Todd Gamblin

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Education

2009	**Ph.D., Computer Science**, *University of North Carolina at Chapel Hill*. *Scalable Performance Measurement and Analysis*. Advisor: Daniel A. Reed.
2005	**M.S., Computer Science**, *University of North Carolina at Chapel Hill*.
2002	**B.A., Computer Science & Japanese**, *Williams College*.

Awards & Honors

2018	LLNL award for technical leadership on secure continuous integration for DOE HPC centers
2017	LLNL Early and Mid-Career Recognition (EMCR) Award
2017	LLNL WCI Directorate Award
2015	LLNL Director's Institutional Operational Excellence (DIOE) Award for labwide collaboration tools
2015	LLNL award for organizing & reinvigorating the JOWOG 34 Applied CS workshop
2014	U.S. Department of Energy (DOE) Early Career Research Award
2014	Best Paper, International Symposium on Cluster, Cloud and Grid Computing (CCGrid)
2013	Best Paper, International Conference on Supercomputing (ICS)
2013	Invited to LLNL Computation Leadership Program
2012, 2013	Two LLNL awards for building collaborative development tools for all supercomputer users
2011	LLNL award for leadership on the PAVE project
2010	LLNL achievement award for the Scalable Application Preparation project
2006-2008	Latané Interdisciplinary Fellowship
2007	Member, Frank Porter Graham Honor Society
2006	Best Poster, Los Alamos Computer Science Institute (LACSI) Symposium
2004	NSF East Asia and Pacific Summer Institutes (EAPSI) Fellowship

Research Experience

2010-present	**Lawrence Livermore National Laboratory**, *Computer Scientist*.
	○ Research and develop tools to measure & analyze performance data from parallel scientific simulations.
	○ Lead: deployment of the Sonar cluster: data analytics for the Livermore Computing Center.
	○ Lead: Spack package manager project: combinatorial builds of over 2,300 HPC packages (spack.io).
	○ Lead: DevRAMP: Reproducibility, Analysis, Monitoring, and Performance for Developers. DevOps/collaboration team within Livermore Computing.
2009-2010	**Lawrence Livermore National Laboratory**, *Postdoctoral Scholar*. Developed $O(log(P))$ parallel clustering algorithm for on-line performance analysis.
2008-2009	**Lawrence Livermore National Laboratory**, *Research Intern*.
Jun, Aug 2007	Developed scalable parallel load balance measurement tools using wavelet compression.
2004-2008	**Renaissance Computing Institute (RENCI)**, **UNC Chapel Hill**, *Research Assistant*. Researched statistical and numerical techniques for performance measurement data reduction.
Summer 2006	**IBM Thomas J. Watson Research Center**, *Research Intern*. Developed distributed clock synchronization for virtualized environments on IBM System z mainframes.
Summer 2004	**Nanya-Nakamura Laboratory**, **University of Tokyo**, *Research Intern*. On NSF EAPSI fellowship, investigated low-power register design using asynchronous digital logic.

2003-2004	**Clockless Computing Laboratory, UNC Chapel Hill**, *Research Assistant.*
	Investigated modular interface designs for asynchronous (clockless) digital circuits.
2001-2002	**Williams College**, *Undergraduate Research Assistant*.
	Investigated cache-conscious memory performance optimizations.

Professional Experience

2002-2003	**ValueCommerce, Co., Ltd.**, *Software Developer*, Tokyo, Japan.
	Developed control panel for web hosting application; conducted performance analysis for ad servers.
Summer 2001	**EMC Corporation**, *Summer Intern*, Research Triangle Park, NC.
Summer 2000	Developed distributed performance monitoring tools and web-based user interface for NAS servers.

