

Preeti Malakar

CONTACT INFORMATION	Argonne National Laboratory Lemont, IL 60439	Email: pmalakar@anl.gov malakar.preeti@gmail.com
CURRENT POSITION	Postdoctoral Appointee at Argonne Leadership Computing Facility, Argonne National Laboratory (June 2014 – present)	
RESEARCH INTERESTS	I am broadly interested in the area of high-performance computing. My current research interests are modeling and optimizing scientific workflows, communication optimization, parallel I/O, and application performance modeling/analysis.	
EDUCATION	Indian Institute of Science, Bangalore, India. Ph.D, Department of Computer Science and Automation (August 2008 – April 2014) (Thesis submitted in July 2013) <ul style="list-style-type: none">• Thesis: <i>Integrated Parallel Simulations and Visualization for Large-scale Weather Applications</i>• Advisors: Prof. Sathish S. Vadhiyar and Prof. Vijay Natarajan Indian Institute of Technology Guwahati, Guwahati, India. M.Tech, Department of Computer Science and Engineering (2004 – 2006) <ul style="list-style-type: none">• Thesis: <i>A Simple Security Policy for the Linux Kernel</i>• Advisor: Prof. Gautam Barua Dr. B. C. Roy Engineering College, Durgapur, India. B.E., Department of Computer Science and Engineering (2000 – 2004) <ul style="list-style-type: none">• Thesis: <i>Delay Analysis for a Heterogeneous Multi-Server System</i>• Advisor: Prof. G. P. Bhattacharjee	

PUBLICATIONS

Journal Publications

- “Data Movement Optimizations for Independent MPI I/O on the Blue Gene/Q”, Preeti Malakar, Venkatram Vishwanath, *Parallel Computing*, 2016. (to appear)
- “Hierarchical Read-write Optimizations for Scientific Applications with Multi-variable Structured Datasets”, Preeti Malakar, Venkatram Vishwanath, *International Journal of Parallel Programming: Special Issue on Network and Parallel Computing*, October 2015.

Conference Proceedings

- “Optimal Execution of Co-analysis for Large-scale Molecular Dynamics Simulations”, Preeti Malakar, Venkatram Vishwanath, Christopher Knight, Todd Munson, Michael E. Papka, *IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC16)*, Salt Lake City, UT, November 2016.

- “Improving Communication Throughput by Multipath Load Balancing on Blue Gene/Q”, Huy Bui, Preeti Malakar, Venkatram Vishwanath, Todd Munson, Eun-Sung Jung, Andrew E Johnson, Michael E. Papka, Jason Leigh, *IEEE International Conference on High Performance Computing (HiPC 2015)*, Bengaluru, India, December 2015.
- “Optimal Scheduling of Simulation-time Analysis for Large-scale Scientific Simulations”, Preeti Malakar, Venkatram Vishwanath, Todd Munson, Christopher Knight, Mark Hereld, Sven Leyffer, Michael E. Papka, *IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC15)*, Austin, TX, November 2015.
- “A Diffusion-Based Processor Reallocation Strategy for Tracking Multiple Dynamically Varying Weather Phenomena”, Preeti Malakar, Vijay Natarajan, Sathish Vadhiyar, Ravi Nanjundiah, *42nd International Conference on Parallel Processing (ICPP 2013)*, Lyon, France, October 2013.
- “A Divide and Conquer Strategy for Scaling Weather Simulations with Multiple Regions of Interest”, Preeti Malakar, Thomas George, Sameer Kumar, Rashmi Mittal, Vijay Natarajan, Yogish Sabharwal, Vaibhav Saxena, Sathish Vadhiyar, *IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC12)*, Salt Lake City, UT, November 2012. **Best Student Paper Finalist**
- “Performance Evaluation and Optimization of Nested High Resolution Weather Simulations”, Preeti Malakar, Vaibhav Saxena, Thomas George, Rashmi Mittal, Sameer Kumar, Abdul Naim, Saiful A. Husain, *International European Conference on Parallel and Distributed Computing (Euro-Par 2012)*, Greece, August 2012.
- “InSt: An Integrated Steering Framework for Critical Weather Applications”, Preeti Malakar, Vijay Natarajan, Sathish Vadhiyar, *International Conference on Computational Science (ICCS 2011)*, Singapore, June 2011.
- “An Adaptive Framework for Simulation and Online Remote Visualization of Critical Climate Applications in Resource-constrained Environments”, Preeti Malakar, Vijay Natarajan, Sathish Vadhiyar, *IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC10)*, New Orleans, LA, November 2010.

