. Nov. 17–22, 2013, Denver, Colorado. [pdf] [poster]

207. David Ozog, Jeffrey R. Hammond, James S. Dinan, Pavan Balaji, Sameer Shende, Allen D. Malony. *Inspector-Executor Load Balancing Algorithms for Block-Sparse Tensor Contractions.* ACM International Conference on Supercomputing (ICS). June 10–14, 2013, Eugene, Oregon. [pdf]

208. Zachary A. Rubenstein, Hajime Fujita, Guoming Lu, Aiman Fang, Ziming Zheng, Andrew A. Chien, Pavan Balaji, Kamil Iskra, Peter H. Beckman, James S. Dinan, Jeffrey R. Hammond, Robert Schreiber. *The Global View Resilience Model.* Greater Chicago Area System Research Workshop (GCASR). May 3rd, 2013, Evanston, Illinois. [poster]

209. Jintao Meng, Bingqiang Wang, Yanjie Wei, Shengzhong Feng, Jiefeng Cheng and Pavan Balaji. *SWAP-Assembler: A Scalable De Bruijn Graph Based Assembler for Massive Genome Data.* International Conference on Research in Computational Molecular Biology (RECOMB). Apr. 7–10, 2013, Beijing, China. [poster]

210. James S. Dinan, Pavan Balaji, Jeffrey R. Hammond, Sriram Krishnamoorthy, and Vinod Tipparaju. *High-Level, One-Sided Programming Models on MPI: A Case Study with Global Arrays and NWChem.* IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC). Nov. 12–18, 2011, Seattle, Washington. [pdf] [poster]

211. Jeffrey R. Hammond, Sreeram Potluri, Zheng (Cynthia) Gu, Alex Dickson, James S. Dinan, Ivo Kabadshow, Pavan Balaji, and Vinod Tipparaju. *Fast One-Sided Communication on Supercomputers and Application to Three Scientific Codes.* IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC). Nov. 12–18, 2011, Seattle, Washington. [poster]

Invited Papers

212. Rajeev S. Thakur, Pavan Balaji, Darius T. Buntinas, David J. Goodell, William D. Gropp, Torsten Hoefler, Sameer Kumar, Ewing L. (Rusty) Lusk and Jesper Larsson Träff. *MPI at Exascale.* Department of Energy SciDAC workshop. Jul. 11-15th, 2010, Chattanooga, Tennessee. [pdf] [slides]

213. Wu-chun Feng, Pavan Balaji and Ajeet Singh. *Network Interface Cards as First-Class Citizens.* Workshop on The Influence of I/O on Microprocessor Architecture (IOM); held in conjunction with the IEEE International Symposium on High Performance Computer Architecture (HPCA). Feb. 15th, 2009, Raleigh, North Carolina. [pdf] [slides]

214. Karthikeyan Vaidyanathan, Sundeep Narravula, Pavan Balaji and Dhabaleswar K. Panda. *Designing Efficient Systems Services and Primitives for Next-Generation Data-Centers.* Workshop on the National Science Foundation Next Generation Software (NSFNGS) Program; held in conjunction with the IEEE International Parallel and Distributed Processing Symposium (IPDPS). Mar. 26th, 2007, Long Beach, California. [pdf] [slides]

215. Pavan Balaji, Karthikeyan Vaidyanathan, Sundeep Narravula, Hyun-Wook Jin and Dhabaleswar K. Panda. *Designing Next Generation Data-centers with Advanced Communication Protcols and Systems Services.* Workshop on the National Science Foundation Next Generation Software (NSFNGS) Program; held in conjunction with the IEEE International Parallel and Distributed Processing Symposium (IPDPS). Apr. 25th, 2006, Rhodes Island, Greece. [pdf] [slides]

Other Publications

216. Jintao Meng, Ning Guo, Jianqiu Ge, Yanjie Wei, and Pavan Balaji. *Scalable Assembly for Massive Genomic Graphs.* **Scalable Computing Challenge Finalist**. IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid). May 14–17, 2017, Madrid, Spain. [pdf] [slides]

217. Boyu Zhang, Trilce Estrada, Pietro Cicotti, Pavan Balaji, Michela Taufer. *Accurate Scoring of Drug Conformations at the Extreme Scale.* **Scalable Computing Challenge Winner**. IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid). May 4–7, 2015, Shenzhen, China. [pdf] [slides]

218. Min Si, Antonio J. Peña, Jeffrey R. Hammond, Pavan Balaji, and Yutaka Ishikawa. *Scaling NWChem with Efficient and Portable Asynchronous Communication in MPI RMA.* **Scalable Computing Challenge Finalist**. IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid). May 4–7, 2015, Shenzhen, China. [pdf] [slides]

Sponsor Reports

219. Sonia R. Sachs, Katherine Yelick, Saman Amarasinghe, Mary Hall, Richard Lethin, Keshav Pingali, Dan Quinlan, Vivek Sarkar, John Shalf, Robert Lucas, Pavan Balaji, Pedro C. Diniz, Alice Koniges, and Marc Snir. *Exascale Programming Challenges Workshop Report.* The ASCR Programming Models Workshop, July, 2011. [pdf]

220. Jack A. Gilbert, Folker Meyer, Dion Antonopoulos, Pavan Balaji, Christopher T. Brown, Narayan Desai, Jonathan A. Eisen, Dick Evers, Dawn Field, Wu-chun Feng, Daniel Huson, Janet Jansson, Rob Knight, James Knight, Eugene Kolker, Kostas Konstantindis, Joel Kostka, Nikos Kyrpides, Rachel Mackelprang, Alice McHardy, Christopher Quince, Jeroen Raes, Alexander Sczyrba, Ashley Shade, and Rick Stevens. *Meeting Report: The Terabase Metagenomics Workshop and the Vision of an Earth Microbiome Project.* Institute of Computing in Science (ICiS) Workshop on the Earth Microbiome Project (EMP), 2010. [pdf]

Technical Reports

221. Karthikeyan Vaidyanathan, Sitha Bhagvat, Pavan Balaji and Dhabaleswar K. Panda. *Understanding the Significance of Network Performance in End Applications: A Case Study with EtherFabric and InfiniBand.* Technical Report, OSU-CISRC-2/06-TR19, The Ohio State University. Feb, 2006. [pdf]

222. Karthikeyan Vaidyanathan, Pavan Balaji, Jiesheng Wu, Hyun-Wook Jin and Dhabaleswar K. Panda. *An Architectural Study of Cluster-based Multi-tier Data-Centers.* Technical Report, OSU-CISRC-5/04-TR25, The Ohio State University. May, 2004. [pdf]

223. Savitha Krishnamoorthy, Pavan Balaji, Karthikeyan Vaidyanathan, Hyun-Wook Jin and Dhabaleswar K. Panda. *Dynamic Reconfigurability Support for providing Soft Quality of Service Guarantees in Multi-Tier Data-Centers over InfiniBand.* Technical Report, OSU-CISRC-2/04-TR10, The Ohio State University. Feb, 2004. [pdf]

International Standards

224. *MPI: A Message-Passing Interface Standard, Version 3.1.* The Message Passing Interface Forum, Jun. 4th, 2015. [pdf]
225. *MPI: A Message-Passing Interface Standard, Version 3.0.* The Message Passing Interface Forum, Sep. 21st, 2012. [pdf]
226. *MPI: A Message-Passing Interface Standard, Version 2.2.* The Message Passing Interface Forum, Sep. 4th, 2009. [pdf]
227. *MPI: A Message-Passing Interface Standard, Version 2.1.* The Message Passing Interface Forum, Jun. 23rd, 2008. [pdf]

Miscellaneous Articles

228. Abhinav Vishnu, Pavan Balaji, and Yong Chen. *Guest Editors' Introduction.* Special Issue on *Parallel Programming Models and Systems Software* with the International Journal of Supercomputing (JoS), 2014.
229. Zhiyi Huang and Pavan Balaji. *Guest Editors' Introduction.* Special Issue on *Programming Models and Applications for Multicores and Manycores* with the International Parallel Computing (ParCo) journal, 2013.
230. Yong Chen, Pavan Balaji and Abhinav Vishnu. *Guest Editors' Introduction.* Special Issue on *Parallel Programming Models and Systems Software* with the International Parallel Computing (ParCo) journal, 2013.
231. Pavan Balaji and Satoshi Matsuoka. *Guest Editors' Introduction.* Special Issue on *Applications for the Heterogeneous Computing Era* with the International Journal of High Performance Computing Applications (IJHPCA), 2013.
232. Pavan Balaji and Rajkumar Buyya. *Guest Editors' Introduction.* Special Issue on *Cluster, Cloud and Grid Computing* with the International Journal of Future Generation Computer Systems (FGCS), 2013.
233. Abhinav Vishnu, Pavan Balaji and Yong Chen. *Guest Editors' Introduction.* Special Issue on *Programming Models and Systems Software* with the International Journal of Supercomputing, 2012.
234. Pavan Balaji and Jiayuan Meng. *Guest Editors' Introduction.* Special Issue on *Applications for the Heterogeneous Computing Era* with the International Journal of High Performance Computing Applications (IJHPCA), 2012.
235. Pavan Balaji and Abhinav Vishnu. *Guest Editors' Introduction.* Special Issue on *Programming Models, Software and Tools for High-End Computing* with the International Journal of High Performance Computing Applications (IJHPCA), 2011.
236. Pavan Balaji and Abhinav Vishnu. *Guest Editors' Introduction.* Special Issue on *Programming Models and Systems Software Support for High-End Computing Applications* with the International Journal of High Performance Computing Applications (IJHPCA), 2010.
237. Wu-chun Feng and Pavan Balaji. *Guest Editors' Introduction.* Special Issue on *Tools and Environments for Multicore and Many-core Architectures* with IEEE Computer, 2009.

PRESENTATIONS

Invited Plenary Talks

1. *Onwards and Upwards to a New Era in Supercomputing.* **Keynote Talk**. IEEE International Conference on High Performance Computing and Communications (HPCC), Zhangjiajie, China. Aug. 11th, 2019.
2. *The Dawn of a New Era in Supercomputing.* **Keynote Talk**. IEEE International Conference on High Performance Computing and Communications (HPCC), Bangkok, Thailand. Dec. 19th, 2017.
3. *Some Thoughts on the Interoperability of MPI and OpenMP.* **Keynote Talk**. International Workshop on OpenMP (IWOMP), Stony Brook, New York. Sep. 20th, 2017.

4. *Onwards and Upwards to a New Era in Supercomputing.* **Keynote Talk**. IEEE International Workshop on Parallel and Distributed Scientific and Engineering Computing (PDSEC), held in conjunction with the IEEE International Parallel and Distributed Processing Symposium (IPDPS), Orlando, Florida. June 2nd, 2017.
5. *How I Learned to Stop Worrying about Exascale and Love MPI.* **Keynote Talk**. International Workshop on Runtime Systems for Extreme Scale Programming Models and Architectures (RESPA). Nov. 18th, 2016.
6. *HPC Interconnect Requirements for Key U.S. Department of Energy Applications.* **Keynote Talk**. Intel HPC Developers' Conference, Beijing, China. Jan. 15th, 2016.
7. *Investigating MPI's Suitability for Highly Dynamic and Irregular Communication.* **Keynote Talk**. Exascale MPI Workshop; held in conjunction with the IEEE/ACM International Conference on High Performance Computing, Networking, Storage, and Analysis (SC), Austin, Texas. Nov. 16th, 2015.
8. *HPC Interconnect Requirements for Key Computational Science Applications.* **Keynote Talk**. HPC Advisory Council, Wuxi, China. Nov. 9th, 2015.
9. *Towards a New Era of Parallel Processing with MPI and Threads.* **Keynote Talk**. Workshop on HPC Middleware Systems; held in conjunction with HPC China, Wuxi, China. Nov. 9th, 2015.
10. *Debunking the Myths of MPI Programming.* **Keynote Talk**. HPC China, Guangzhou, China. Nov. 8th, 2014.
11. *HPC Research at Argonne National Laboratory.* **Keynote Talk**. HPC Advisory Council, Guangzhou, China. Nov. 5th, 2014.
12. *Commodity-driven Exascale Computing: Passing Fad or a Promising Future?* **Keynote Talk**. IEEE International Workshop on Parallel and Distributed Scientific and Engineering Computing (PDSEC), held in conjunction with the IEEE International Parallel and Distributed Processing Symposium (IPDPS), Shanghai, China. May 25th, 2012.
13. *Challenges in Utilizing Clouds for High-End Scientific Computing Applications.* **Keynote Talk**. IEEE/ACM International Workshop on Cloud Computing and Scientific Applications (CCSA), held in conjunction with the IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid), Ottawa, Canada. May 13th, 2012.
14. *Is Exascale the Last Frontier for Commodity Computing?* **Distinguished Speaker Seminar**. Queen's University, Kingston, Canada. Mar. 17th, 2011.

