Rong Ge, Ph.D.

McAdams 209
School of Computing
Clemson University
Clemson, SC 29634 USA

Voice: (414) 755-9305

E-mail: rge@clemson.edu
WWW: www.cs.clemson.edu/~rge

Scholarship

Citations: 3025
h-index: 23
i10-index: 39
Based on Google Scholar, July. 2021.

Publications

Journal/Magazine Papers

1. Zheng Miao, Jon Calhoun, and Rong Ge. Towards Resilient and Energy Efficient Scalable Linear Solvers. IEEE Transactions on Parallel and Distributed Systems. (submitted)

2. Rong Ge, Xizhou Feng, Tyler Allen, and Pengfei Zou. The Case for Cross-Component Power Coordination on Power Bounded Systems. IEEE Transactions on Parallel and Distributed Systems. Vol 32, Issue 10, Oct 2021. DOI Bookmark: 10.1109/TPDS.2021.3068235.

3. Zhihui Du, Rong Ge, Victor W. Lee, Richard Vuduc, David A. Bader, and Ligang He. Modeling the Power Variability of Core Speed Scaling on Homogeneous Multicore Systems. Scientific Programming, Volume 2017.

4. Ziliang Zong, Rong Ge, and Qijun Gu. Marcher: A Heterogeneous System Supporting Energy-Aware High Performance Computing and Big Data Analytics. Big Data Research. 2017.

5. Pengfei Xuan, Walter B. Ligon, Pradip K. Srimani, Rong Ge, Feng Luo. Accelerating Big Data Analytics on HPC Clusters Using Two-level Storage. Parallel Computing. 2017.

6. Xiaomin Zhu, Rong Ge, Jinguang Sun and Chuan He. 3E: Energy-Efficient Elastic Scheduling for Independent Tasks in Heterogeneous Computing Systems, Journal of System and Software, Vol. 86, No.2, 2013, Pages 302-314.

7. Kirk W. Cameron and Rong Ge, Generalizing Amdahl's Law for Power and Energy. Computer, 45(3):75 –77, March 2012.

8. Xiaomin Zhu, Chuan He, Rong Ge and Peizhong Lu, Boosting Adaptivity of Fault-Tolerant Scheduling for Real-Time Tasks with Service Requirements on Clusters, Journal of Systems and Software, Vol 84, No. 10, 1708-1716 (2011).

9. Rong Ge, Xizhou Feng, Shuaiwen Song, Hung-Ching Chang, Dong Li, Kirk W. Cameron, PowerPack: Energy profiling and analysis of High-Performance Systems and Applications, IEEE Transactions on Parallel and Distributed Systems, Vol 21, No.5, 658-671 (2010).

10. Shuaiwen Song, Rong Ge, Xizhou Feng, Kirk W. Cameron, Energy Profiling and Analysis of the HPC Challenge Benchmarks, The International Journal of High Performance Computing Applications, Vol. 23, No. 3, 265-276 (2009)

11. Kirk W. Cameron, Rong Ge, Xian-He Sun, lognP and log3P: Accurate analytical models of point-to-point communication in distributed systems, IEEE Transactions on Computer, Volume 56, No. 3:314-327, 2007.

12. Xizhou Feng, Rong Ge, and Kirk W. Cameron, The Argus Prototype: Aggregate Use of Load Modules as a High density Supercomputer, Concurrency and Computation: Practice and Experience, Volume 18. No. 15, 2006, Pages 1975-1987.

13. Kirk W. Cameron, Rong Ge, Xizhou Feng, High-Performance, Power-Aware Distributed Computing for Scientific Applications, IEEE Computer, Volume 38. No. 11, 2005, Pages 40-47.

14. Wu-chun Feng, Xizhou Feng, Rong Ge, Green Supercomputing Comes of Age: From Passe to In Vogue, IEEE IT Professional, 10(1): 17-23, January/February, 2008.

15. Ke-Qin Zhu, Rong Ge, Bao-Shu Xi, The Squeezing flow of Electro-rheological Fluids between Circular Plates, Journal of Tsinghua University (Science and Technology), No. 8, 1999.

Publications **Book Chapters**

1. Rong Ge and Kirk Cameron. Models and Techniques for Energy Efficient High Performance Computing, Book chapter in "Energy Aware Distributed Computing Systems". Wiley Series on Parallel and Distributed Computing.

2. Kirk W. Cameron, Rong Ge, Xizhou Feng, Designing Computational Clusters for Performance and Power, Advances in Computers, 2007.