Research and Other Funding

2016-present	**PI**, *DevRAMP: Reproducibility, Analysis, Monitoring, and Performance for Developers*, programmatic, ≈ 3 FTE/yr.
	Department of Energy (DOE) Advanced Simulation and Computing (ASC) ATDM Program.
2017-2018	**PI**, *LLNL Early and Mid-Career Recognition Award*, 20% FTE/yr.
	Recognized by LLNL and funded to work on expanding the Spack community.
2017-present	**Co-PI**, *IDEAS-ECP: Softare Productivity for the Exascale Computing Project*, PIs Mike Heroux and Lois Curfman McInnes, $225k/yr.
	U.S. Exascale Computing Project
2014-2019	**PI**, *Statistical Methods for Exascale Performance Modeling*, $2,500,000.
	U.S. Department of Energy (DOE) Early Career Research Program.
2010-present	**PI**, *Performance Analysis and Visualization at Exascale (PAVE)*, $500,000/year.
	Department of Energy (DOE) Advanced Simulation and Computing (ASC) Program.
2015-present	**PI**, *Containers and Secure Services for HPC*, $100k/yr.
	LLNL ISCP Project
2014-2017	**PI**, *Sonar: An Analytics Cluster for Livermore Computing Performance Data*, $100,000/yr.
	LLNL Computation TechBase Project
2013-2015	**Co-PI**, *Performance Insight for Programs and Exascale Runtimes (PIPER)*, $4,500,000.
	PI Martin Schulz, LLNL. DOE Advanced Scientific Computing Research (ASCR) X-Stack 2 Program.
2012-2014	**Co-PI**, *Performance Visualization at ExaScale (PeVES)*, $250,000.
	PI Timo Bremer, LLNL. University of California Laboratory Fees Research Program.
2012-2014	**Co-PI**, *Scalable Topology-Aware Task Embedding (STATE)*, $945,000.
	PI Abhinav Bhatele, LLNL. DOE LDRD Exploratory Research.
2012	**PI**, *Data Analytics for HPC*, $100,000.

Time Allocation Grants

2013-2018	**Co-PI**, *Performance Evaluation and Analysis Consortium (PEAC)*, 120M core-hours.
	PI Lenny Oliker, LBNL. DOE Innovative and Novel Computational Impact on Theory and Experiment (INCITE) Program. Provided millions of compute hours for CS researchers on ANL Intrepid, Mira, and Theta; and ORNL Titan systems.
2013-2015	**Co-PI**, *Exploring energy efficiency, memory contention and application-tools-hardware co-design on a Xeon Phi cluster*, 1M core-hours. PI Abhinav Bhatele, LLNL. UTK Beacon Project..

Conferences & Workshops Organized

2017	**IEEE CLUSTER**, *General Chair*.
	Location to be announced at IEEE CLUSTER 2016
2014-2016	**JOWOG 34: Applied Computer Science**, *Co-Chair, Founder*.
	Scalable algorithms & simulation techniques for LLNL, LANL, Sandia (US) and AWE (UK). 100+ attendees.

2015-2016	**International Workshop on HPC User Support Tools (HUST)**, *Co-Chair*.
	Held at SC15-16 in cooperation with SIGHPC.
2016	**Workshop on Variability in Parallel and Distributed Systems (VarSys)**, *Co-Chair*.
	Held at IPDPS'16.
2016	**Workshop on Emerging Parallel and Distributed Runtime Systems and Middleware (IPDRM'16)**, *Co-Chair*.
	Held at IPDPS'16.
2011-2012	**Workshop on High-performance Infrastructure for Scalable Tools (WHIST)**, *Chair*.
	Held twice at ICS. Proceedings published in special issue of ParCo Journal. 30 attendees.