Tutorials

15. *Programming with User-level Threads using Argobots.* Full-day tutorial, jointly with Shintaro Iwasaki (Argonne National Laboratory). International Conference on Principles and Practice of Parallel Programming (PPoPP), San Diego, California, 2020.
16. *Programming with User-level Threads using Argobots.* Full-day tutorial, jointly with Shintaro Iwasaki (Argonne National Laboratory). International Conference on Parallel Architectures and Compilation Techniques (PACT), Seattle, Washington, 2019.
17. *Advanced MPI.* Full-day tutorial, jointly with Torsten Hoefler (ETH, Zurich), Yanfei Guo (Argonne National Laboratory), and Antonio Peña (Barcelona Supercomputing Center). International Supercomputing Conference (ISC), Frankfurt, Germany. Jun. 16th, 2019.
18. *Advanced MPI Programming.* Full-day tutorial, jointly with Rajeev S. Thakur (Argonne National Laboratory), William D. Gropp (University of Illinois, Urbana-Champaign), and Torsten Hoefler (ETH, Zurich). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Dallas, Texas. Nov. 12th, 2018.
19. *MPI for Scalable Computing.* Full-day tutorial, jointly with Rajeev S. Thakur (Argonne National Laboratory) and William D. Gropp (University of Illinois, Urbana-Champaign). Argonne Training Program on Extreme-Scale Computing (ATPESC), St. Charles, Illinois. Jul. 31st, 2018.
20. *Parallel Programming with MPI.* Full-day tutorial, jointly with Rajeev S. Thakur (Argonne National Laboratory), Kenneth Raffenetti (Argonne National Laboratory), Yanfei Guo (Argonne National Laboratory). Argonne National Laboratory, Argonne, Illinois. June 29th, 2018.

21. *Advanced MPI.* Full-day tutorial, jointly with Torsten Hoefler (ETH, Zurich). International Supercomputing Conference (ISC), Frankfurt, Germany. Jun. 24th, 2018.
22. *Parallel Programming with MPI.* Three-day tutorial. NASA Langley Research Center, Hampton, Virginia. Apr. 30th—May 2nd, 2018.
23. *Parallel Programming with MPI.* Two-hour short course. Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences (SIAT), Shenzhen, China. Dec. 14th, 2017.
24. *Advanced MPI Programming.* Full-day tutorial, jointly with Rajeev S. Thakur (Argonne National Laboratory), William D. Gropp (University of Illinois, Urbana-Champaign), and Torsten Hoefler (ETH, Zurich). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Denver, Colorado. Nov. 13th, 2017.
25. *MPI for Scalable Computing.* Full-day tutorial, jointly with Rajeev S. Thakur (Argonne National Laboratory) and William D. Gropp (University of Illinois, Urbana-Champaign). Argonne Training Program on Extreme-Scale Computing (ATPESC), St. Charles, Illinois. Aug. 1st, 2017.
26. *Parallel Programming with MPI.* Full-day tutorial, jointly with Kenneth Raffenetti (Argonne National Laboratory) and Abdelhalim Amer (Argonne National Laboratory) and Yanfei Guo (Argonne National Laboratory). Scaling to Petascale Institute, Argonne, Illinois. June 26th, 2017.
27. *Advanced MPI.* Full-day tutorial, jointly with Torsten Hoefler (ETH, Zurich). International Supercomputing Conference (ISC), Frankfurt, Germany. Jun. 18th, 2017.
28. *Advanced MPI.* Half-day tutorial, jointly with Torsten Hoefler (ETH, Zurich). ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP). Feb. 5th, 2017.
29. *Advanced MPI Programming.* Full-day tutorial, jointly with Rajeev S. Thakur (Argonne National Laboratory), William D. Gropp (University of Illinois, Urbana-Champaign), and Torsten Hoefler (ETH, Zurich). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Salt Lake City, Utah. Nov. 14th, 2016.
30. *Advanced MPI.* Half-day tutorial. Intel Xeon Phi Users' Group (IXPUG) meeting, Argonne, Illinois. Sep. 19th, 2016.
31. *Advanced MPI.* Half-day tutorial, jointly with Torsten Hoefler (ETH, Zurich). International Supercomputing Conference (ISC), Frankfurt, Germany. Jun. 9th, 2016.
32. *Parallel Programming with MPI.* Full-day tutorial, jointly with Rajeev S. Thakur (Argonne National Laboratory), Kenneth Raffenetti (Argonne National Laboratory), Abdelhalim Amer (Argonne National Laboratory). Argonne National Laboratory, Argonne, Illinois. June 14th, 2016.
33. *Parallel Programming with MPI.* Two-day tutorial. IT4 Innovations Institute, Ostrava, Czech Republic. Dec. 14–15, 2015.
34. *Advanced MPI Programming.* Full-day tutorial, jointly with Rajeev S. Thakur (Argonne National Laboratory), William D. Gropp (University of Illinois, Urbana-Champaign), and Torsten Hoefler (ETH, Zurich). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Austin, Texas. Nov. 16th, 2015.
35. *Advanced MPI.* Half-day tutorial. Intel Xeon Phi Users' Group (IXPUG) meeting, Berkeley, California. Sep. 28th, 2015.
36. *Advanced MPI.* Half-day tutorial, jointly with Torsten Hoefler (ETH, Zurich). International Supercomputing Conference (ISC), Frankfurt, Germany. Jul. 12th, 2015.
37. *Parallel Programming with MPI.* Full-day tutorial, jointly with Rajeev S. Thakur (Argonne National Laboratory), Kenneth Raffenetti (Argonne National Laboratory), Antonio Peña (Argonne National Laboratory) and Min Si (University of Tokyo, Japan). Argonne National Laboratory, Argonne, Illinois. June 5th, 2015.
38. *Parallel Programming with MPI.* Full-day tutorial. Shanghai Jiao Tong University, Shanghai, China. Mar. 26th, 2015.
39. *Advanced MPI Programming.* Full-day tutorial, jointly with Rajeev S. Thakur (Argonne National Laboratory), William D. Gropp (University of Illinois, Urbana-Champaign), and Torsten Hoefler (ETH, Zurich). IEEE/ACM International

Conference for High Performance Computing, Networking, Storage and Analysis (SC), New Orleans, Louisiana. Nov. 17th, 2014.

40. *Advanced Parallel Programming with MPI.* Half-day tutorial, jointly with Torsten Hoefler (ETH, Zurich). IEEE International Conference on Cluster Computing (Cluster), Madrid, Spain. Sep. 22nd, 2014.
41. *Advanced Parallel Programming with MPI.* Full-day tutorial, jointly with Torsten Hoefler (ETH, Zurich). International Supercomputing Conference (ISC), Leipzig, Germany. June 22nd, 2014.
42. *Parallel Programming with MPI.* Full-day tutorial, jointly with Rajeev S. Thakur (Argonne National Laboratory), Kenneth Raffenetti (Argonne National Laboratory), Wesley Bland (Argonne National Laboratory) and Xin Zhao (University of Illinois, Urbana-Champaign). Argonne National Laboratory, Argonne, Illinois. June 10th, 2014.
43. *Advanced MPI.* Half-day tutorial, jointly with Torsten Hoefler (ETH, Zurich). ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP), Orlando, Florida. Feb. 15th, 2014.
44. *Advanced MPI Programming with MPI-2.2 and MPI-3.* Half-day tutorial, jointly with Xin Zhao (University of Illinois, Urbana-Champaign) and Torsten Hoefler (ETH, Zurich). IEEE International Conference on Parallel and Distributed Systems (ICPADS), Seoul, South Korea. Dec. 15th, 2013.
45. *Introduction to MPI.* Half-day tutorial, jointly with Xin Zhao (University of Illinois, Urbana-Champaign) and Torsten Hoefler (ETH, Zurich). IEEE International Conference on Parallel and Distributed Systems (ICPADS), Seoul, South Korea. Dec. 15th, 2013.
46. *Advanced MPI Programming.* Full-day tutorial, jointly with Rajeev S. Thakur (Argonne National Laboratory), James S. Dinan (Intel), and Torsten Hoefler (ETH, Zurich). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Denver, Colorado. Nov. 17th, 2013.
47. *Advanced Parallel Programming with MPI.* Full-day tutorial, jointly with Torsten Hoefler (ETH, Zurich) and Martin Schulz (Lawrence Livermore National Laboratory). International Supercomputing Conference (ISC), Leipzig, Germany. June 16th, 2013.
48. *Advanced Parallel Programming with MPI.* Half-day tutorial, jointly with Torsten Hoefler (ETH, Zurich). ACM International Conference on Supercomputing (ICS), Eugene, Oregon. June 11th, 2013.
49. *Parallel Programming with MPI.* Full-day tutorial, jointly with Rajeev S. Thakur (Argonne National Laboratory), Ewing L. (Rusty) Lusk (Argonne National Laboratory), and Wesley Bland (Argonne National Laboratory). Argonne National Laboratory, Argonne, Illinois. June 10th, 2013.
50. *Advanced Parallel Programming with MPI-1, MPI-2 and MPI-3.* Half-day tutorial, jointly with Torsten Hoefler (ETH, Zurich). ACM Symposium on Principles and Practice of Parallel Programming (PPoPP), Shenzhen, China. Feb 24th, 2013.
51. *MPI for Dummies.* Half-day tutorial, jointly with Torsten Hoefler (ETH, Zurich). ACM Symposium on Principles and Practice of Parallel Programming (PPoPP), Shenzhen, China. Feb 24th, 2013.
52. *Advanced Parallel Programming with MPI.* Half-day tutorial. Center for Scalable Application Development Software (CScADS) workshop on Leadership Computing Platforms, Extreme-scale Applications, and Performance Strategies, Snowbird, Utah. July 24th, 2012.
53. *Hands-On Introduction to Parallel Programming with MPI.* Full-day tutorial. Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences (SIAT), Shenzhen, China. Sep. 9th, 2011.
54. *InfiniBand and High-Speed Ethernet Architectures for Scientific and Enterprise Computing: Opportunities and Challenges.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University) and Sayantan Sur (Ohio State University). IEEE International Symposium on High Performance Computer Architecture (HPCA), San Antonio, Texas. Feb. 12th, 2011.
55. *Introduction to Parallel Programming with MPI.* Short course. University of Tennessee Space Institute (UTSI), Tullahoma, Tennessee. Feb. 10th, 2011.
56. *Designing High-End Computing Systems with InfiniBand and High-speed Ethernet.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University) and Sayantan Sur (Ohio State University). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), New Orleans, Louisiana. Nov. 14th, 2010.

57. *InfiniBand and 10-Gigabit Ethernet for Dummies.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University) and Sayantan Sur (Ohio State University). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), New Orleans, Louisiana. Nov. 14th, 2010.

58. *Introduction to Parallel Programming with MPI.* Two-hour short course. University of Wisconsin at Milwaukee (UWM), Milwaukee, Wisconsin. Nov. 10th, 2010.

59. *Advanced Parallel Programming with MPI.* Two-hour short course. Community Surface Dynamic Modeling System Meeting (CSDMS), San Antonio, Texas. Oct. 17th, 2010.

60. *Introduction to Parallel Programming with MPI.* Two-hour short course. Community Surface Dynamic Modeling System Meeting (CSDMS), San Antonio, Texas. Oct. 16th, 2010.

61. *Designing High-End Computing Systems and Programming Models with InfiniBand and High-speed Ethernet.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University) and Sayantan Sur (Ohio State University). International Conference on Partitioned Global Address Space Models (PGAS), New York, New York. Oct. 15th, 2010.

62. *Designing High-End Computing Systems with InfiniBand and High-speed Ethernet.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University). IEEE International Conference on Cluster Computing (Cluster), Crete, Greece. Sep. 20th, 2010.

63. *Designing High-End Computing Systems with InfiniBand and High-speed Ethernet.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University) and Sayantan Sur (Ohio State University). IEEE International Symposium on High Performance Interconnects (HotI), Mountain View, California. Aug. 20th, 2010.

64. *Designing High-End Computing Systems with InfiniBand and 10-Gigabit Ethernet.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University) and Sayantan Sur (Ohio State University). ACM/SIGARCH International Conference on Supercomputing (ICS), Tsukuba, Japan. June 1st, 2010.

65. *Designing High-End Computing Systems with InfiniBand and 10-Gigabit Ethernet.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University). International Supercomputing Conference (ISC), Hamburg, Germany. May. 30th, 2010.

66. *InfiniBand and Ethernet Architectures for Scientific and Enterprise Computing: Opportunities and Challenges.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University). IEEE International Symposium on High-Performance Computer Architecture (HPCA), Bangalore, India. Jan. 9th, 2010.

67. *Designing High-End Computing Systems with InfiniBand and 10-Gigabit Ethernet.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University) and Matthew Koop (Ohio State University). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Portland, Oregon. Nov. 15th, 2009.