Publications **Peer Reviewed, Referenced Conference and Workshop Papers and Posters**

1. Zheng Miao, Jiajia Li, Jon Calhoun, and Rong Ge. Performance Implication of Tensor Irregularity and Optimization for Distributed Tensor Decomposition. To be submitted.

2. Tyler Allen and Rong Ge. In-Depth Analyses of Unified Virtual Memory System for GPU Accelerated Computing. Accepted to the International Conference for High Performance Computing, Networking, Storage, and Analysis (SC21).

3. Thomas Randall, Tyler Allen and Rong Ge. FULL-W2V: Fully Exploiting Data Reuse for W2V on GPU-Accelerated Systems. Accepted to the International Conference on Supercomputing (ICS'21). (**Best Paper Award**).

4. Tyler Allen and Rong Ge. Demystifying GPU UVM Cost with Deep Runtime and Workload Analysis. Proceedings of the 35th International Parallel and Distributed Processing Symposium (IPDPS), 2021.

5. Tyler Allen and Rong Ge. Optimizing Performance in Power Bounded GPU Computing (Poster). Proceedings of The International Conference for High Performance Computing, Networking, Storage, and Analysis (SC20).

6. Zheng Miao, Jiajia Li, Jon Calhoun, and Rong Ge. Sparsity-Aware Distributed Tensor Decomposition (Poster). Proceedings of The International Conference for High Performance Computing, Networking, Storage, and Analysis (SC20).

7. Fei Ding, Hongda Li, Feng Luo, Hongxing Hu, Long Cheng, Hai Xiao, and Rong Ge. DeepPower: Non-intrusive and Deep Learning-based Detection of IoT Malware Using Power Side Channels. Proceedings of the 15th ACM Asia Conference on Computer and Communications Security. October 2020.

8. Pengfei Zou, Ang Li, Kevin Barker, and Rong Ge. Detecting Anomalous Computation with RNNs on GPU-Accelerated HPC Machines. Proceedings of the 49th International Conference on Parallel Processing (ICPP). Sept. 2020.

9. Pengfei Zou, Ang Li, Kevin Barker and Rong Ge. Indicator-Directed Dynamic Power Management forIterative Workloads on GPU-Accelerated Systems. Accepted by the IEEE/ACM International Symposium in Cluster, Cloud, and Grid Computing (CCGRID2020), May 2020.

10. Yancey Wang, Rong Ge and Shuang Qiu. Energy-Aware DNN Graph Optimization. Accepted by the workshop on Resource-Constrained Machine Learning in conjunction with the Conference on Machine Learning and Systems (MLSys20), March 2020.

11. Pengfei Zou, Ang Li, Kevin Barker and Rong Ge. Fingerprinting Anomalous Computation with RNN for GPGPU-Based HPC Machines. Proceedings of the 2019 IEEE International Symposium on Workload Characterization (IISWC19) (Short Paper), Nov. 2019.

12. Pengfei Zou, Ang Li, Kevin Barker and Rong Ge. Fingerprinting Anomalous Computation with RNN for GPGPU- Based HPC Machines. Proceedings of the International Conference for High Performance Computing, Networking, Storage, and Analysis (SC19), Nov. 2019. (Poster, ACM SRC Bronze Medal Award).

13. Bennett Cooper, Derek Rodriguez, Tyler Allen, Thomas Randall, and Rong Ge. Learning Page Access Patterns for Algorithms Programmed with GPU UVM. Proceedings of the International Conference for High Performance Computing, Networking, Storage, and Analysis (SC19), Nov. 2019. (Poster)

14. Zheng Miao, Jon Calhoun, and Rong Ge. A Framework for Resilient and Energy-Efficient Computing in GPU-Accelerated Systems. Proceedings of the International Conference for High Performance Computing, Networking, Storage, and Analysis (SC19), Nov. 2019. (Poster)

15. Pengfei Zou, Xizhou Feng, Rong Ge. Contention Aware Workload and Resource Co-Scheduling on Power-Bounded Systems. Proceedings of the IEEE International Conference on Networking, Architectures and Storage (NAS 2019), Aug. 2019.

16. Tyler Allen, Xizhou Feng, and Rong Ge. Slate: Enabling Workload-Aware Efficient Multiprocessing, Proceedings of the International Parallel & Distributed Processing Symposium (IPDPS 2019), May 2019.

17. Zheng Miao, Jon Calhoun, and Rong Ge. Energy Analysis and Optimization for Resilient Linear Systems. Proceedings of the IEEE International Conference on Cluster Computing (CLUSTER), Sept. 2018.

