

Christian Engelmann, Ph.D.

Computer Scientist - Extreme-scale High-Performance Computing
Computer Science and Mathematics Division, Oak Ridge National Laboratory (ORNL)

✉ P.O. Box 2008, Oak Ridge, TN 37831-6016
☎ +1 (865) 574-3132 / 📠 +1 (865) 576-5491

🌐 www.christian-engelmann.info
✉ engelmann@computer.org

List of Publications

Peer-reviewed Journal Papers

- [1] Saurabh Hukerikar and Christian Engelmann. Resilience design patterns: A structured approach to resilience at extreme scale. *Journal of Supercomputing Frontiers and Innovations (JSFI)*, 4(3):4–42, October 2017. ISSN 2409-6008. doi: 10.14529/jsfi170301. URL <http://www.christian-engelmann.info/publications/hukerikar17resilience.pdf>.
- [2] Amogh Katti, Giuseppe Di Fatta, Thomas Naughton, and Christian Engelmann. Epidemic failure detection and consensus. *International Journal of High Performance Computing Applications (IJHPCA)*, February 2017. ISSN 1094-3420. doi: 10.1177/1094342017690910. URL <http://www.christian-engelmann.info/publications/katti17epidemic.pdf>.
- [3] Christian Engelmann and Thomas Naughton. A new deadlock resolution protocol and message matching algorithm for the extreme-scale simulator. *Concurrency and Computation: Practice and Experience*, 28(12):3369–3389, August 2016. ISSN 1532-0634. doi: 10.1002/cpe.3805. URL <http://www.christian-engelmann.info/publications/engelmann16new.pdf>.
- [4] 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 Gupta, Fred Johnson, Sriram Krishnamoorthy, Sven Leyffer, Dean Liberty, Subhasish Mitra, Todd Munson, Rob Schreiber, Jon Stearley, and Eric Van Hensbergen. Addressing failures in exascale computing. *International Journal of High Performance Computing Applications (IJHPCA)*, 28(2):127–171, May 2014. ISSN 1094-3420. doi: 10.1177/1094342014522573. URL <http://www.christian-engelmann.info/publications/snir14addressing.pdf>. 173 citations.
- [5] Christian Engelmann. Scaling to a million cores and beyond: Using light-weight simulation to understand the challenges ahead on the road to exascale. *Future Generation Computer Systems (FGCS)*, 30(0):59–65, January 2014. ISSN 0167-739X. doi: 10.1016/j.future.2013.04.014. URL <http://www.christian-engelmann.info/publications/engelmann13scaling.pdf>.
- [6] Chao Wang, Frank Mueller, Christian Engelmann, and Stephen L. Scott. Proactive process-level live migration and back migration in HPC environments. *Journal of Parallel and Distributed Computing (JPDC)*, 72(2):254–267, February 2012. ISSN 0743-7315. doi: 10.1016/j.jpdc.2011.10.009. URL <http://www.christian-engelmann.info/publications/wang12proactive.pdf>.
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- [9] Xubin (Ben) He, Li Ou, Martha J. Kosa, Stephen L. Scott, and Christian Engelmann. A unified multiple-level cache for high performance cluster storage systems. *International Journal of High Performance Computing and Networking (IJHPCN)*, 5(1-2):97–109, 2007. ISSN 1740-0562. doi: 10.1504/IJHPCN.2007.015768. URL <http://www.christian-engelmann.info/publications/he07unified.pdf>.
- [10] Christian Engelmann, Stephen L. Scott, Chokchai (Box) Leangsuksun, and Xubin (Ben) He. Symmetric active/active high availability for high-performance computing system services. *Journal of Computers (JCP)*, 1(8):43–54, December 2006. ISSN 1796-203X. doi: jcp/vol01/no08/jcp01084354.html. URL <http://www.christian-engelmann.info/publications/engelmann06symmetric.pdf>.
- [11] Christian Engelmann, Stephen L. Scott, David E. Bernholdt, Narasimha R. Gottumukkala, Chokchai (Box) Leangsuksun, Jyothish Varma, Chao Wang, Frank Mueller, Aniruddha G. Shet, and Ponnuswamy (Saday) Sadayappan. MOLAR: Adaptive runtime support for high-end computing operating and runtime systems. *ACM SIGOPS Operating Systems Review (OSR)*, 40(2):63–72, April 2006. ISSN 0163-5980. doi: 10.1145/1131322.1131337. URL