68. *InfiniBand and 10-Gigabit Ethernet for Dummies.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University) and Matthew Koop (Ohio State University). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Portland, Oregon. Nov. 15th, 2009.

69. *Designing High-End Computing Systems with InfiniBand and 10-Gigabit Ethernet.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University) and Matthew Koop (Ohio State University). IEEE International Conference on Cluster Computing (Cluster), New Orleans, Louisiana. Sep. 4th, 2009.

70. *Designing High-End Computing Systems with InfiniBand and 10-Gigabit Ethernet.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University) and Matthew Koop (Ohio State University). IEEE International Conference on High Performance Interconnects (HotI), New York, New York. Aug. 25th, 2009.

71. *InfiniBand and 10-Gigabit Ethernet for Dummies.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University) and Matthew Koop (Ohio State University). IEEE International Conference on High Performance Interconnects (HotI), New York, New York. Aug. 25th, 2009.

72. *InfiniBand and 10-Gigabit Ethernet Architectures for Emerging HPC Clusters and Enterprise Datacenters.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University). IEEE International Symposium on High Performance Computer Architecture (HPCA), Raleigh, North Carolina. Feb. 14th, 2009.

73. *InfiniBand and 10-Gigabit Ethernet for Dummies.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University) and Matthew Koop (Ohio State University). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Austin, Texas. Nov. 16th, 2008.
74. *Designing High-End Computing Systems with InfiniBand and 10-Gigabit Ethernet.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University) and Matthew Koop (Ohio State University). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Austin, Texas. Nov. 16th, 2008.
75. *Designing HPC Clusters and Enterprise Datacenters: The InfiniBand and 10GE Way.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University). IEEE Symposium on High-Performance Interconnects (HotI), Palo Alto, California. Aug. 26th, 2008.
76. *High-Speed Network Architectures for Clusters: Designs and Trends.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University). IEEE International Symposium on Computer Architecture (ISCA), Beijing, China. Jun. 22nd, 2008.
77. *Message Passing for Dummies: Introduction to MPI.* Student Lecture Series, Argonne National Laboratory, Argonne, Illinois. Jun 9th, 2008.
78. *High-Speed Network Architectures for Clusters: Designs and Trends.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University). International Symposium on High-Performance Computer Architecture (HPCA), Salt Lake City, Utah. Feb. 16th, 2008.
79. *Designing High-End Computing Systems with InfiniBand and iWARP Standards.* Full-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University) and Sayantan Sur (Ohio State University). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Reno, Nevada. Nov. 10th, 2007.
80. *Designing High-End Computing Systems with InfiniBand and 10-Gigabit Ethernet.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University). IEEE International Conference on Cluster Computing (Cluster), Austin, Texas. Sep. 17th, 2007.
81. *Designing Clusters and Distributed Grid Computing Systems with InfiniBand and iWARP.* Half-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University). IEEE International Symposium on Cluster Computing and the Grid (CCGrid), Rio de Janeiro, Brazil. May 14th, 2007.
82. *State of InfiniBand in Designing HPC Clusters, Storage/File Systems, and Datacenters.* Full-day tutorial, jointly with Dhabaleswar K. Panda (Ohio State University) and Sayantan Sur (Ohio State University). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Seattle, Washington. Nov. 13th, 2005.

Invited Panel Presentations

83. *High Performance Computing and Communications for Smart Cities.* IEEE International Conference on High Performance Computing and Communications (HPCC), Zhangjiajie, China. Aug. 10th, 2019.
84. *Runtime for Exascale and Beyond: Convergence or Divergence?* IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Denver, Colorado. Nov. 14th, 2018.
85. *The Future of Cloud Computing.* Moderator: Gul Agha, University of Illinois, Urbana-Champaign. IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid), Cartagena, Colombia. May 18th, 2016.
86. *MPI Hybrid Programming.* MPI Birds-of-a-Feather panel. Moderator: Martin Schulz, Lawrence Livermore National Laboratory. IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Austin, Texas. Nov. 18th, 2015.
87. *MPICH/UCX: Early Experiences.* Unified Communication X Birds-of-a-Feather panel. Moderator: Pavel Shamis, Oak Ridge National Laboratory. IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Austin, Texas. Nov. 17th, 2015.
88. *Networking Requirements for Key U.S. Department of Energy Applications.* InfiniBand Trade Association Birds-of-a-Feather panel. Moderator: Bill Lee, Mellanox. IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Austin, Texas. Nov. 17th, 2015.

89. *MPI Hybrid Programming.* MPI Birds-of-a-Feather panel. Moderator: Martin Schulz, Lawrence Livermore National Laboratory. International Supercomputing Conference (ISC), Frankfurt, Germany. Jul. 13th, 2015.
90. *Exascale Computing and Future HPC Talent.* Moderator: Gilad Shainer, Mellanox. HPC Advisory Council, Guangzhou, China. Nov. 5th, 2014.
91. *Chapel over MPI.* Chapel Birds-of-a-Feather panel. Moderator: Brad Chamberlain, Cray. IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Denver, Colorado. Nov. 18th, 2013.
92. *Flexibility.* Crain's 40 under 40 Panel Series. DePaul University, Chicago, Illinois. June 13th, 2013.
93. *A Software Development SWAT Team Perspective.* Moderator: Rajeev Thakur, Argonne National Laboratory. Conceptualization of Software Institute for Abstractions and Methodologies for HPC Simulations Codes on Future Architectures workshop (SIMAC), Champaign, Illinois. May 17th, 2013.
94. *Cloudy with a Chance of Scientific Discovery*. The Future of Cloud Computing Panel. Moderator: Gul Agha, University of Illinois at Urbana-Champaign. IEEE/ACM International Conference on Utility and Cloud Computing (UCC), Chicago, Illinois. Nov. 7th, 2012.
95. *On-Chip Heterogeneity: The Last Man Standing*. Battle of the Accelerator Stars Panel. Moderator: Yong Chen, Texas Tech University. International Workshop on Parallel Programming Models and Systems Software for High-End Computing (P2S2), Pittsburgh, Pennsylvania. Sep. 10th, 2012.
96. *GPUs and Heterogeneous Accelerators: Programmability, Productivity, and Other Nightmares*. Frontiers of Computational Science and Engineering Panel. Moderator: Weisong Shi, Wayne State University. IEEE International Conference on Computational Science and Engineering (CSE), Dalian, China. Aug. 24th, 2011.
97. *Resilience and Fault Tolerance.* Working Session Reports. ASCR Exascale Kickoff Meeting, San Diego, California. Mar. 11th, 2011.
98. *Crosscutting Topic Definitions.* Working Session Reports. ASCR Exascale Kickoff Meeting, San Diego, California. Mar. 11th, 2011.
99. *The Era of Hybrid Programming*. Challenges and Opportunities of HPC-based Distributed Systems Panel. Moderator: Xian-He Sun, Illinois Institute of Technology. IEEE International Conference on Parallel and Distributed Systems (ICPADS), Shanghai, China. Dec. 10th, 2010.
100. *MPICH2 on DCMF.* Deep Computing Messaging Framework Birds-of-a-Feather Panel. Moderator: Michael Blocksome, IBM. IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Austin, Texas. Nov. 18th, 2008.

Conference and Workshop Presentations

101. *Petascale Genome Analytics.* SIAM Conference on Parallel Processing for Scientific Computing (SIAM-PP), Tokyo, Japan. Mar. 10th, 2018.
102. *Hexe: A Toolkit for Heterogeneous Memory Management.* IEEE International Conference on Parallel and Distributed Systems (ICPADS), Shenzhen, China. Dec. 16th, 2017.
103. *Onwards and Upwards to a New Era in Supercomputing.* International Workshop on HPC and AI Techniques, Dongguan, China. Apr. 22nd, 2017.
104. *Bloomfish: A Highly Scalable Distributed Kmer Counting Framework.* Workshop on Extreme Scale Genome Analytics, Shenzhen, China. Mar. 31st, 2017.
105. *How I Learned to Stop Worrying about Exascale and Love MPI.* Workshop on Clusters, Clouds, and Data for Scientific Computing (CCDSC), Lyon, Frankfurt. Oct. 6th, 2016.
106. *Compiler-Assisted Overlapping of Communication and Computation in MPI Applications.* IEEE International Conference on Cluster Computing (Cluster). Sep. 13th, 2016, Taipei, Taiwan.
107. *Building HPC Skills for Scientific Computing.* PRACE Training Workshop, Frankfurt, Germany. Jun. 23rd, 2016.
108. *Scaling Genome Assembly on Mira.* Workshop on Parallel Software Libraries for Sequence Analysis (pSALSA), Chicago, Illinois. May 22nd, 2016.

109. *OS/R Abstractions to Heterogeneous Memory.* Twentieth Anniversary Meeting of the SOS Workshop, Asheville, North Carolina. Mar. 24th, 2016.

110. *Activities in the DOE/MEXT Collaboration Effort.* Jointly with Mitsuhisa Sato (RIKEN), Martin Schulz (Lawrence Livermore National Laboratory) and Jeff Vetter (Oak Ridge National Laboratory). Workshop on Big Data and Extreme Computing (BDEC); held in conjunction with the International Supercomputing Conference (ISC), Frankfurt, Germany. Jul. 16th, 2015.

111. *Argobots: Runtime Challenges in Fine-grained Threading Models.* International Supercomputing Conference (ISC), Frankfurt, Germany. Jul. 13th, 2015.

112. *Understanding the '+' in MPI+OpenMP.* International High Performance Computing Forum (IHPCF), Tianjin, China. May 21st, 2015.

113. *Debunking the Myths of MPI Programming.* JST/CREST International Symposium on Post Petascale System Software, Tokyo, Japan. Dec. 4th, 2014.

114. *VOCL: A Virtualization Infrastructure for Accelerators.* INRIA-ANL-Illinois Petascale Computing Joint Lab workshop, Champaign, Illinois. Nov. 22nd, 2014.

115. *A Faster, Stronger MPI for BlueWaters-2.* Blue Waters Symposium, Champaign, Illinois. May 15th, 2014.

116. *How to Efficiently Virtualize Local and Remote GPUs.* GPU Technology Conference (GTC). Mar. 27th, 2014, San Jose, California.

117. *MPI for Exascale Systems.* Workshop on Application Development for Exascale Computing, Baton Rouge, Louisiana. Feb. 28th, 2014.

118. *Message Passing in Massively Parallel Environments.* INRIA-ANL-Illinois Petascale Computing Joint Lab workshop, Champaign, Illinois. Nov. 22nd, 2013.

119. *On the Reproducibility of MPI Reduction Operations.* IEEE International Conference on High Performance Computing and Communications (HPCC). Nov. 13th, 2013, Zhangjiajie, China.

120. *Implementation and Evaluation of Container-based Job Management for Fair Resource Sharing.* International Supercomputing Conference (ISC). June 19th, 2013, Leipzig, Germany.

121. *Exascale Computing and Materials Design.* The Materials Genome: Current Practice and Future Promise workshop, Northwestern University, Evanston, Illinois. June 12th, 2013.

122. *Full Software Ecosystems.* Conceptualization of Software Institute for Abstractions and Methodologies for HPC Simulations Codes on Future Architectures workshop (SIMAC), Chicago, Illinois. Dec. 11th, 2012.

123. *MPI-ACC: A Unified Data Movement Infrastructure for Heterogeneous Memory Architectures.* INRIA-ANL-Illinois Petascale Computing Joint Lab workshop, Argonne, IL. Nov. 19th, 2012.

124. *Exploring Efficient Data Movement Strategies For Exascale Systems with Deep Memory Hierarchies.* U.S. Department of Energy Exascale Research Conference (ERC), Arlington, Virginia. Oct. 1st, 2012.

125. *Message Passing in Hierarchical and Heterogeneous Environments: MPI-3 and Beyond.* Workshop on Productive Programming Models for the Exascale (PPME), Portland, Oregon. August 15th, 2012.

126. *Transparent Accelerator Migration in a Virtualized GPU Environment.* IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid). May 13th, 2012, Ottawa, Canada.

127. *Early Experiences with MPICH over the Intel KNF Architecture.* Intel Extreme MIC Workshop, Santa Fe, New Mexico. Feb. 22nd, 2012.

128. *Building Algorithmically Nonstop Fault Tolerant MPI Programs.* IEEE International Conference on High Performance Computing (HiPC), Bangalore, India. Dec. 20th, 2011.

129. *Evolutionary Support for Revolutionary Programming Models and Runtime Systems.* Department of Energy (DOE), Advanced Scientific Computing Research (ASCR) Exascale Programming Models Workshop, Marina del Rey, California. Jul. 28th, 2011.

130. *Mapping Communication Layouts to Network Hardware Characteristics on Massive-Scale Blue Gene Systems.* International Supercomputing Conference (ISC), Hamburg, Germany. Jun. 22nd, 2011.