Conference Committees

2019	**ACM/IEEE Supercomputing Conference (SC)**, *Technical Papers Committee*.
2019	**ACM Symp. on Principles and Practices of Parallel Programming (PPoPP)**, *Finance Chair*.
2018	**ACM/IEEE Supercomputing Conference (SC)**, *Vice Chair, Technical Papers*.
2017	**ACM/IEEE Supercomputing Conference (SC)**, *Posters Committee*.
2017	**Parallel Architectures and Compilation Techniques (PACT)**, *Technical Papers Committee*.
2014-2017	**International Workshop on HPC User Support Tools (HUST)**, *Technical Papers*.
2014-2017	**International Workshop on Visual Performance Analytics (VPA)**, *Technical Papers*.
2016	**International Conference on Parallel Processing (ICPP)**, *Technical Papers Committee*.
2012-2016	**ACM Student Research Competition**, *Review Committee*.
2010-2016	**Performance Modeling, Benchmarking, & Simulation (PMBS)**, *Steering Committee*.
2015	**IEEE CLUSTER**, *Area Chair, Cluster Design and Architecture*.
2015	**PPoPP 2015**, *External Program Committee*.
2013-2014	**ACM/IEEE Supercomputing Conference (SC)**, *Technical Papers Committee*.
2011,2014	**ACM International Conference on Supercomputing (ICS)**, *Technical Papers Committee*.
2014	**IEEE International Parallel and Distributed Processing Symposium (IPDPS)**, *Tech. Papers*.
2014	**Hardware-Software Co-Design for High Performance Computing (Co-HPC)**, *Technical Papers Committee*.
2013-2014	**IEEE/ACM Cluster, Cloud &Grid Computing (CCGrid)**, *Technical Papers Committee*.
2013-2014	**IEEE Big Data**, *Technical Papers Committee*.
2012-2013	**International Conference on Parallel Processing (ICPP)**, *Technical Papers Committee*.
2012	**IEEE CLUSTER**, *Technical Papers Committee*.
2012	**ACM/IEEE Supercomputing Conference (SC)**, *Posters Committee*.
2009	**Parallel Architectures and Compilation Techniques (PACT)**, *Organizing Committee*.

Grant Reviewing

2015	**Computing and Communication Foundations (CCF)**, *NSF*.
2012	**Predictive Science Academic Alliance Program (PSAAP II)**, *DOE NNSA*.
2011	**Small Business Innovation Research (SBIR)**, *DOE Office of Science*.

Memberships

Professional	IEEE, ACM, SIGHPC
Teaching	Software Carpentry Certified Instructor
Open Source	OpenHPC Techical Steering Committee (Developer Tools Representative)

Skills

| General | C, C++, Fortran (linking), Python, numpy, Java, Ruby, Perl, git, svn, CVS, autotools, CMake. |

High Performance Computing	Parallel performance tool development in C/C++. MPI & OpenMP profiling tools, runtime systems, debugger interfaces, stack tracing. Measurement, analysis, and tuning of parallel applications on large clusters (IBM Blue Gene, Cray, Linux). Experience with large physics codes at LLNL.
Data Analysis	Sampling, sequential and parallel clustering algorithms.
Enterprise Web Development	Server-side Java: MVC, Tomcat, Apache, Struts, Velocity, Atlassian plugins, Spring Framework; Maven, Ant; JDO, JDBC, SQL with Oracle. Other: Ruby on Rails, Mongrel server, LAMP stack.
Languages	English (fluent), Japanese (conversational)

Software Projects
see *github.com/LLNL* to download.

spack	Package manager for HPC software, used widely by developers and HPC centers.
cram	Tool for running ensembles of millions of small MPI jobs for Uncertainty Quantification.
rubik	Tool for building optimized task mappings for structured simulation codes on supercomputers.
callpath	Library for analyzing stack traces scalably in distributed applications.
wrap	Code generator for MPI profiling wrapper libraries. Used in Allinea DDT.
perf-dump	Dump per-process, per-thread PAPI counter data from MPI programs to HDF5 files.
muster	Scalable $O(log(P))$ parallel clustering library, used in performance/debugging tools.
nami	Parallel and sequential wavelet compression library.
libra	Scalable load-balance measurement/viewer tool for MPI simulations.

Software developed by students and mentees

AutomaDeD	Massively scalable statistical control flow analysis and performance debugging.
Boxfish	Visual tool for projecting performance data onto network topologies.
MemAxes	Visual projection of memory performance data onto processor topologies.
Ravel	Visualization of MPI traces in logical, Lamport happened-before order.