Peer-reviewed Conference Papers

- [1] Mohit Kumar, Saurabh Gupta, Tirthak Patel, Michael Wilder, Weisong Shi, Song Fu, Christian Engelmann, and Devesh Tiwari. Understanding and analyzing interconnect errors and network congestion on a large scale hpc system. In *Proceedings of the 48th IEEE/IFIP International Conference on Dependable Systems and Networks (DSN) 2018*, Luxembourg City, Luxembourg, June 25-28, 2018. IEEE Computer Society, Los Alamitos, CA, USA. To appear.
- [2] Bin Nie, Ji Xue, Saurabh Gupta, Tirthak Patel, Christian Engelmann, Evgenia Smirni, and Devesh Tiwari. Machine learning models for gpu error prediction in a large scale hpc system. In *Proceedings of the 48th IEEE/IFIP International Conference on Dependable Systems and Networks (DSN) 2018*, Luxembourg City, Luxembourg, June 25-28, 2018. IEEE Computer Society, Los Alamitos, CA, USA. To appear.
- [3] Rizwan Ashraf, Saurabh Hukerikar, and Christian Engelmann. Pattern-based modeling of multiresilience solutions for high-performance computing. In *Proceedings of the 9th ACM/SPEC International Conference on Performance Engineering (ICPE) 2018*, pages 80–87, Berlin, Germany, April 9-13, 2018. ACM Press, New York, NY, USA. ISBN 978-1-4503-5095-2. doi: 10.1145/3184407.3184421. URL <http://www.christian-engelmann.info/publications/ashraf18pattern-based.pdf>. Acceptance rate 23.7% (14/59).
- [4] Rizwan Ashraf, Saurabh Hukerikar, and Christian Engelmann. Shrink or substitute: Handling process failures in HPC systems using in-situ recovery. In *Proceedings of the 26th Euromicro International Conference on Parallel, Distributed, and network-based Processing (PDP) 2018*, Cambridge, UK, March 21-23, 2018. IEEE Computer Society, Los Alamitos, CA, USA. URL <http://www.christian-engelmann.info/publications/ashraf18shrink.pdf>.
- [5] Saurabh Gupta, Tirthak Patel, Christian Engelmann, and Devesh Tiwari. Failures in large scale systems: Long-term measurement, analysis, and implications. In *Proceedings of the 30th IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC) 2017*, pages 44:1–44:12, Denver, CO, USA, November 12-17, 2017. ACM Press, New York, NY, USA. ISBN 978-1-4503-5114-0. doi: 10.1145/3126908.3126937. URL <http://www.christian-engelmann.info/publications/gupta17failures.pdf>. Acceptance rate 18.7% (61/327).
- [6] Bin Nie, Ji Xue, Saurabh Gupta, Christian Engelmann, Evgenia Smirni, and Devesh Tiwari. Characterizing temperature, power, and soft-error behaviors in data center systems: Insights, challenges, and opportunities. In *Proceedings of the 25th IEEE International Symposium on the Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS) 2017*, pages 22–31, Banff, AB, Canada, September 20-22, 2017. IEEE Computer Society, Los Alamitos, CA, USA. ISBN 978-1-5386-2764-8. doi: 10.1109/MASCOTS.2017.12. URL <http://www.christian-engelmann.info/publications/nie17characterizing.pdf>. Acceptance rate 30.95% (26/84).
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- [8] Mahesh Lagadapati, Frank Mueller, and Christian Engelmann. Benchmark generation and simulation at extreme scale. In *Proceedings of the 20th IEEE/ACM International Symposium on Distributed Simulation and Real Time Applications (DS-RT) 2016*, pages 9–18, London, UK, September 21-23, 2016. IEEE Computer Society, Los Alamitos, CA, USA. ISBN 978-1-5090-3506-9. doi: 10.1109/DS-RT.2016.18. URL <http://www.christian-engelmann.info/publications/lagadapati16benchmark.pdf>. Acceptance rate 42.0% (21/50). Best paper candidate.
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rate 24.2% (43/178).