131. *Software Infrastructure/Sustainability Specific to Accelerators.* National Science Foundation (NSF), Scientific Software Innovation Institute (S2I2) planning workshop, Arlington, Virginia. Oct. 13th, 2010.

132. *Understanding Network Saturation Behavior on Large-Scale Blue Gene/P Systems.* International Conference on Parallel and Distributed Systems (ICPADS), Shenzhen, China. Dec. 11th, 2009.

133. *An Evaluation of ConnectX Virtual Protocol Interconnect for Data Centers.* International Conference on Parallel and Distributed Systems (ICPADS), Shenzhen, China. Dec. 9th, 2009.

134. *GePSeA: A General-Purpose Software Acceleration Framework For Lightweight Task Offloading.* International Conference on Parallel Processing (ICPP), Vienna, Austria. Sep. 24th, 2009.

135. *Toward Message Passing for a Million Processes: Characterizing MPI on a Massive Scale Blue Gene/P.* International Supercomputing Conference (ISC), Hamburg, Germany. Jun. 23rd, 2009.

136. *ProOnE: A General Purpose Protocol Onload Engine for Multi- and Many-Core Architectures.* International Supercomputing Conference (ISC), Hamburg, Germany. June 23rd, 2009.

137. *Natively Supporting True One-sided Communication in MPI on Multi-core Systems with InfiniBand.* IEEE International Symposium on Cluster Computing and the Grid (CCGrid), Shanghai, China. May 21st, 2009.

138. *Making a Case for Proactive Flow Control in Optical Circuit-Switched Networks.* IEEE/ACM International Conference on High Performance Computing (HiPC), Bangalore, India. Dec. 20th, 2008.

139. *Sockets Direct Protocol for Hybrid Network Stacks: A Case Study with iWARP over 10G Ethernet.* IEEE/ACM International Conference on High Performance Computing (HiPC), Bangalore, India. Dec. 20th, 2008.

140. *Communication Analysis of Parallel 3D FFT for Flat Cartesian Meshes on Large Blue Gene Systems.* IEEE/ACM International Conference on High Performance Computing (HiPC), Bangalore, India. Dec. 19th, 2008.

141. *Non-Data-Communication Overheads in MPI: Analysis on Blue Gene/P.* The Euro PVM/MPI Users' Group Conference (Euro PVM/MPI), Dublin, Ireland. Sep. 8th, 2008.

142. *Impact of Network Sharing in Multi-core Architectures.* IEEE International Conference on Computer Communication and Networks (ICCCN), St. Thomas, U.S. Virgin Islands. Aug. 4th, 2008.

143. *Semantics-based Distributed I/O with the ParaMEDIC Framework.* ACM/IEEE International Symposium on High Performance Distributed Computing (HPDC), Boston, Massachusetts. Jun. 27th, 2008.

144. *Distributed I/O with ParaMEDIC: Experiences with a Worldwide Supercomputer.* International Supercomputing Conference (ISC), Dresden, Germany. Jun. 17th, 2008.

145. *Analyzing the Impact of Supporting Out-of-Order Communication on In-order Performance with iWARP.* IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Reno, Nevada. Nov. 14th, 2007.

146. *Advanced Flow-control Mechanisms for the Sockets Direct Protocol over InfiniBand.* IEEE International Conference on Parallel Processing (ICPP), Xi'an, China. Sep. 13th, 2007.

147. *Analyzing and Minimizing the Impact of Opportunity Cost in QoS-aware Job Scheduling.* IEEE International Conference on Parallel Processing (ICPP), Xi'an, China. Sep. 12th, 2007.

148. *An Analysis of 10-Gigabit Ethernet Protocol Stacks in Multicore Environments.* IEEE International Symposium on High-Performance Interconnects (HotI), Palo Alto, California. Aug. 23rd, 2007.

149. *Nonuniformly Communicating Noncontiguous Data: A Case Study with PETSc and MPI.* IEEE International Parallel and Distributed Processing Symposium (IPDPS), Long Beach, California. Mar. 27th, 2007.

150. *Asynchronous Zero-copy Communication for Synchronous Sockets in the Sockets Direct Protocol (SDP) over InfiniBand.* Workshop on Communication Architecture for Clusters (CAC); held in conjunction with the IEEE International Parallel and Distributed Processing Symposium (IPDPS), Rhodes Island, Greece. Apr. 25th, 2006.

151. *Designing High-performance Communication Support for Sockets based Applications over System-area and Wide-area Networks.* Virginia Tech (VT), Blacksburg, Virginia. Apr. 5th, 2006.

152. *Head-to-TOE Comparison for High Performance Sockets over Protocol Offload Engines.* IEEE International Conference on Cluster Computing (Cluster), Boston, Massachusetts. Sep. 29th, 2005.

153. *Supporting RDMA Capable Network Compatibility and Features for Regular Network Adapters.* Workshop on Remote Direct Memory Access (RDMA): Applications, Implementations and Techniques (RAIT); held in conjunction with the IEEE International conference on Cluster Computing (Cluster), Boston, Massachusetts. Sep. 26th, 2005.

154. *Performance Characterization of a 10-Gigabit Ethernet TOE.* IEEE International Symposium on High Performance Interconnects (HotI), Palo Alto, California. Aug. 18th, 2005.

155. *Sockets vs. RDMA Interface over 10-Gigabit Networks: An In depth Analysis of the Memory Traffic Bottleneck.* Workshop on Remote Direct Memory Access (RDMA): Applications, Implementations and Technologies (RAIT); held in conjunction with the IEEE International Conference on Cluster Computing (Cluster), San Diego, California. Sep. 20th, 2004.

156. *Exploiting Remote Memory Operations to Design Efficient Reconfiguration for Shared Data-Centers over InfiniBand.* Workshop on Remote Direct Memory Access (RDMA): Applications, Implementations and Technologies (RAIT); held in conjunction with the IEEE International Conference on Cluster Computing (Cluster), San Diego, California. Sep. 20th, 2004.

157. *Towards Provision of Quality of Service Guarantees in Job Scheduling.* IEEE International Conference on Cluster Computing (Cluster), San Diego, California. Sep. 22nd, 2004.

158. *Sockets Direct Protocol over InfiniBand in Clusters: Is it Beneficial?* IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS), Austin, Texas. Mar. 10th, 2004.

159. *Impact of High Performance Sockets on Data Intensive Applications.* IEEE International Symposium on High Performance Distributed Computing (HPDC), Seattle, Washington. Jun. 22nd, 2003.

160. *Efficient Collective Operations using Remote Memory Operations on VIA-based Clusters.* IEEE International Parallel and Distributed Processing Symposium (IPDPS), Nice, France. Apr. 24th, 2003.

161. *High Performance User-level Sockets over Gigabit Ethernet.* IEEE International Conference on Cluster Computing (Cluster), Chicago, Illinois. Sep. 25th, 2002.

Demos and Poster Presentations

162. *Exploring Efficient Data Movement Strategies For Exascale Systems with Deep Memory Hierarchies.* U.S. Department of Energy Exascale Research Conference (ERC), Arlington, Virginia. Oct. 1st, 2012.

163. *Early Experiences with MPICH over the Intel KNC Architecture.* Intel Exhibition Booth, International Supercomputing Conference (ISC), Hamburg, Germany. June 18-20, 2012.

164. *Semantics-based Distributed I/O for mpiBLAST.* ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP), Salt Lake City, Utah. Feb. 20-23, 2008.

165. *ParaMEDIC: Parallel Metadata Environment for Distributed I/O and Computing.* Argonne National Laboratory Exhibition Booth, IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Reno, Nevada. November 13-15, 2007.

166. *High-performance Message Passing with MPICH2.* Argonne National Laboratory Exhibition Booth, IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Tampa, Florida. November 14-16, 2006.

167. *mpiBLAST on the GreenGene Distributed Supercomputer: Sequencing the NT database against the NT database (An NT-complete problem).* Los Alamos National Laboratory Exhibition Booth, IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Seattle, Washington. November 14-17, 2005.

168. *InfiniBand: Performance and Implications on Next Generation Applications.* Exhibition Demo at the 10th Annual Coalition for National Science Funding Science Exhibition and Reception, Capitol Hill, Washington DC. June 23rd, 2003.

Miscellaneous Presentations and Seminars

169. *Challenges in MPI for Supporting Distributed-Memory Graph Analytics.* SIAM CSE, Spokane, Washington. Feb. 25th, 2019.

170. *Planning for a New Era in Supercomputing.* Florida State University, Tallahassee, Florida. Jan. 22nd, 2019.
171. *IDEAS-MPICH: Training, Development and Testing.* ECP All-Hands Meeting, Houston, Texas. Jan. 15th, 2019.
172. *Recent Efforts of the MPI Forum for MPI-4 and Future MPI Standards.* Jointly with Howard Pritchard. ECP All-Hands Meeting, Houston, Texas. Jan. 16th, 2019.
173. *Onwards and Upwards to a New Era in Supercomputing.* Colorado State University (CSU). Mar. 27th, 2017.
174. *A Computer Architect's View of Large-scale Genome Analytics.* Ruijin Hospital, Shanghai, China. Mar. 7th, 2017.
175. *Onwards and Upwards to a New Era in Supercomputing.* Center for Development of Advanced Computing (C-DAC), Pune, India. Jan. 27th, 2017.
176. *MPICH: Current Status and Future Roadmap.* Center for Development of Advanced Computing (C-DAC), Pune, India. Jan. 27th, 2017.
177. *A Computer Architect's View of Large-scale Genome Analytics.* Indian Institute of Sciences, Bangalore, India. Dec. 27th, 2016.
178. *A Computer Architect's View of Large-scale Genome Analytics.* Jinan Supercomputer Center, Jinan, China. Nov. 28th, 2016.
179. *Extreme-Scale Interconnects and Impact on Applications.* Argonne Training Program on Extreme-Scale Computing (ATPESC), St. Charles, Illinois. Aug. 1st, 2016.
180. *Parallel Programming with MPI.* Mei Tuan, Beijing, China. May 6th, 2016.
181. *Hybrid Programming with MPI.* FastMath PI Meeting, Argonne National Laboratory, Argonne, Illinois. Sep. 30th, 2015.
182. *HPC Interconnect Requirements for Key U.S. Department of Energy Applications.* Broadcom. Sep. 25th, 2015.
183. *Network Architecture Trends.* Argonne Training Program on Extreme-Scale Computing (ATPESC), St. Charles, Illinois. Aug. 3rd, 2015.
184. *VOCL: A Virtualization Infrastructure for Accelerators.* National Supercomputing Center at Jinan (NSCCJN), Jinan, China. Aug 30th, 2015.
185. *MPI Communication Challenges in Irregular Data-Driven Applications.* University of Tokyo, Tokyo, Japan. June 12th, 2015.
186. *MPI Communication Challenges in Irregular Data-Driven Applications.* University of Tsukuba, Tsukuba, Japan. June 9th, 2015.
187. *MPI Communication Challenges in Irregular Data-Driven Applications.* Tokyo Institute of Technology (TiTech), Tokyo, Japan. June 8th, 2015.
188. *Research Challenges in MPI on Large-Scale Supercomputing Systems.* National Supercomputing Center at Jinan (NSCCJN), Jinan, China. May 19th, 2015.
189. *Challenges in Scientific Computing at the Extreme Scale.* Tongji University (TU), Shanghai, China. Mar. 24th, 2015.
190. *MPI and OpenMP Runtimes.* DOE Runtime Systems workshop, Washington, DC. Mar. 12th, 2015.
191. *Hybrid Programming with MPI.* NERSC, Oakland, California. Dec. 8th, 2014.
192. *Programming Models and Runtime System Challenges in Exascale Applications.* Tsukuba University, Tsukuba, Japan. Dec. 1st, 2014.
193. *Recent Advances in MPI for Large Scale Systems.* Sugon, Beijing, China. Aug. 11th, 2014.
194. *Recent Advances in MPI for Large Scale Systems.* Jinan Supercomputing Center, Jinan, China. Aug. 10th, 2014.
195. *How I Learned to Stop Worrying about Exascale and Love MPI.* Virginia Tech (VT), Blacksburg, Virginia. Jul. 25th, 2014.
196. *How I Learned to Stop Worrying about Exascale and Love MPI.* North Carolina State University (NCSU), Raleigh, North Carolina. Jul. 23rd, 2014.

197. *Argonne/University of Tokyo/RIKEN/Tokyo Tech Collaborative Research on Runtime Systems.* Jointly with Yutaka Ishikawa (University of Tokyo and RIKEN). Workshop on International Cooperation on System Software for Trans-Petascale; held in conjunction with the International Supercomputing Conference (ISC), Leipzig, Germany. June 22nd, 2014.

198. *Systems Software Challenges for Productivity.* Working Session Reports. DOE ASCR Productivity Meeting, Washington, DC. Jun. 3rd, 2014.