Invited Talks, Panels, and Podcasts

July 16, 2019	**The Manifest (Podcast)**, *Spack*, Hosts: Andrew Nesbitt and Alex Pounds.
October 26, 2018	**Let's Talk Exascale (Podcast)**, *Spack: The Deployment Tool for ECP's Software Stack*, Host: Scott Gibson.
February 6, 2018	**The Changelog (Podcast)**, *Moore's Law and High Performance Computing*, Hosts: Jerod Santo and Adam Stacoviak.
July 16, 2017	**Request for Commits (Podcast)**, *Open Source and Supercomputers (Spack)*, Hosts: Nadia Eghbal and Mikeal Rogers.
June 2, 2017	**4th International Workshop on Reproducibility in Parallel Computing (REPPAR'17)**, *Spack and Reproducibility in HPC*, Orlando, FL. Held at the International Parallel and Distributed Processing Sympsium (IPDPS'17)
February 26, 2016	**Tokyo Institute of Technology**, *Measuring and Analyzing Entire HPC Centers: The Sonar Project at LLNL*, Tokyo, Japan.
January 29, 2016	**University of California, Merced**, *Measuring and Analyzing Entire HPC Centers: The Sonar Project at LLNL*, Merced, CA.
March 26, 2015	**Lawrence Berkeley National Laboratory**, *Visualizing application semantics in performance tools*, Berkeley, CA.
October 30, 2015	**Research Computing & Engineering Podcast**, *http://www.rce-cast.com/Podcast/rce-102-spack.html*, Hosts: Brock Palen and Jeff Squyres.
March 12, 2015	**DOE Exascale Computing Initiative Runtime Systems Workshop**, *ASC's Tool Needs*, Rockville, MD.
October, 2014	**College of William & Mary**, *Measuring, Analyzing, and Visualizing Memory Performance*, Williamsburg, VA.

Publications

Peer Reviewed Conference & Journal Papers

[1] Prasanna Balaprakash, Jack Dongarra, **Todd Gamblin**, Mary Hall, Jeffrey K. Hollingsworth, Boyana Norris, and Rich Vuduc. Autotuning in High-Performance Computing Applications. *Proceedings of the IEEE*, pages 1–16, 2018.

[2] Katherine E. Isaacs and **Todd Gamblin**. Preserving command line workflow for a package management system using ascii dag visualization. *IEEE Transactions on Visualization and Computer Graphics*, pages 1–1, 2018.

[3] Michael R. Wyatt II, Stephen N. Herbein, **Todd Gamblin**, Adam Moody, Dong H. Ahn, and Michela Taufer. PRIONN: Predicting Runtime and IO using Neural Networks. In *International Conference on Parallel Processing (ICPP'18)*, Eugene, OR, August 13-16 2018. LLNL-CONF-739253.

[4] Jayaraman J. Thiagarajan, Nikhil Jain, Rushil Anirudh, Alfredo Giménez, Rahul Sridhar, Aniruddha Marathe, Tao Wang, Murali Emani, Abhinav Bhatele, and **Todd Gamblin**. Bootstrapping Parameter Space Exploration for Fast Tuning. In *International Conference on Supercomputing (ICS'18)*, Beijing, China, June 12-15 2018. LLNL-CONF-750296.

[5] Jayaraman J. Thiagarajan, Rushil Anirudh, Bhavya Kailkhura, Nikhil Jain, Tanzima Islam, Abhinav Bhatele, Jae-Seung Yeom, and **Todd Gamblin**. PADDLE: Performance Analysis using a Data-driven Learning Environment. In *Proceedings of the International Parallel and Distributed Processing Symposium (IPDPS'18)*, Vancouver, BC, Canada, May 21-25 2018. LLNL-CONF-740303.

[6] Alfredo Giménez, **Todd Gamblin**, Abhinav Bhatele, Chad Wood, Kathleen Shoga, Aniruddha Marathe, Peer-Timo Bremer, Bernd Hamann, and Martin Schulz. ScrubJay: Deriving Knowledge from the Disarray of HPC Performance Data. In *Supercomputing 2017 (SC'17)*, Denver, CO, November 13-16 2017.