18. Pengfei Zou, Derek Rodriguez, and Rong Ge. POSTER: Maximizing Throughput on Power-Bounded HPC Systems, Proceedings of the IEEE International Conference on Cluster Computing (CLUSTER), Sept. 2018. (poster)

19. Pengfei Zou, Tyler Allen, Claude Davis IV, Xizhou Feng, and Rong GE. CLIP: Cluster-Level Intelligent Power Coordination for Power-Bounded Systems. Proceedings of the IEEE International Conference on Cluster Computing (CLUSTER), Sept. 2017.

20. Rong Ge, Pengfei Zou, and Xizhou Feng. Application-Aware Power Coordination on Power Bounded NUMA Multicore Systems. Proceedings of the 46th International Conference on Parallel Processing. August 2017.

21. Pengfei Xuan, Feng Luo, Rong Ge, and Pradip Srimani. Dynamic Management of in-Memory Storage for Efficiently Integrating Compute- and Data-intensive Computing on HPC Systems. Proceedings of the 17th IEEE/ACM International Symposium on Cluster, Cloud and Grid. May 2017.

22. Jieyang Chen, Li Tan, Panruo Wu, Dingwen Tao, Hongbo Li, Xin Liang, Sihuan Li, Rong Ge, Laxmi Bhuyan, Zizhong Chen. GreenLA: Green Linear Algebra Software for GPU-Accelerated Heterogeneous Computing. Proceedings of Supercomputing (SC16), Nov. 2016.

23. Tyler Allen and Rong Ge. Characterizing Power and Performance of GPU memory Access. The 4th workshop on Energy Efficient Super Computing (E2SC) in conjunction with Supercomputing (SC16), Nov. 2016.

24. Pengfei Xuan, Feng Luo, Rong Ge, Pradip K. Srimani. DynIMS: A Dynamic Memory Controller for In-memory Storage on HPC Systems. The 7th workshop on Big Data Analytics: Challenges and Opportunities in conjunction with Supercomputing (SC16), Nov. 2016.

25. Rong Ge, Xizhou Feng, Yangyang He, Pengfei Zou. The Case for Cross-Component Power Coordination on Power Bounded Systems. Proceedings of the 45th Annual International Conference on Parallel Processing (ICPP2016), August 2016.

26. Donna LaKomski, Ziliang Zong, Tongdan Jin, Rong Ge. Optimal Balance between Energy and Performance in Hybrid Computing Applications. The Sixth International Green Computing and Sustainable Computing Conference (IGSC2015), Dec. 2015.

27. Anurag Gupta, Sanjeev Gupta, Rong Ge, Ziliang Zong. CRUSH: Data Collection and Analysis Framework for Power Capped Data Intensive Computing. The 3rd International Workshop on Green Programming, Computing, and Data Processing (GPCDP) in conjunction with the International Green and Sustainable Computing Conference, Dec. 2015.

28. Pengfei Xuan, Jeffrey Denton, Pradip K. Srimani, Rong Ge, Feng Luo. Big Data Analytics on Traditional HPC Infrastructure Using Two-level Storage. International workshop on Data-Intensive Scalable Computing Systems in conjunction with SC15. Nov. 2015.

29. Ivor D. Addo, Duc Do, Rong Ge, Sheikh I. Ahamed. A Reference Architecture for Social Media Intelligence Applications in the Cloud. Proceedings of the 39th Annual Computer Software and Applications Conference (COMPSAC2015). July 2015.

30. Li Tan, Shuaiwen Leon Song, Panruo Wu, Zizhong Chen, Rong Ge, and Darren J. Kerbyson. Investigating the Interplay between Energy Efficiency and Resilience in High Performance Computing, Proceedings of the 29th IEEE International Parallel and Distributed Processing Symposium (IPDPS). 2015.

31. Joal Wood, Ziliang Zong, Qijun Gu and Rong Ge, Energy and Power Characterization of Parallel Programs Running on Intel Xeon Phi, Workshop on Parallel Programming Models and Systems Software for High-End Computing (P2S2), in conjunction with the International Conference on Parallel Processing (ICPP'14), Minneapolis, Minnesota, Sep. 2014.

32. Rong Ge, Xizhou Feng, Martin Burtscher and Ziliang Zong, Performance and Energy Modeling for Cooperative Hybrid Computing, Proceedings of the 9th IEEE International Conference on Networking, Architecture, and Storage (NAS 2014) (NAS'14), Tianjin, China, Aug. 2014.

33. Li Tan, LongXiang Chen, Zizhong Chen, Ziliang Zong, Rong Ge and Dong Li, DAEMON: Distributed Adaptive Energy-efficient Matrix-multiplicatiON, Proceedings of the International Conference on Computational Science (ICCS 14), Cairns, Australia, Jun. 2014.