199. *MPI in the Heterogeneous Computing Era.* International Workshop on Exascale MPI, Denver, Colorado. Nov. 22nd, 2013.

200. *Dynamic Execution on Heterogeneous Platforms with the VOCL Virtualization Infrastructure.* Institute of Computing, Chinese Academy of Sciences (ICT), Beijing, China. Nov. 11th, 2013.

201. *The Coming of the Exascale Era: Runtime Systems Challenges for Extreme-scale Computing.* High Performance Numerical Simulation Software Center, Beijing, China. Nov. 11th, 2013.

202. *Dynamic Execution on Heterogeneous Platforms with the VOCL Virtualization Infrastructure.* Beihang University, Beijing, China. Nov. 8th, 2013.

203. *MPI on Exascale Systems: Current Trends and Opportunities.* Institute of Software, Chinese Academy of Sciences (ISCAS), Beijing, China. Nov. 6th, 2013.

204. *Messaging and Interconnect Trends.* Global View of Resilience (GVR) Offsite Retreat, Chicago, Illinois. Aug. 9th, 2013.

205. *Macro Architecture Trends.* Argonne Training Program on Extreme-Scale Computing (ATPESC), St. Charles, Illinois. July 29th, 2013.

206. *Efficient Unified Runtime Systems for Heavily Multi-threaded Architectures (MTR).* Jointly with Yutaka Ishikawa (University of Tokyo). Workshop on International Cooperation on System Software for Trans-Petascale; held in conjunction with the International Supercomputing Conference (ISC), Leipzig, Germany. June 18th, 2013.

207. *DMEM: Data Movement for Heterogeneous Memory.* U.S. Department of Energy X-Stack PI meeting, Berkeley, California. Mar. 22nd, 2013.

208. *Dynamic Global Provisioning and Execution with Virtualized Graphics Processing Units.* Tongji University (TU), Shanghai, China. Feb. 27th, 2013.

209. *A Computer Architect's View to Extreme-scale Genome Mapping and Assembly.* Beijing Genome Institute (BGI), Shenzhen, China. Feb. 25th, 2013.

210. *Survey of Successful Libraries and Frameworks.* Jointly with Shane Canon (NERSC) and Wu-chun Feng (Virginia Tech). Institute of Computing in Science (ICiS) workshop on Next Generation Sequence Analysis. July 30th, 2012, Park City, Utah.

211. *Graphics Processing Units as a Cloud System Service.* Shanghai Jiao Tong University (SJTU), Shanghai, China. May. 24th, 2012.

212. *Is Exascale End-of-the-Line for Commodity Computing?* Florida State University (FSU), Tallahassee, Florida. Jan. 27th, 2012.

213. *Fine-grained Resource Virtualization in Cloud Computing Systems.* Shenzhen Institute of Advanced Technologies, Chinese Academy of Sciences (SIAT), Shenzhen, China. Jan. 4th, 2012.

214. *Unistack: A Unified Infrastructure for Composable Programming Models for Exascale Systems.* Argonne National Laboratory Exhibition Booth. IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Seattle, Washington. Nov. 15th, 2011.

215. *Towards Virtualized Environments for Using Graphics Processing Units as a Cloud System Service.* Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences (SIAT), Shenzhen, China. Sep. 8th, 2011.

216. *Are Graphics Processing Units Viable as Cloud Services?* Tsinghua University, Beijing, China. Aug. 23rd, 2011.

217. *Fault Resilient Computing with MPI.* Institute of Computing Technologies, Chinese Academy of Sciences (ICT-CAS), Beijing, China. Aug. 23rd, 2011.

218. *Transparent Virtualization of Graphics Processing Units.* Institute of Software, Chinese Academy of Sciences (ISCAS), Beijing, China. Aug. 22nd, 2011.

219. *Trends in One-sided Communication Models.* Institute of Software, Chinese Academy of Sciences (CAS), Beijing, China. Jan. 10th, 2011.

220. *Towards Efficient Data and Computational Task Management on Distributed Cloud Computing Systems.* Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences (SIAT), Shenzhen, China. Jan. 6th, 2011.

221. *Will Existing Programming Models Evolve for Exascale Systems or Die?* Center for Development of Advanced Computing (C-DAC), Pune, India. Dec. 23rd, 2010.

222. *Is Hybrid Programming the Next Step in the Evolution of HPC?* Institute of Computing Technology, Chinese Academy of Sciences (ICT-CAS), Beijing, China. Dec. 3rd, 2010.

223. *Is MPI Relevant at Exascale?* Institute of Software, Chinese Academy of Sciences (ISCAS), Beijing, China. Nov. 29th, 2010.

224. *A Unified Runtime Infrastructure for Exascale Programming Models.* Department of Energy (DOE), Advanced Scientific Computing Advisory Committee (ASCAC) meeting, Argonne, Illinois. Nov. 9th, 2010.

225. *Programming Models Plans for the BG/Q Early Science Program.* Jointly with Jeffrey R. Hammond (Argonne National Laboratory), Paul Hargrove (Lawrence Berkeley National Laboratory) and John Mellor-Crummey (Rice University). BG/Q Early Science Program workshop, Argonne, Illinois. Oct. 19th, 2010.

226. *InfiniBand on the Cloud.* Argonne National Laboratory, Argonne, Illinois. Apr. 14th, 2010.

227. *Is Hybrid Programming a Bad Idea Whose Time Has Come?* Pacific Northwest National Laboratory, Richmond, Washington. Nov. 23rd, 2009.

228. *The Race to Exascale: Communication Management for Massively Parallel Hierarchical Systems.* State University of New York, Binghamton, New York. Aug. 24th, 2009.

229. *Message Passing for a Million Processes.* Ohio State University (OSU), Columbus, Ohio. May 15th, 2009.

230. *And You Thought Threads Could Work in Parallel?* University of New Mexico (UNM), Albuquerque, New Mexico. Oct. 13th, 2008.

231. *Interfacing Multicores and High-speed Networks Towards Large-scale Computing Systems.* Virginia Tech (VT), Blacksburg, Virginia. Dec. 11th, 2007.

232. *Designing High-end Computing Systems with InfiniBand.* Illinois Institute of Technology (IIT), Chicago, Illinois. Jun. 21st, 2007.

233. *Accelerating Ethernet: Challenges and Pitfalls.* Aprius Inc., Sunnyvale, California. Mar. 28th, 2007.

234. *High Performance Messaging over High-speed Networks.* University of Chicago (over Access Grid), Argonne, Illinois. Nov. 2nd, 2006.

235. *Analyzing, Optimizing and Evaluating PETSc over MPI.* Argonne National Laboratory Exhibition Booth. IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Tampa, Florida. Nov. 14th, 2006.

236. *SDP and Extended Sockets: A TOE and iWARP Perspective.* NetEffect Inc., Austin, Texas. Jun. 19th, 2006.

237. *TCP and iWARP Offload Engines: Challenges and Pitfalls.* NetEffect Inc., Austin, Texas. Jun. 19th, 2006.

238. *High-performance Communication Support for Sockets-based Applications.* Ohio State University (OSU), Columbus, Ohio. Jun. 15th, 2006.

239. *Designing High-performance Communication Support for Sockets-based Applications.* Hewlett-Packard (HP), Palo Alto, California. May 23rd, 2006.

240. *Enhancing the Performance and Compatibility of Sockets over High-Speed Networks.* QLogic Corporation, Mountain View, California. May 5th, 2006.

241. *Designing High-performance Communication Support for Sockets based Applications over System-area and Wide-area Networks.* D.E.Shaw, New York, New York. Apr. 11th, 2006.

242. *Designing High Performance Communication Support for Sockets-based Applications over System-area and Wide-area Networks.* Argonne National Laboratory (ANL), Argonne, Illinois. Mar. 24th, 2006.

243. *Comparing 10-Gigabit Ethernet with InfiniBand and Myrinet for High Performance Sockets over Protocol Offload Engines.* National Nuclear Security Administration (NNSA), Advanced Simulation and Computing (ASC) Exhibition Booth. IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Seattle, Washington. Nov. 16th, 2005.

244. *A Case for UDP Offload Engines in Lambda Grids.* Ohio State University (OSU), Columbus, Ohio. Nov. 4th, 2005.

245. *Analyzing the Memory Traffic Bottleneck in TCP/IP over 10-Gigabit Ethernet.* Ohio State University (OSU), Columbus, Ohio. Sep. 12th, 2002.

246. *Software iWARP: Design and Implementation in FreeBSD.* Ohio State University (OSU), Columbus, Ohio. Sep. 13th, 2002.

247. *Java Animated Text Rendering for Indian Language Scripts.* Indian Institute of Technology (IIT), Madras, India. May 11th, 2001.

PROFESSIONAL ACTIVITIES

Chairmanships and Editorships

1. ***General, Program, and Vice/Area/Track Chairmanships***

   (i) Program Chair. IEEE/ACM International Symposium on Cluster, Cloud and Internet Computing (CCGrid), 2022.

   (ii) Program Chair. *IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC)*, 2019.

   (iii) Program Co-chair (with Tao Li, University of Florida). IEEE International Conference on Data Science and Systems (DSS), 2019.

   (iv) Deputy Program Chair. *IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC)*, 2018.

   (v) Program Co-chair (with Marc Casas, Barcelona Supercomputing Center). *European MPI Users' Group Meeting (Euro MPI)*, 2018.

   (vi) Program Chair. *IEEE International Conference on High Performance Computing and Communications (HPCC)*, 2017.

   (vii) General Chair. *European/USA MPI Users' Group Meeting (Euro MPI/USA)*, 2017.

   (viii) Program Co-chair (with Abhinav Vishnu, Pacific Northwest National Laboratory, USA; Yong Chen, Texas Tech University, USA). *International Workshop on Parallel Programming Models and Systems Software for High-end Computing (P2S2)*, 2017. (held in conjunction with the International Conference on Parallel Processing (ICPP)).

   (ix) General Co-chair (with Marco Aldinucci, University of Torino, Italy). *IEEE International Conference on Scalable Computing and Communications (ScalCom)*, 2017.

   (x) Papers Chairs. *International Supercomputing Conference (ISC)*, 2017.

   (xi) Program Vice-chair. *International Parallel and Distributed Processing Symposium (IPDPS)*. Software track, 2017.

   (xii) Track Co-chair. *IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid)*. Programming Models and Runtime Systems track, 2017.

   (xiii) Vice-chair. *IEEE International Conference on High Performance Computing (HiPC)*. Systems Software track, 2016.

   (xiv) Program Co-chair (with Lucia Drummond, Federal University of Rio de Janeiro). International Symposium on Computer Architecture and High Performance Computing (SBAC-PAD), 2016.

   (xv) Program Co-chair (with Abhinav Vishnu, Pacific Northwest National Laboratory, USA; Yong Chen, Texas Tech University, USA). *International Workshop on Parallel Programming Models and Systems Software for High-end Computing (P2S2)*, 2016. (held in conjunction with the International Conference on Parallel Processing (ICPP)).

(xvi) Deputy Papers Chairs. *International Supercomputing Conference (ISC)*, 2016.

(xvii) Program Co-chair (with Kai-Cheung Leung, University of Otago, New Zealand). *International Workshop on Programming Models and Applications for Multicores and Manycores (PMAM)*, 2016. (held in conjunction with the ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP)).

(xviii) Track Co-chair (with Wenguang Cheng, Tsinghua University). *International Conference on Cloud Computing and Big Data (CCBD)*, 2015.

(xix) General Co-chair (with Michela Taufer, University of Delaware). *IEEE International Conference on Cluster Computing (Cluster)*, 2015.

(xx) Program Co-chair (with Mingwei Xu, Tsinghua University). *International Conference on Parallel Processing (ICPP)*, 2015.

(xxi) Program Co-chair (with Abhinav Vishnu, Pacific Northwest National Laboratory, USA; Yong Chen, Texas Tech University, USA). *International Workshop on Parallel Programming Models and Systems Software for High-end Computing (P2S2)*, 2015. (held in conjunction with the International Conference on Parallel Processing (ICPP)).

(xxii) General Co-chair (with Keping Long, University of Science and Technology, China; Yunquan Zhang, Institute of Computing Technology, Chinese Academy of Science, China). *IEEE International Conference on Scalable Computing and Communications (ScalCom)*, 2015.

(xxiii) General Co-chair (with Cheng-Zhong Xu, Shenzhen Institute of Advanced Technologies, China). *IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid)*, 2015.

(xxiv) Program Co-chair (with Zhiyi Huang, University of Otago, New Zealand; Minyi Guo, Shanghai Jiao Tong University, China). *International Workshop on Programming Models and Applications for Multicores and Manycores (PMAM)*, 2015. (held in conjunction with the ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP)).

(xxv) Program Co-chair (with Abhinav Vishnu, Pacific Northwest National Laboratory, USA; Yong Chen, Texas Tech University, USA). *International Workshop on Parallel Programming Models and Systems Software for High-end Computing (P2S2)*, 2014. (held in conjunction with the International Conference on Parallel Processing (ICPP)).