[7] Nikhil Jain, Abhinav Bhatele, Louis Howell, David Böhme, Ian Karlin, Edgar Leon, Misbah Mubarak, Noah Wolfe, **Todd Gamblin**, and Matthew Leininger. Predicting the Impact of Fat-tree Configurations on Applications and Multi-job Workloads. In *Supercomputing 2017 (SC'17)*, Denver, CO, November 13-16 2017.

[8] Aniruddha Marathe, Nikhil Jain, Rushil Anirudh, Abhinav Bhatele, Jayaraman J. Thiagarajan, Bhavya Kailkhura, Jae-Seung Yeom, Barry Rountree, and **Todd Gamblin**. Power-aware Parameter Tuning of HPC Applications using Machine Learning. In *Supercomputing 2017 (SC'17)*, Denver, CO, November 13-16 2017.

[9] David Beckingsale, Olga Pearce, Ignacio Laguna, and **Todd Gamblin**. Apollo: Fast, Dynamic Tuning for Data-Dependent Code. In *IEEE International Parallel & Distributed Processing Symposium (IPDPS'17)*, Orlando, FL, USA, May 29-June 2 2017. LLNL-CONF-723337.

[10] Nikhil Jain, Abhinav Bhatele, Xiang Ni, **Todd Gamblin**, and Laxmikant V. Kale. Express Mesh: A Partitionable Low-Diameter Network that Eliminates Inter-job Interference. In *IEEE International Parallel & Distributed Processing Symposium (IPDPS'17)*, Orlando, FL, USA, May 29-June 2 2017. LLNL-CONF-706801.

[11] Hao Xu, Shasha Wen, Alfredo Gimenez, **Todd Gamblin**, and Xu Liu. DR-BW: Identifying Bandwidth Contention in NUMA Architectures with Supervised Learning. In *IEEE International Parallel & Distributed Processing Symposium (IPDPS'17)*, Orlando, FL, USA, May 29-June 2 2017.

[12] David Böhme, **Todd Gamblin**, David Beckingsale, Peer-Timo Bremer, Alfredo Giménez, Matthew LeGendre, Olga Pearce, and Martin Schulz. Caliper: Performance Introspection for HPC Software Stacks. In *Supercomputing 2016 (SC'16)*, Salt Lake City, UT, November 13-18 2016. LLNL-CONF-699263.

[13] Tanzima Z. Islam, Jayaraman J. Thiagarajan, Abhinav Bhatele, Martin Schulz, and **Todd Gamblin**. A Machine-Learning Framework for Performance Coverage Analysis of Proxy Applications. In *Supercomputing 2016 (SC'16)*, Salt Lake City, UT, November 13-18 2016. LLNL-CONF-696018.

[14] Nikhil Jain, Abhinav Bhatele, Sam White, **Todd Gamblin**, and Laxmikant V. Kale. Evaluating HPC Networks via Simulation of Parallel Workloads. In *Supercomputing 2016 (SC'16)*, Salt Lake City, UT, November 13-18 2016. LLNL-CONF-690662.

[15] Ryan McKenna, Stephen N. Herbein, Adam Moody, **Todd Gamblin**, and Michela Taufer. Forecasting traffic to parallel filesystems from hpc clusters. In *IEEE Cluster 2016 (CLUSTER'16)*, Taipei, Taiwan, September 12-16 2016. LLNL-CONF-691797.

[16] Olga Pearce, **Todd Gamblin**, Bronis R. de Supinski, Martin Schulz, and Nancy M. Amato. MPMD Framework for Offloading Load Balance Computation. In *Proceedings of the International Parallel and Distributed Processing Symposium (IPDPS'16)*, Chicago, IL, May 23-27, 2016 2016. LLNL-CONF-665393.

[17] Ignacio Laguna, David F. Richards, **Todd Gamblin**, Martin Schulz, Bronis R. de Supinski, Kathryn Mohror, and Howard Pritchard. Evaluating and Extending User-Level Fault Tolerance in MPI. *International Journal of High Performance Computing Applications (IJHPCA)*, January 11 2016. LLNL-JRNL-663434.