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- [13] Christian Engelmann and Thomas Naughton. Supporting the development of soft-error resilient message passing applications using simulation. In *Proceedings of the 13th IASTED International Conference on Parallel and Distributed Computing and Networks (PDCN) 2016*, Innsbruck, Austria, February 15-16, 2016. ACTA Press, Calgary, AB, Canada. ISBN 978-0-88986-979-0. doi: 10.2316/P.2016.834-005. URL <http://www.christian-engelmann.info/publications/engelmann16supporting.pdf>.
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- [15] Christian Engelmann and Thomas Naughton. A network contention model for the extreme-scale simulator. In *Proceedings of the 34th IASTED International Conference on Modelling, Identification and Control (MIC) 2015*, Innsbruck, Austria, February 17-18, 2015. ACTA Press, Calgary, AB, Canada. ISBN 978-0-88986-975-2. doi: 10.2316/P.2015.826-043. URL <http://www.christian-engelmann.info/publications/engelmann15network.pdf>.
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- [19] Christian Engelmann. Investigating operating system noise in extreme-scale high-performance computing systems using simulation. In *Proceedings of the 11th IASTED International Conference on Parallel and Distributed Computing and Networks (PDCN) 2013*, Innsbruck, Austria, February 11-13, 2013. ACTA Press, Calgary, AB, Canada. ISBN 978-0-88986-943-1. doi: 10.2316/P.2013.795-010. URL <http://www.christian-engelmann.info/publications/engelmann12investigating.pdf>.
- [20] David Fiala, Frank Mueller, Christian Engelmann, Kurt Ferreira, Ron Brightwell, and Rolf Riesen. Detection and correction of silent data corruption for large-scale high-performance computing. In *Proceedings of the 25th IEEE/ACM International Conference on High Performance Computing, Networking, Storage and Analysis (SC) 2012*, pages 78:1–78:12, Salt Lake City, UT, USA, November 10-16, 2012. ACM Press, New York, NY, USA. ISBN 978-1-4673-0804-5. URL <http://www.christian-engelmann.info/publications/fiala12detection2.pdf>. Acceptance rate 21.2% (100/472). 199 citations.
- [21] James Elliott, Kishor Kharbas, David Fiala, Frank Mueller, Kurt Ferreira, and Christian Engelmann. Combining partial redundancy and checkpointing for HPC. In *Proceedings of the 32nd International Conference on Distributed Computing Systems (ICDCS) 2012*, pages 615–626, Macau, SAR, China, June 18-21, 2012. IEEE Computer Society, Los Alamitos, CA, USA. ISBN 978-0-7695-4685-8. doi: 10.1109/ICDCS.2012.56. URL <http://www.christian-engelmann.info/publications/elliott12combining.pdf>. Acceptance rate 13.8% (71/515). 103 citations.
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- [28] Swen Böhm, Christian Engelmann, and Stephen L. Scott. Aggregation of real-time system monitoring data for analyzing large-scale parallel and distributed computing environments. In *Proceedings of the 12th IEEE International Conference on High Performance Computing and Communications (HPCC) 2010*, pages 72–78, Melbourne, Australia, September 1-3, 2010. IEEE Computer Society, Los Alamitos, CA, USA. ISBN 978-0-7695-4214-0. doi: 10.1109/HPCC.2010.32. URL <http://www.christian-engelmann.info/publications/boehm10aggregation.pdf>. Acceptance rate 19.1% (58/304).
- [29] Antonina Litvinova, Christian Engelmann, and Stephen L. Scott. A proactive fault tolerance framework for high-performance computing. In *Proceedings of the 9th IASTED International Conference on Parallel and Distributed Computing and Networks (PDCN) 2010*, Innsbruck, Austria, February 16-18, 2010. ACTA Press, Calgary, AB, Canada. ISBN 978-0-88986-783-3. doi: 10.2316/P.2010.676-024. URL <http://www.christian-engelmann.info/publications/litvinova10proactive.pdf>.
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