(xxvi) Program Co-chair (with Lisong Xu, University of Nebraska-Lincoln, USA). *IEEE International Conference on Computer Communications and Networks (ICCCN)*, 2014.

(xxvii) Program Co-chair (with Zhiyi Huang, University of Otago, New Zealand; Minyi Guo, Shanghai Jiao Tong University, China). *International Workshop on Programming Models and Applications for Multicores and Manycores (PMAM)*, 2014. (held in conjunction with the ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP)).

(xxviii) General co-chair (with Peter Palensky, Austrian Institute of Technology, Austria; Cheng-Zhong Xu, Wayne State University; Shahid A Khan, COMSATS Institute of IT, Islamabad, Pakistan). *International Conference on Frontiers of Information Technology (FIT)*, 2013.

(xxix) Track Co-chair (with Luis Veiga, Technical University of Lisbon, Portugal). *IEEE International Conference on Cloud Computing Technology and Science (CloudCom)*. Virtualization Track, 2013.

(xxx) Area Co-chair (with Taisuke -Arai- Boku, University of Tsukuba, Japan). *IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC)*. Systems Software Track, 2013.

(xxxi) Program Co-chair (with Abhinav Vishnu, Pacific Northwest National Laboratory, USA; Yong Chen, Texas Tech University, USA). *International Workshop on Parallel Programming Models and Systems Software for High-end Computing (P2S2)*, 2013. (held in conjunction with the International Conference on Parallel Processing (ICPP)).

(xxxii) Track Co-chair (with Ada Gavrilovska, Georgia Institute of Technology, USA). *IEEE International Conference on Computer Communications and Networks (ICCCN)*, Grid and Cloud Computing Track, 2013.

(xxxiii) Program Co-chair (with Justin Y. Shi, Temple University, USA). *International Symposium on Cloud Computing and Services for High Performance Computing Systems (InterCloud-HPC)*, 2013.

(xxxiv) Program Co-chair (with Zhiyi Huang, University of Otago, New Zealand; Minyi Guo, Shanghai Jiao Tong University, China). *International Workshop on Programming Models and Applications for Multicores and Manycores (PMAM)*, 2013. (held in conjunction with the ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP)).

(xxxv) Program Co-chair (with Justin Y. Shi, Temple University, USA). *International Workshop of Sustainable High Performance Cloud (SHPCloud)*, 2012. (held in conjunction with the IEEE/ACM International Conference on High Performance Computing, Network, Storage and Analysis (SC)).

(xxxvi) Track Co-chair (with Samee Ullah Khan, North Dakota State University, USA). *IEEE International Conference on Cloud Computing Technology and Science (CloudCom)*. Virtualization Track, 2012.

(xxxvii) General co-chair (with Peter Palensky, Austrian Institute of Technology, Austria; Albert Y. Zomaya, The University of Sydney, Australia; Cheng-Zhong Xu, Shenzhen Institute of Advanced Technologies, China). *International Conference on Frontiers of Information Technology (FIT)*, 2012.

(xxxviii) Vice-chair. *IEEE International Conference on Parallel and Distributed Systems (ICPADS)*. Parallel and Distributed Algorithms and Applications Track, 2012.

(xxxix) Vice-chair. *IEEE International Conference on Scalable Computing and Communications (ScalCom)*. Data Intensive Computing Track, 2012.

(xl) Program Co-chair (with Abhinav Vishnu, Pacific Northwest National Laboratory, USA; Yong Chen, Texas Tech University, USA). *International Workshop on Parallel Programming Models and Systems Software for High-end Computing (P2S2)*, 2012. (held in conjunction with the International Conference on Parallel Processing (ICPP)).

(xli) Co-vice-chair (with Dhrubajyoti Goswami, Concordia University, Canada; Paul Lu, University of Alberta, Canada; Tarek Abdelrahman, University of Toronto, Canada). *International Conference on Future Information Technology (FutureTech)*, High Performance Computing Track, 2012.

(xlii) Track Co-chair (with Ronald Brightwell, Sandia National Laboratory, USA). *IEEE International Conference on Computer Communications and Networks (ICCCN)*, High Speed and Data Center Networks Track, 2012.

(xliii) General Chair. *International Workshop on Accelerators and Heterogeneous Exascale Systems (AsHES)*, 2012. (held in conjunction with the IEEE International Parallel and Distributed Processing Symposium (IPDPS)).

(xliv) Program Co-chair (with Rajkumar Buyya, University of Melbourne, Australia). *IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid)*, 2012.

(xlv) Program Co-chair (with Abhinav Vishnu, Pacific Northwest National Laboratory, USA; Yong Chen, Oak Ridge National Laboratory, USA). *International Workshop on Parallel Programming Models and Systems Software for High-end Computing (P2S2)*, 2011. (held in conjunction with the International Conference on Parallel Processing (ICPP)).

(xlvi) Track Co-chair (with Guihai Chen, Nanjing University, China). *IEEE International Conference on Computer Communications and Networks (ICCCN)*, Network Architectures and P2P Protocols Track, 2011.

(xlvii) Program Co-chair (with Jiayuan Meng, Argonne National Laboratory, USA). *International Workshop on Characterizing Applications for Heterogeneous Exascale Systems (CACHES)*, 2011. (held in conjunction with the IEEE International Parallel and Distributed Processing Symposium (IPDPS)).

(xlviii) Vice-chair. *IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid)*, Scheduling and Resource Management Track, 2011.

(xlix) Vice-chair. *International Conference on Parallel Processing (ICPP)*, Resource Management and Scheduling Track, 2010.

(l) Program Co-chair (with Abhinav Vishnu, Pacific Northwest National Laboratory, USA). *International Workshop on Parallel Programming Models and Systems Software for High-end Computing (P2S2)*, 2010. (held in conjunction with the International Conference on Parallel Processing (ICPP)).

(li) Program Co-chair (with Ronald Brightwell, Sandia National Laboratory, USA; Cyriel Minkenberg, IBM Research, Switzerland). *IEEE International Symposium on High Performance Interconnects (HotI)*, 2010.

(lii) Track Co-chair (with Gilles Fedak, INRIA, France). *IEEE International Conference on Computer Communications and Networks (ICCCN)*, High-speed Distributed Systems and Grids Track, 2010.

(liii) Program Co-chair (with Abhinav Vishnu, Pacific Northwest National Laboratory, USA). *International Workshop on Parallel Programming Models and Systems Software for High-end Computing (P2S2)*, 2009. (held in conjunction with the International Conference on Parallel Processing (ICPP)).

(liv) Program Co-chair (with Ada Gavrilovska, Georgia Institute of Technology, USA). *International Workshop on High Performance Interconnects for Distributed Computing (HPI-DC)*, 2009. (held in conjunction with the IEEE International Conference on Cluster Computing (Cluster)).

(lv) Track Co-chair (with Li Xiao, Michigan State University, USA). *IEEE International Conference on Computer Communications and Networks (ICCCN)*, Pervasive Computing and Grid Networking Track, 2009.

(lvi) Program Co-chair (with Sayantan Sur, IBM Research, USA). *International Workshop on Parallel Programming Models and Systems Software for High-end Computing (P2S2)*, 2008. (held in conjunction with the International Conference on Parallel Processing (ICPP)).

2. ***Journal Editorships***

(i) Guest Co-editor (with Wu-chun Feng, Virginia Tech, USA). *Tools and Environments for Multicore and Many-core Architectures.* Special Issue of IEEE Computer, Dec, 2009.

3. ***Journal Special Issues for Conferences/Workshops***

(i) International Workshop on Programming Models and Applications for Multicores and Manycores (PMAM).

- **PMAM 2019:** Guest Co-editor (with Min Si, Argonne National Laboratory; and Zhiyi Huang, University of Otago, New Zealand). *Programming Models and Applications for Multicores and Manycores.* Special Issue of the Elsevier Parallel Computing (ParCo) journal, 2020. (pending)
- **PMAM 2018:** Guest Co-editor (with Min Si, Argonne National Laboratory; and Zhiyi Huang, University of Otago, New Zealand). *Programming Models and Applications for Multicores and Manycores.* Special Issue of the Elsevier Parallel Computing (ParCo) journal, 2019.
- **PMAM 2017:** Guest Co-editor (with Abdelhalim Amer, Argonne National Laboratory). *Programming Models and Applications for Multicores and Manycores.* Special Issue of the Elsevier Parallel Computing (ParCo) journal, 2018.
- **PMAM 2016:** Guest Co-editor (with Zhiyi Huang, University of Otago, New Zealand; Kai-Cheung Leung, The University of Auckland). *Programming Models and Applications for Multicores and Manycores.* Special Issue of the Wiley Concurrency and Computation: Practice and Experience (CCPE) journal, 2017.
- **PMAM 2016:** Guest Co-editor (with Zhiyi Huang, University of Otago, New Zealand; Kai-Cheung Leung, The University of Auckland). *Programming Models and Applications for Multicores and Manycores.* Special Issue of the Elsevier Parallel Computing (ParCo) journal, 2017.
- **PMAM 2015:** Guest Co-editor (with Zhiyi Huang, University of Otago, New Zealand). *Programming Models and Applications for Multicores and Manycores.* Special Issue of the International Journal of High Performance Computing Applications (IJHPCA), 2016
- **PMAM 2014:** Guest Co-editor (with Zhiyi Huang, University of Otago, New Zealand). *Programming Models and Applications for Multicores and Manycores.* Special Issue of the Wiley Concurrency and Computation: Practice and Experience (CCPE) journal, 2015.
- **PMAM 2013:** Guest Co-editor (with Zhiyi Huang, University of Otago, New Zealand). *Programming Models and Applications for Multicores and Manycores.* Special Issue of the Elsevier Parallel Computing (ParCo) journal, 2014.

(ii) International Workshop on Parallel Programming Models and Systems Software for High-End Computing (P2S2).

- **P2S2 2017:** Guest Co-editor (with Abhinav Vishnu, Pacific Northwest National Laboratory, USA; Yong Chen, Texas Tech University, USA). *Programming Models and Systems Software.* Special Issue of the Elsevier Parallel Computing (ParCo) journal, 2018.
- **P2S2 2016:** Guest Co-editor (with Abhinav Vishnu, Pacific Northwest National Laboratory, USA; Yong Chen, Texas Tech University, USA). *Programming Models and Systems Software.* Special Issue of the Elsevier Parallel Computing (ParCo) journal, 2017.
- **P2S2 2015:** Guest Co-editor (with Abhinav Vishnu, Pacific Northwest National Laboratory, USA; Yong Chen, Texas Tech University, USA). *Programming Models and Systems Software.* Special Issue of the Journal of Supercomputing (JoS), 2016.
- **P2S2 2014:** Guest Co-editor (with Abhinav Vishnu, Pacific Northwest National Laboratory, USA; Yong Chen, Texas Tech University, USA). *Programming Models and Systems Software.* Special Issue of the Elsevier Parallel Computing (ParCo) journal, 2015.
- **P2S2 2013:** Guest Co-editor (with Abhinav Vishnu, Pacific Northwest National Laboratory, USA; Yong Chen, Texas Tech University, USA). *Programming Models and Systems Software.* Special Issue of the Springer Journal of Supercomputing (JoS), 2014.

- **P2S2 2012:** Guest Co-editor (with Abhinav Vishnu, Pacific Northwest National Laboratory, USA; Yong Chen, Texas Tech University, USA). *Parallel Programming Models and Systems Software.* Special Issue of the Elsevier Parallel Computing (ParCo) journal, 2013.
- **P2S2 2011:** Guest Co-editor (with Abhinav Vishnu, Pacific Northwest National Laboratory, USA; Yong Chen, Texas Tech University, USA). *Programming Models and Systems Software.* Special Issue of the Springer Journal of Supercomputing (JoS), 2012.
- **P2S2 2010:** Guest Co-editor (with Abhinav Vishnu, Pacific Northwest National Laboratory, USA). *Programming Models and Systems Software Support for High-End Computing Applications.* Special Issue of the International Journal of High Performance Computing Applications (IJHPCA), Volume 25, No. 2, May, 2011.
- **P2S2 2009:** Guest Co-editor (with Abhinav Vishnu, Pacific Northwest National Laboratory, USA). *Programming Models and Systems Software Support for High-End Computing Applications.* Special Issue of the International Journal of High Performance Computing Applications (IJHPCA), Volume 24, No. 3, Jul, 2010.

(iii) **Euro MPI 2018:** Guest Co-editor (with Marc Casas, Barcelona Supercomputing Center). *Recent Advances in MPI.* Special Issue of the Elsevier Parallel Computing (ParCo) journal for the best papers from the *2018 European Users' Group Meeting (Euro MPI)*, 2019.