[18] **Todd Gamblin**, Matthew P. LeGendre, Michael R. Collette, Gregory L. Lee, Adam Moody, Bronis R. de Supinski, and W. Scott Futral. The Spack Package Manager: Bringing order to HPC software chaos. In *Supercomputing 2015 (SC'15)*, Austin, Texas, November 15-20 2015. LLNL-CONF-669890, (22% accepted).

[19] Katherine E. Isaacs, Abhinav Bhatele, Jonathan Lifflander, David Böhme, **Todd Gamblin**, Martin Schulz, Bernd Hamann, and Peer-Timo Bremer. Analyzing the structure of execution traces from task-based parallel runtimes. In *Supercomputing 2015 (SC'15)*, Austin, Texas, November 15-20 2015. LLNL-CONF-670046, (22% accepted).

[20] Ignacio Laguna, Dong H. Ahn, Bronis R. de Supinski, **Todd Gamblin**, Gregory L. Lee, Martin Schulz, Saurabh Bagchi, Milind Kulkarni, Bowen Zhou, Zhezhe Chen, and Feng Qin. Debugging high-performance computing applications at massive scales. *Communications of the ACM*, September 2015. LLNL-JRNL-652400.

[21] Abhinav Bhatele, Andrew R. Titus, Jayaraman J. Thiagarajan, Nikhil Jain, **Todd Gamblin**, Peer-Timo Bremer, Martin Schulz, and Laxmikant V. Kale. Identifying the Culprits behind Network Congestion. In *Proceedings of the International Parallel and Distributed Processing Symposium (IPDPS'15)*, Hyderabad, INDIA, May 25-29 2015. LLNL-CONF-663150, (21.8% accepted).

[22] Katherine E. Isaacs, **Todd Gamblin**, Abhinav Bhatele, Martin Schulz, Bernd Hamann, and Peer-Timo Bremer. Ordering Traces Logically to Identify Lateness in Message Passing Programs. *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, 27(3):829–840, March 2015.

[23] Abhinav Bhatele, Nikhil Jain, Katherine Isaacs, Ronak Buch, **Todd Gamblin**, Steven H. Langer, and Laxmikant V. Kale. Optimizing the performance of parallel applications on a 5D torus via task mapping. In *International Conference on High Performance Computing (HiPC'14)*, Goa, India, December 17-20 2014. LLNL-CONF-655465.

[24] Alfredo Giménez, **Todd Gamblin**, Barry Rountree, Abhinav Bhatele, Ilir Jusufi, Bernd Hamann, and Peer-Timo Bremer. Dissecting On-Node Memory Access Performance: A Semantic Approach. In *Supercomputing 2014 (SC'14)*, New Orleans, LA, November 16-21 2014. LLNL-CONF-658626, (20.8% accepted).

[25] Katherine E. Isaacs, Peer-Timo Bremer, Ilir Jusufi, **Todd Gamblin**, Abhinav Bhatele, Martin Schulz, and Bernd Hamann. Combing the Communication Hairball: Visualizing Parallel Execution Traces using Logical Time. In *IEEE Symposium on Information Visualization (INFOVIS'14)*, Paris, France, November 9-14 2014. LLNL-JRNL-657418, (23% accepted).

[26] Ignacio Laguna, David F. Richards, **Todd Gamblin**, Martin Schulz, and Bronis R. de Supinski. Evaluating User-Level Fault Tolerance for MPI Applications. In *EuroMPI/Asia 2014*, Kyoto, Japan, September 9-12 2014. LLNL-CONF-656877, (46% accepted).

[27] Olga Pearce, **Todd Gamblin**, Bronis R. de Supinski, Tom Arsenlis, and Nancy M. Amato. Load Balancing N-body Simulations with Highly Non-Uniform Density. In *International Conference on Supercomputing (ICS'14)*, Munich, Germany, June 10-13 2014. LLNL-CONF-648577, (20.9% accepted).

[28] Katherine E. Isaacs, Abhinav Bhatele, Peer-Timo Bremer, **Todd Gamblin**, Alfredo Gimenez, Bernd Hamann, Ilir Jusufi, and Martin Schulz. State of the Art of Performance Visualization. In R. Borgo, R. Maciejewski, and I. Viola, editors, *Eurographics Conference on Visualization (EuroVis'14)*, Swansea, Wales, UK, June 9-13 2014. LLNL-CONF-652873.