Refereed Workshops

- “Topology-Aware Data Aggregation for Intensive I/O on Large-Scale Supercomputers”, Francois Tessier, Venkatram Vishwanath, Preeti Malakar, Emmanuel Jeannot, and Florin Isaila, *First International Workshop on Communication Optimizations in High-Performance Computing (COMHPC)*, Held in conjunction with ACM/IEEE Supercomputing Conference, Salt Lake City, UT, November 2016.
- “Coupling LAMMPS and the v13 Framework for Co-Visualization of Atomistic Simulations”, Silvio Rizzi, Mark Hereld, Joseph Insley, Preeti Malakar, Michael E. Papka, Thomas Uram, Venkatram Vishwanath, *High Performance Data Analysis and Visualization (HPDAV 2016)*, Held in conjunction with IEEE International Parallel and Distributed Processing Symposium, Chicago, IL, May 2016.
- “Route-aware Independent MPI I/O on the Blue Gene/Q”, Preeti Malakar, Venkatram Vishwanath, *International Workshop on Data-Intensive Scalable Computing Systems (DISCS 2015)*, Held in conjunction with ACM/IEEE Supercomputing Conference, Austin, TX, November 2015.

- “Multipath Load Balancing for M x N Communication Patterns on the Blue Gene/Q Supercomputer Interconnection Network”, Huy Bui, Robert Jacob, Preeti Malakar, Venkatram Vishwanath, Andrew Johnson, Michael E. Papka, Jason Leigh, *1st IEEE International Workshop on High-Performance Interconnection Networks Towards the Exascale and Big-Data Era (HiPINEB 2015)*, Held in conjunction with IEEE Cluster 2015, Chicago, September 2015.

Refereed Posters/Short Papers

- “Modeling Analysis Computations and End-to-end Simulation-analysis Workflows”, Preeti Malakar, Gagan Agrawal, Tekin Bicer, Venkatram Vishwanath, Todd Munson, Rajkumar Kettimuthu, Ian Foster, *Workshop on Modeling & Simulation of Systems and Applications (ModSim 2016)*, Seattle, August 2016.
- “Topology-aware data aggregation for parallel I/O on BG/Q supercomputing system”, Francois Tessier, Preeti Malakar, Venkatram Vishwanath, Emmanuel Jeannot, *5th Greater Chicago Area Systems Research Workshop (GCASR)*, Chicago, April 2016.
- “Internal variability and boundary read performance of a high resolution regional climate model (WRF)”, Jiali Wang, Preeti Malakar, Rao Kotamarthi, Venkat Vishwanath, *16th Annual WRF Users’ Workshop*, Boulder, CO, July 2015.
- “Integrated Parallelization of Computation and Visualization for Large-scale Weather Applications”, Preeti Malakar, *Dissertation Research Showcase, International Conference for High Performance Computing, Networking, Storage and Analysis*, Salt Lake City, UT, November 2012.
- “Integrated Parallelization of Computations and Visualization for Large-scale Applications”, Preeti Malakar, Vijay Natarajan, Sathish Vadhiyar, *IPDPS 2012 PhD Forum*, Shanghai, May 2012.
- “A Coupled Framework for Parallel Simulation and Visualization”, Preeti Malakar, Vijay Natarajan, Sathish Vadhiyar, *Grace Hopper Celebration of Women in Computing INDIA*, Bangalore, India, December 2010.
- “An Integrated Simulation and Visualization Framework for Tracking Cyclone Aila”, Preeti Malakar, Vijay Natarajan, Sathish Vadhiyar, Ravi Nanjundiah, *Student Research Symposium, International Conference on High Performance Computing*, Kochi, India, December 2009. **TCPP Best Paper Award**
- “An Integrated Simulation and Visualization Framework for Tracking Cyclone Aila”, Preeti Malakar, Vijay Natarajan, Sathish Vadhiyar, Ravi Nanjundiah, *Workshop on HPC in India held in conjunction with International Conference for High Performance Computing, Networking, Storage and Analysis*, Portland, OR, November 2009.

AWARDS/RECOGNITIONS

- Best Student Paper finalist in ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis 2012.
- TCS Research Scholarship 2010-2013.
- Google India Women in Engineering Award 2011.
- TCPP Best Paper Award in Student Research Symposium, HiPC 2009.

REVIEWER/SUB-
REVIEWER

- US DOE INCITE (Innovative and Novel Computational Impact on Theory and Experiment) Proposals, 2016.
- International Conference on Distributed Computing and Internet Technology (ICD-CIT), 2016.
- Sadhana, published by Indian Academy of Sciences, 2014.
- IEEE International Conference on Electronics, Computing and Communication Technologies (IEEE CONECCT), 2014.
- IEEE International Conference on High Performance Computing, 2013.
- Grace Hopper Celebration India, 2012.
- 17th International Conference on Advanced Computing and Communications (ADCOM), 2009.

FUNDING

- Co-PI, Linking Climate to Water: Implementing a 4KM Regional Climate Model with hydrologic Model Coupling (WRF-Hydro) using Argonnes HPC Resources. PI: Veerabhadra Kotamarthi, ANL. Funding Agency: DOE LDRD Prime, 2017 - 2018.
- Co-PI, ExaHDF5: Delivering Efficient Parallel I/O on Exascale Computing Systems. PI: Suren Byna, LBNL. Funding Agency: DOE ECP Software Development, 2017 - 2019.