(iv) **Cluster 2015:** Guest Co-editor (with Michela Taufer, University of Delaware; Satoshi Matsuoka, Tokyo Institute of Technology). *Recent Advances in Cluster Computing.* Special Issue of the Elsevier Parallel Computing (ParCo) journal for the best papers from the *2015 IEEE International Conference on Cluster Computing (Cluster)*, 2016.

(v) **ICCCN 2014:** Guest Co-editor (with Lisong Xu, University of Nebraska-Lincoln; Xiaobo Zhou, University of Colorado, Colorado Springs; Changjun Jiang, Tongji University). *Computer Communications and Networks.* Special Issue of the Elsevier Computer Communications (ComCom) journal for the best papers from the *2014 International Conference on Computer Communications and Networks (ICCCN)*, 2015.

(vi) **ASHES 2012:** Guest Co-editor (with Satoshi Matsuoka, Tokyo Institute of Technology, Japan). *Applications for the Heterogeneous Computing Era.* Special Issue of the International Journal of High Performance Computing Applications (IJHPCA) for the best papers from the *2012 International Workshop on Accelerators and Hybrid Exascale Systems (AsHES)*, 2013.

(vii) **CCGrid 2012:** Guest Co-editor (with Rajkumar Buyya, University of Melbourne, Australia). *Cluster, Cloud and Grid Computing.* Special Issue of the Elsevier Future Generation Computer Systems (FGCS) journal for the best papers from the *2012 IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid)*, 2013.

(viii) **CACHES 2011:** Guest Co-editor (with Jiayuan Meng, Argonne National Laboratory, USA). *Applications for the Heterogeneous Computing Era.* Special Issue of the International Journal of High Performance Computing Applications (IJHPCA) for the best papers from the *2011 International Workshop on Characterizing Applications for Heterogeneous Exascale Systems (CACHES)*, 2012.

4. ***Other Chairmanships***

(i) Panels Chair. *IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC)*, 2021.

(ii) Publicity Co-chair. *International Conference on Cluster Computing (Cluster)*, 2016.

(iii) Workshops Co-chair (with Anne Benoit, ENS Lyon, France). *International Conference on Parallel Processing (ICPP)*, 2016.

(iv) Finance and Registration Co-chair (with Dr. Gabriel Pedraza, Universidad Industrial de Santander; Dr. Jesus Carretero, Universidad Carlos III de Madrid). *IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid)*, 2016.

(v) Tutorials Chair. *International Supercomputing Conference (ISC)*, 2015.

(vi) Panels Chair. *IEEE International Conference on Scalable Computing and Communications (ScalCom)*, 2014.

(vii) Tutorials Co-chair (with Bernd Mohr, Julich Supercomputing Center, Germany). *IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC)*, 2014.

(viii) International Liaison Co-chair (with Michela Taufer, University of Delaware). IEEE International Conference on Cluster Computing (Cluster), 2014.

(ix) Workshops Co-chair (with Anne Benoit, ENS Lyon, France). *International Conference on Parallel Processing (ICPP)*, 2014.

(x) Publications Chair. *ACM International Symposium on High Performance Parallel and Distributed Computing (HPDC)*, 2014.

(xi) Tutorials Chair. *International Supercomputing Conference (ISC)*, 2014.

(xii) Proceedings Chair. *IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid)*, 2014.

(xiii) Workshops Co-chair (with Chiranjib Sur, IBM, India; Yogesh Simmhan, University of Southern California, Los Angeles, USA). *IEEE International Symposium on High Performance Computing (HiPC)*, 2013.

(xiv) Workshops Co-chair (with Anne Benoit, ENS Lyon, France). *International Conference on Parallel Processing (ICPP)*, 2013.

(xv) Tutorials Chair. *International Supercomputing Conference (ISC)*, 2013.

(xvi) Submissions and Proceedings Chair. *IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid)*, 2013.

(xvii) Workshops Co-chair (with Manimaran Govindarasu, Iowa State University, USA; Chiranjib Sur, IBM, India). *IEEE International Symposium on High Performance Computing (HiPC)*, 2012.

(xviii) Workshops Co-chair (with Taisuke -Arai- Boku, University of Tsukuba, Japan). *IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC)*, 2012.

(xix) Local Arrangements Chair. *IEEE/ACM International Conference on Utility and Cloud Computing (UCC)*, 2012.

(xx) Workshops Co-chair (with Heshan Lin, Virginia Tech, USA). *International Conference on Parallel Processing (ICPP)*, 2012.

(xxi) Posters Co-chair (with Wu-chun Feng, Virginia Tech, USA). *International Conference on Parallel Processing (ICPP)*, 2012.

(xxii) Organizing Co-chair (with Rick Stevens, Argonne National Laboratory, USA; Wu-chun Feng, Virginia Tech, USA; Fangfang Xia, Argonne National Laboratory, USA; Shane Canon, Lawrence Berkeley National Laboratory, USA). *Institute of Computing in Science (ICiS) Workshop to Develop Next Generation Sequence Analysis Libraries*, 2012.

(xxiii) Mini-symposium Chair. Session on *HPC System Interconnects* at the *International Supercomputing Conference (ISC)*, 2012.

(xxiv) Tutorials Chair. *International Supercomputing Conference (ISC)*, 2012.

(xxv) Organizing Co-chair (with Yunquan Zhang, Institute of Software, Chinese Academy of Sciences, China). *First Workshop of the MCS-ISCAS Joint Lab on Parallel Processing and Computing Techniques*, May 2012.

(xxvi) Organizing Co-chair (with Shantenu Jha, Rutgers University, USA). *IEEE TCSC Scalable Computing (SCALE) Challenge*, 2012.

(xxvii) Workshops Co-chair (with Manimaran Govindarasu, Iowa State University, USA). *IEEE International Symposium on High Performance Computing (HiPC)*, 2011.

(xxviii) Posters and Research Demos Co-chair (with Rajiv Ranjan, University of New South Wales, Australia). *IEEE International Conference on Utility and Cloud Computing (UCC)*, 2011.

(xxix) Tutorials Chair. *International Supercomputing Conference (ISC)*, 2011.

(xxx) Tutorials Co-chair (with Sushil K. Prasad, Georgia State University, USA). *IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid)*, 2011.

(xxxi) Poster Awards Chair. *IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid)*, Scheduling and Resource Management Track, 2011.

(xxxii) Research Demo Co-chair (with A. B. M. Russel, VeRSI, Australia; Suraj Pandey, University of Melbourne, Australia). *IEEE International Conference on Cluster, Cloud and Grid Computing (CCGrid)*, 2010.

(xxxiii) Posters Chair. *IEEE International Conference on Cluster, Cloud and Grid Computing (CCGrid)*, 2010.

(xxxiv) Tutorials Chair. *IEEE International Conference on High Performance Interconnects (HotI)*, 2009.

(xxxv) Publicity Chair. *International Workshop on High-Performance, Power-Aware Computing (HP-PAC)*, 2008. (held in conjunction with the IEEE International Parallel and Distributed Processing Symposium (IPDPS)).

Technical Committees

1. ***Journal Editorial Boards:***
   (i) Associate Editor-in-Chief (in charge of special sections). *IEEE Transactions on Parallel and Distributed Systems (TPDS).* Term: 2020–present.
   (ii) Associate Editor. *IEEE Transactions on Parallel and Distributed Systems (TPDS).* Term: 2017–present.
   (iii) Area Editor. *Parallel Computing Journal (PARCO).* Term: 2015–2018.
   (iv) Associate Editor. *Elsevier Journal of Parallel and Distributed Computing (JPDC).* Term: 2015–present.
   (v) Associate Editor. *Elsevier Journal on Big Data Research (BDR).* Term: 2015–2018.
   (vi) Associate Editor. *IEEE Transactions on Cloud Computing (TCC).* Term: 2013–2018.
   (vii) Associate Editor. CCF Transactions on High Performance Computing (THPC): 2016–present.
   (viii) International Journal of Big Data Intelligence (IJDBI): 2013–present.
   (ix) CRC Press Cloud Computing with E-science Applications: 2013–2014.
   (x) International Journal of Grid and High Performance Computing (IJGHPC): 2012–present.
2. ***Steering Committees:***
   (i) AIPerf 500 List: 2020–present.
   (ii) International Conference on Parallel Processing (ICPP): 2016–present.
   (iii) IEEE International Conference on Cluster Computing (Cluster): 2014–present (chair from 2018–2020).
   (iv) International Workshop on Fault Tolerant Systems (FTS): 2014–present.
   (v) IEEE International Conference on Scalable Computing and Communications (ScalCom): 2014–present.
   (vi) IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC): 2012–2014.
   (vii) International Supercomputing Conference (ISC): 2012–present.
   (viii) International Workshop on Accelerators and Hybrid Exascale Systems (AsHES): 2012–present.
   (ix) IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid): 2011–present.
   (x) International Workshop on Characterization of Accelerator-based Computing on High-End Systems (CACHES): 2011.
3. ***Proposal Review Committees:***
   (i) National Science Foundation (NSF), Software Infrastructure for Sustained Innovation (SI2) panel, May, 2014.
   (ii) Department of Energy (DOE), Advanced Scientific Computing Research (ASCR) panel, Feb, 2014.
   (iii) National Science Foundation (NSF), Advanced Computing Infrastructure (ACI) panel, June, 2013.
   (iv) Singapore Ministry of Education (MOE) Academic Research Fund panel, June, 2013.
   (v) National Science Foundation (NSF), Computer Systems Research (CSR) panel, May, 2013.
   (vi) National Science Foundation (NSF), Computer Systems Research (CSR) panel, May, 2012.
   (vii) National Science Foundation (NSF), Computer Systems Research (CSR) panel, April, 2012.
   (viii) Czech Science Foundation, 2011.
   (ix) Department of Energy (DOE), Office of Science Advanced Scientific Computing Research (ASCR), 2011.
   (x) National Science Foundation (NSF), Computer Systems Research (CSR) panel, April, 2010.
4. ***Program Committee for International Conferences and Workshops:***
   (i) Fourth workshop on OpenSHMEM and Related Technologies (OpenSHMEM): 2017
   (ii) IEEE International Conference on Networking, Architecture, and Storage (NAS): 2017
   (iii) International Conference on Parallel Computational Technologies (PCT): 2016

(iv) Russian Supercomputing Days Conference: 2016
(v) International Conference on Network and Parallel Computing (NPC): 2015, 2016
(vi) International Conference on Parallel Architectures and Compilation Techniques (PACT): 2015, 2016
(vii) ACM International Symposium on High-Performance Parallel and Distributed Computing (HPDC): 2015, 2020
(viii) IEEE International Conference on Scalable Computing and Communications (ScalCom): 2014
(ix) International Workshop on Extreme Scale Data Cloud Computing Architectures (SHPCloud): 2014
(x) International Workshop on Accelerator Programming using Directives (WACCPD): 2014
(xi) IEEE International Conference on Big Data Science and Engineering (BDSE): 2014
(xii) International Exascale Applications and Software Conference (EASC): 2014
(xiii) International Symposium on Big Data and Data Analytics in Collaboration (BDDAC): 2014
(xiv) IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid): 2014, 2016
(xv) IEEE International Conference on Networking and Distributed Computing (ICNDC): 2013
(xvi) International Workshop on Big Data Computing (BDC): 2013
(xvii) IEEE International Conference on Big Data and Distributed Systems (BDDS): 2013
(xviii) SIAM Parallel Processing: 2014
(xix) IEEE International Conference on Parallel and Distributed Systems (ICPADS): 2013, 2014, 2015
(xx) IEEE International Conference on Big Data (BigData): 2013
(xxi) Workshop on Multicore and GPU Programming Models, Languages and Compilers (PLC): 2013, 2014
(xxii) Euro-Par, International Conference on Parallel Processing: 2013
(xxiii) International Workshop on Large-Scale Parallel Processing (LSPP): 2013, 2014, 2015, 2016
(xxiv) International Conference on Cloud Research and Innovation (ICCRI): 2013
(xxv) International Workshop on Parallel Algorithm and Parallel Software (IWPAPS): 2012
(xxvi) IEEE International Conference on Networks (ICON): 2012
(xxvii) International Conference on P2P, Parallel, Grid, Cloud and Internet Computing (PGCIC): 2012
(xxviii) International Conference on Advances in Cloud Computing (ACC): 2012
(xxix) International Workshop on Collaborative Cloud (CollabCloud): 2012
(xxx) International Workshop on Advances in High-Performance Algorithms and Applications (AHPAA): 2012
(xxxi) European MPI Users' Group Meeting (Euro MPI): 2012, 2013, 2014, 2015, 2016, 2018, 2019
(xxxii) ACM International Conference on Computing Frontiers (CF): 2012
(xxxiii) International Workshop on Network-aware Data Management (NDM): 2011, 2012, 2015
(xxxiv) International Workshop on Cloud Computing and Scientific Applications (CCSA): 2011, 2012
(xxxv) Partitioned Global Address Space Conference (PGAS): 2011
(xxxvi) International Workshop on High-level Parallel Programming and Applications (HLPP): 2011, 2013
(xxxvii) International Workshop on Performance Modeling, Benchmarking and Simulation of High Performance Computing Systems (PMBS): 2011, 2012, 2013, 2014
(xxxviii) IEEE International Conference on High Performance Computing and Communications (HPCC): 2011, 2012, 2013
(xxxix) International Conference on Contemporary Computing (IC3): 2011, 2012
(xl) IEEE International Conference on Computational Science and Engineering (CSE): 2011
(xli) International Supercomputing Conference (ISC): 2011, 2012, 2013
(xlii) International Workshop on Communication Architecture for Scalable Systems (CASS): 2011, 2012, 2013
(xliii) International Workshop on High-Level Parallel Programming Models and Supportive Environments (HIPS): 2011
(xliv) IEEE International Symposium on Parallel and Distributed Processing with Applications (ISPA): 2011, 2012