[29] Subrata Mitra, Ignacio Laguna, Dong H. Ahn, Saurabh Bagchi, Martin Schulz, and **Todd Gamblin**. Accurate application progress analysis for large-scale parallel debugging. In *Programming Langauge Design and Implementation (PLDI'14)*, Edinburgh, UK, June 9-11 2014. LLNL-CONF-646258, (18% accepted).

Best Paper [30] Kento Sato, Kathryn Mohror, Adam Moody, **Todd Gamblin**, Bronis R. de Supinski, Naoya Maruyama, and Satoshi Matsuoka. A user-level infiniband-based file system and checkpoint strategy for burst buffers. In *IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid'14)*, Chicago, IL, May 26-29, 2014 2014. LLNL-CONF-645876, (19% accepted).

[31] Ignacio Laguna, Dong H. Ahn, Bronis R. de Supinski, Saurabh Bagchi, and **Todd Gamblin**. Diagnosis of performance faults in large scale mpi applications via probabilistic progress-dependence inference. *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, May 22 2014. LLNL-JRNL-643939.

[32] Kento Sato, Adam Moody, Kathryn Mohror, **Todd Gamblin**, Bronis R. de Supinski, Naoya Maruyama, and Satoshi Matsuoka. FMI: Fault Tolerant Messaging Interface for Fast and Transparent Recovery. In *Proceedings of the International Parallel and Distributed Processing Symposium (IPDPS'14)*, Phoenix, AZ, May 19-23 2014. LLNL-CONF-645209, (21% accepted).

[33] Nikhil Jain, Abhinav Bhatele, Michael P. Robson, **Todd Gamblin**, and Laxmikant V. Kale. Predicting application performance using supervised learning on communication features. In *Supercomputing 2013 (SC'13)*, Denver, CO, November 17-22 2013. LLNL-CONF-556491, (20% accepted).

[34] Lukasz G. Szafaryn, **Todd Gamblin**, Bronis R. de Supinski, and Kevin Skadron. Trellis: Portability across architectures with a high-level framework. *J. Parallel Distrib. Comput.*, 73(10):1400–1413, July 18 2013.

Best Paper [35] Wolfgang Frings, Dong H. Ahn, Matthew LeGendre, **Todd Gamblin**, Bronis R. de Supinski, and Felix Wolf. Massively parallel loading. In *International Conference on Supercomputing (ICS'13)*, Eugene, OR, June 10-14 2013. LLNL-CONF-610893, (21% accepted).

[36] Dong H. Ahn, Michael J. Brim, Bronis R. de Supinski, **Todd Gamblin**, Gregory L. Lee, Matthew P. LeGendre, Barton P. Miller, Adam Moody, and Martin Schulz. Efficient and Scalable Retrieval Techniques for Global File Properties. In *Proceedings of the International Parallel and Distributed Processing Symposium (IPDPS'13)*, Boston, MA, May 20-24 2013. LLNL-PROC-554055, (21% accepted).

[37] Barry Rountree, **Todd Gamblin**, Bronis R. de Supinski, Martin Schulz, David K. Lowenthal, Guy Cobb, and Henry Tufo. Parallelizing heavyweight debugging tools with MPIEcho. *Parallel Computing*, 39(3):156–166, March 2013.

[38] Abhinav Bhatele, **Todd Gamblin**, Katherine E. Isaacs, Brian T. N. Gunney, Martin Schulz, Peer-Timo Bremer, and Bernd Hamann. Novel views of performance data to analyze large-scale adaptive applications. In *Supercomputing 2012 (SC'12)*, Salt Lake City, UT, November 10-16 2012. LLNL-CONF-554552, (21% accepted).