(xlv) IEEE International Parallel and Distributed Processing Symposium (IPDPS): 2011, 2012, 2014, 2015, 2018

(xlvi) IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC): 2010, 2011, 2012, 2014, 2015, 2017, 2018, 2020

(xlvii) International Workshop on Multi-Core Computing Systems (MuCoCoS): 2010

(xlviii) IEEE International Conference on Cluster Computing (Cluster): 2009, 2010, 2017

(xlix) International Workshop on The Influence of I/O on Microprocessor Architecture (IOM): 2009

(l) International Workshop on Communication Architecture for Clusters (CAC): 2009, 2010

(li) IEEE International Symposium on High-Performance Interconnects (HotI): 2008, 2009, 2011, 2012, 2013, 2014, 2015

(lii) International Conference on Parallel Processing (ICPP): 2008, 2009, 2011, 2012, 2014, 2019

(liii) International Workshop on Scheduling and Resource Management for Parallel and Distributed Systems (SRMPDS): 2007, 2008, 2009, 2010, 2011, 2012, 2013

(liv) IEEE International Conference on High Performance Computing (HiPC): 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015

(lv) IEEE International Conference on Computer Communications and Networks (ICCCN): 2006, 2007, 2008

5. ***Other Committees:***

(i) Tutorials Committee: International Supercomputing Conference (ISC): 2016, 2018, 2019, 2020

(ii) Emerging Technologies Committee: IEEE/ACM International Conference on High Performance Computing, Networking, Storage, and Analysis (SC): 2016

(iii) Posters Committee: IEEE/ACM International Conference on High Performance Computing, Networking, Storage, and Analysis (SC): 2016

(iv) IEEE Technical Subcommittee on Big Data (TSCBD): 2015

(v) Posters Committee: International Supercomputing Conference (ISC): 2014

(vi) Workshops Committee: IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC): 2013, 2015, 2017

(vii) Argonne/University of Chicago Computation Institute Director Renewal Review Committee: 2012

(viii) IEEE Computer Society, Future Technologies Strategies, Cloud Computing Committee: 2012, 2013, 2014

(ix) Recruitment and University Relations, Mathematics and Computer Science Division, Argonne National Laboratory: 2012

(x) IEEE TCPP Student Travel Award Committee: IEEE International Parallel and Distributed Processing Symposium (IPDPS): 2012

(xi) Ph.D. Forum Committee: IEEE International Parallel and Distributed Processing Symposium (IPDPS): 2011, 2012

(xii) Division Director Search Committee, Mathematics and Computer Science Division, Argonne National Laboratory, 2011

(xiii) Student Research Symposium Judge: IEEE International Conference on High Performance Computing (HiPC): 2010

(xiv) Birds-of-a-Feather Committee: International Supercomputing Conference (ISC): 2011, 2012, 2013

(xv) Poster Awards Committee: IEEE International Conference on Cluster, Cloud and Grid Computing (CCGrid): 2010

(xvi) Student Research Symposium Committee: IEEE International Conference on High Performance Computing (HiPC): 2009, 2010, 2013

(xvii) Tutorials Committee: IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC): 2009, 2011, 2012, 2013

(xviii) Posters Committee: IEEE International Conference on Cluster Computing (Cluster): 2009

(xix) Poster Awards Committee: IEEE International Conference on High Performance Computing (HiPC): 2009

(xx) Book Proposal Review Committee, Taylor and Francis Group, 2007

(xxi) Departmental Awards Committee, Computer Science and Engineering, Ohio State University, 2006

6. ***Technical Referee for International Journals and Magazines:***

(i) IEEE Transactions on Cloud Computing (TCC): 2013, 2014

(ii) International Journal of Parallel Processing (IJPP): 2013

(iii) ACM Transactions on Architecture and Code Optimization (TACO): 2012

(iv) Journal of Cluster Computing (CLUS): 2012, 2013, 2014

(v) Future Generation Computer Systems (FGCS) Journal: 2012

(vi) Institution of Engineering and Technology (IET) Computers & Digital Techniques Journal: 2012

(vii) Journal of Computer Science and Technology (JCST): 2012

(viii) Journal of Simulation Modelling Practice and Theory (SIMPAT): 2011, 2012

(ix) IEEE Computer Architecture Letters (CAL): 2009, 2010

(x) IEEE Transactions on Networking (TN): 2009

(xi) Journal of Future Generation Computer Systems (with Elsevier): 2009

(xii) Journal of Concurrency and Computation: Practice and Experience (CCPE): 2009, 2013

(xiii) Computer Networks Journal (COMNET): 2009, 2010, 2012, 2013

(xiv) IBM Systems Journal: 2008

(xv) IEEE Micro: 2007

(xvi) IEEE Transactions on Parallel and Distributed Systems (TPDS): 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013

(xvii) IEEE Transactions on Computers (TC): 2006, 2007, 2008

(xviii) Electronics and Telecommunications Research Institute Journal (ETRI): 2006

(xix) Journal of Grid Computing (Grid): 2005

(xx) Journal of Parallel and Distributed Computing (JPDC): 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013

Panel Moderator

1. *Exascale Runtime Systems.* IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Denver, Colorado. Nov. 20th, 2013.
2. *Is Big Data the New HPC?* International Conference on Parallel Processing (ICPP), Pittsburgh, Pennsylvania. Sep. 12th, 2012.
3. *Is Exascale End-of-the-line for Commodity Networks?* International Conference on Cluster Computing (Cluster), Austin, Texas. Sep. 27th, 2011.
4. *Scheduling Primitives.* ASCR Exascale Programming Models Workshop, Marina del Rey, California. Jul 27th, 2011.
5. *Accelerators: Fad, Fashion or Future?* Jointly with Wu-chun Feng, Virginia Tech. International Conference on Parallel Processing (ICPP), San Diego, California. Sep. 15th, 2010.
6. *Is Hybrid Programming a Bad Idea Whose Time has Come?* Third International Workshop on Parallel Programming Models and Systems Software for High-End Computing (P2S2), San Diego, California. Sep. 13th, 2010.
7. *Software for the ExaFlop Era: The Demons & The Dementors.* First International Workshop on Parallel Programming Models and Systems Software for High-End Computing (P2S2), Portland, Oregon. Sep. 12th, 2008.

Birds of a Feather Session Organizer

1. *Towards Standardized, Portable and Lightweight User-level Threads and Tasks.* Jointly with Sangmin Seo (Argonne National Laboratory). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Austin, Texas. Nov. 18th, 2015.

2. *MPICH: A High Performance and Portable MPI Implementation.* Jointly with Kenneth Raffenetti (Argonne National Laboratory) and Rajeev S. Thakur (Argonne National Laboratory). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), New Orleans, Louisiana. Nov. 17th, 2015.

3. *MPICH: A High Performance and Portable MPI Implementation.* Jointly with Kenneth Raffenetti (Argonne National Laboratory) and Rajeev S. Thakur (Argonne National Laboratory). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), New Orleans, Louisiana. Nov. 19th, 2014.

4. *Application Grand Challenges in the Heterogeneous Accelerator Era.* IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Denver, Colorado. Nov. 21st, 2013. (Speakers: Alice Koniges, Lawrence Berkeley National Laboratory; Robert Harrison, Stony Brook University; Tim Mattson, Intel; Nick Wright, NERSC; David Bernholdt, Oak Ridge National Laboratory)

5. *Critically Missing Pieces in Heterogeneous Accelerator Computing.* IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Denver, Colorado. Nov. 20th, 2013. (Speakers: Jean-Francois Mehaut, Universite Joseph Fourier; Franck Cappello, Argonne National Laboratory; Milind Chabbi, Rice University; Vinod Tipparaju, AMD; Luiz DeRose, Cray)

6. *MPICH: A High Performance and Portable MPI Implementation.* Jointly with Rajeev S. Thakur (Argonne National Laboratory) and Ewing L. (Rusty) Lusk (Argonne National Laboratory). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Denver, Colorado. Nov. 19th, 2013. (Speakers: Chulho Kim, IBM; Bill Magro, Intel; Fab Tillier, Microsoft; Heidi Poxon, Cray; Yutaka Ishikawa, University of Tokyo)

7. *Application Grand Challenges in the Heterogeneous Accelerator Era.* Jointly with Satoshi Matsuoka (Tokyo Institute of Technology, Japan). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Seattle, Washington. Nov. 17th, 2012. (Speakers: Robert Harrison, Stony Brook University; Jim Phillips, University of Illinois at Urbana-Champaign; Takashi Shimokawabe, Tokyo Institute of Technology; Bill Dally, NVIDIA; John Gustafson, AMD; Pradeep Dubey, Intel).

8. *Unistack: Interoperable Community Runtime Environment for Exascale Systems.* Jointly with Laxmikant Kale (University of Illinois at Urbana-Champaign). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Seattle, Washington. Nov. 15th, 2012. (Speakers: Sriram Krishnamoorthy, Pacific Northwest National Laboratory; Vinod Tipparaju, AMD; John Mellor-Crummey, Rice University; Sunita Chandrasekaran, University of Houston).

9. *Critically Missing Pieces in Heterogeneous Accelerator Computing.* Jointly with Satoshi Matsuoka (Tokyo Institute of Technology, Japan). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Seattle, Washington. Nov. 15th, 2012. (Speakers: Tim Mattson, Intel; Taisuke Boku, University of Tsukuba; Allen Malony, University of Oregon; Vinod Tipparaju, AMD).

10. *MPICH: A High Performance and Portable MPI Implementation.* Jointly with Darius T. Buntinas (Argonne National Laboratory) and Rajeev S. Thakur (Argonne National Laboratory). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Seattle, Washington. Nov. 17th, 2012. (Speakears: Rusty Lusk, Argonne National Laboratory; Bill Magro, Intel; Fab Tillier, Microsoft; Duncan Roweth, Cray; Chulho Kim, IBM).

11. *Application Grand Challenges in the Heterogeneous Accelerator Era.* Jointly with Satoshi Matsuoka (Tokyo Institute of Technology, Japan). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Seattle, Washington. Nov. 17th, 2011. (Speakers: Jeff Hammond, Argonne National Laboratory; David Bader, Georgia Tech University; Tim Mattson, Intel; Volodymyr Kindratenko, National Center for Supercomputing Applications; Takayuki Aoki, Tokyo Institute of Technology, Japan).

12. *Critically Missing Pieces in Heterogeneous Accelerator Computing.* Jointly with Satoshi Matsuoka (Tokyo Institute of Technology, Japan). IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), Seattle, Washington. Nov. 15th, 2011. (Speakers: John Shalf, Lawrence Berkeley National Laboratory; Kei Hiraki, University of Tokyo, Japan; Jesus Labarta, Barcelona Supercomputing Center, Spain; Wen-mei Hwu, University of Illinois at Urbana-Champaign; Hemant Shukla, Lawrence Berkeley National Laboratory).

13. *Critically Missing Pieces in Heterogeneous Exascale Computing.* Jointly with Satoshi Matsuoka (Tokyo Institute of Technology, Japan). IEEE/ACM International Conference for High Performance Computing, Networking, Storage

and Analysis (SC), New Orleans, Louisiana. Nov. 16th, 2010. (Speakers: Wen-mei Hwu, University of Illinois at Urbana-Champaign; Jeff Vetter, Oak Ridge National Laboratory; P. Sadayappan, Ohio State University).

Professional Memberships and Other Affiliations

1. Senior Member, IEEE (2012 – present)
2. Professional Member, IEEE Computer Society (2012 – present)
3. MPI Forum: The Message Passing Interface Standardizing Body.
   - Hybrid Programming Working Group Chair. Period: 2008 – present.
   - Member. Period: 2007 – present.
4. Professional Member, IEEE (2007 – 2011)
5. Professional Member, ACM (2007 – present)
6. Student Member, IEEE (2001 – 2006)
7. Student Member, ACM (2001 – 2006)

REFERENCES

Available on Request