[39] Abhinav Bhatele, **Todd Gamblin**, Steven H. Langer, Peer-Timo Bremer, Erik W. Draeger, Bernd Hamann, Katherine E. Isaacs, Aaditya G. Landge, Joshua A. Levine, Valerio Pascucci, Martin Schulz, and Charles H. Still. Mapping applications with collectives over sub-communicators on torus networks. In *Supercomputing 2012 (SC'12)*, Salt Lake City, UT, November 10-16 2012. LLNL-CONF-556491, (21% accepted).

[40] Kento Sato, Adam Moody, Kathryn Mohror, **Todd Gamblin**, Bronis R. de Supinski, Naoya Maruyama, and Satoshi Matsuoka. Design and modeling of a non-blocking checkpointing system. In *Supercomputing 2012 (SC'12)*, Salt Lake City, UT, November 10-16 2012. LLNL-CONF-554431, (21% accepted).

[41] Aaditya G. Landge, Joshua A. Levine, Katherine E. Isaacs, Abhinav Bhatele, **Todd Gamblin**, Martin Schulz, Steven H. Langer, Peer-Timo Bremer, and Valerio Pascucci. Visualizing network traffic to understand the performance of massively parallel simulations. In *IEEE Symposium on Information Visualization (INFOVIS'12)*, Seattle, WA, October 14-19 2012. LLNL-CONF-543359, (25% accepted).

[42] Ignacio Laguna, Dong H. Ahn, Bronis R. de Supinski, Saurabh Bagchi, and **Todd Gamblin**. Probabilistic diagnosis of performance faults in large scale parallel applications. In *International Conference on Parallel Architectures and Compilation Techniques (PACT'12)*, Minneapolis, MN, September 19-23 2012. LLNL-PROC-548642, (18% accepted).

[43] Olga Pearce, **Todd Gamblin**, Bronis R. de Supinski, Martin Schulz, and Nancy M. Amato. Quantifying the Effectiveness of Load Balance Algorithms. In *International Conference on Supercomputing (ICS'12)*, Venice, Italy, June 25-29 2012. LLNL-CONF- 523343, (22.3% accepted).

[44] Spyros Lyberis, Polyvios Pratikakis, Dimitrios Nikolopoulos, Martin Schulz, **Todd Gamblin**, and Bronis de Supinski. The myrmics memory allocator: Hierarchical, message-passing allocation for global address spaces. In *International Symposium on Memory Management (ISMM'12)*, Beijing, China, June 15-16 2012. LLNL-CONF-545875.

[45] Sandeep Budanur, Frank Mueller, and **Todd Gamblin**. Memory Trace Compression and Replay for SPMD Systems using Extended PRSDs. *Computer Journal*, 55(2):206–217, February 2012. LLNL-CONF-460598.

[46] Allison H. Baker, Robert D. Falgout, **Todd Gamblin**, Tzanio V. Kolev, Martin Schulz, and Ulrike Meier Yang. Scaling Algebraic Multigrid Solvers: On the Road to Exascale. *Competence in High Performance Computing (CiHPC)*, Dec 2011. LLNL-PROC-463941.

[47] Ignacio Laguna, **Todd Gamblin**, Bronis R. de Supinski, Saurabh Bagchi, Greg Bronevetsky, Dong H. Ahn, Martin Schulz, and Barry Rountree. Large scale debugging of parallel tasks with AutomaDeD. In *Supercomputing 2011 (SC'11)*, Seattle, WA, November 12-18 2011. LLNL-CONF-486911, (21% accepted).

[48] Martin Schulz, Joshua A. Levine, Peer-Timo Bremer, **Todd Gamblin**, and Valerio Pascucci. Interpreting performance data across intuitive domains. In *International Conference on Parallel Processing (ICPP'11)*, Taipei, Taiwan, September 13-16 2011. LLNL-CONF-476091, (22% accepted).

[49] Allison H. Baker, **Todd Gamblin**, Martin Schulz, and Ulrike Meier Yang. Challenges of Scaling Algebraic Multigrid across Modern Multicore Architectures. In *Proceedings of the International Parallel and Distributed Processing Symposium (IPDPS'11)*, Anchorage, Alaska, May 16-20 2011. LLNL-CONF-458074, (19.6% accepted).

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