34. Rong Ge, Xizhou Feng, Martin Burtscher and Ziliang Zong, POSTER: PEACH: Performance and Energy Aware Cooperative Hybrid Computing, Proceedings of the ACM International Conference on Computing Frontiers(CF2014), Cagliari, Italy, May. 2014. (poster)

35. Li Tan, Zizhong Chen, Rong Ge, Ziliang Zong and Dong Li. Adaptively Aggressive Energy Efficient DVFS Scheduling for Data Intensive Application. Proceedings of the 32nd IEEE international performance Computing and Communications Conference. Dec. 2013. San Diego, California.

36. Brian Romoser, Ziliang Zong, Ribel Fares, Joal Wood and Rong Ge. Using Intelligent Prefetching to Reduce Energy Consumption of a Large-Scale Hybrid Storage System. Proceedings of the the 32nd IEEE international performance Computing and Communications Conference. Dec. 2013. San Diego, California.

37. Li Tan, Longxiang Chen, Zizhong Chen, Ziliang Zong, Rong Ge, and Dong Li. Improving Performance and Energy Efficiency of Matrix Multiplication via Pipeline Broadcast. Proceedings of the IEEE Cluster. September, 2013.

38. Rong Ge, Ryan Vogt, Jahangir Majumder, Arif Alam, Martin Burtscher and Ziliang Zong. Effects of Dynamic Voltage and Frequency Scaling on a K20 GPU, Proceedings of the 42nd International Conference on Parallel Processing Workshops. October, 2013.

39. Ziliang Zong, Jonathan Bush, Rong Ge, Xin Li, Zizhong Chen. Energy-Efficient Scheduling for Multicore Systems with Bounded Resources. Proceedings of the 2013 IEEE International Conference on Green Computing and Communications. August, 2013.

40. Thomas Wirtz, Rong Ge, Ziliang Zong, Zizhong Chen. Power and Energy Characteristics of MapReduce Data Movements, Proceedings of the 4th Green Computing Conference. June 2013.

41. Rong Ge, Xizhou Feng, Thomas Wirtz, Ziliang Zong, and Zizhong Chen. eTune: A Power Analysis Framework for Data-Intensive Computing. Proceedings of the 41st International Conference on Parallel Processing Workshops, 2012.

42. Longxiang Chen, Zizhong Chen, Panruo Wu, Rong Ge, and Ziliang Zong. Energy Efficient Parallel Matrix-Matrix Multiplication for DVFS-Enabled Clusters. Proceedings of the 41st International Conference on Parallel Processing Workshops, 2012.

43. Ivan Zecena, Ziliang Zong, Rong Ge, Tongdan Jin, Zizhong Chen and Meikang Qiu. Energy Consumption Analysis of Parallel Sorting Algorithms Running on Multicore Systems. Proceedings of the Third International Green Computing Conference and Workshops, 2012.

44. Rong Ge, Xizhou Feng and Xian-He Sun, SERA-IO: Integrating Energy Consciousness into Parallel I/O Middleware, IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid), 2012.

45. Thomas Wirtz and Rong Ge. Improving MapReduce Energy Efficiency for Computation Intensive Workloads. The second International Green Computing Conference (IGCC2011), Jul 2011. (Orlando, USA)

46. Shuaiwen Song, Chun-Yi Su, Rong Ge, Abhinav Vishnu, and Kirk Cameron. Iso-energy-efficiency: An Approach to Power-Constrained parallel Computation, IEEE International Parallel and Distributed Processing Symposium, IPDPS2011.

47. Rong Ge, Xizhou Feng, Jiping Hu, and Xian-He Sun. POSTER: Assessing Energy Efficiency of parallel I/O Systems. The 22nd ACM/IEEE International Conference on High Performance Computing and Communications (SC 2010), November 2010. (poster)

48. Rong Ge, Evaluating Parallel I/O Energy Efficiency, IEEE/ACM International Conference on Green Computing and Communications (GreenCom2010), Hangzhou, China.

49. Dong Li, Rong Ge, and Kirk Cameron, Unified Dynamic Thermal Control in High End Computing, International Conference on Parallel Processing, 2010.

50. Rong Ge, Xizhou Feng, Sindhu Subramanya, and Xian-He Sun, Characterizing Energy Efficiency of Parallel I/O Intensive Applications on Power-Aware Clusters. Proceedings of the 24th IEEE International Parallel and Distributed Processing Symposium (IPDPS'10), Apr 2010. (Atlanta, GA)

51. Craig Struble, Sheikh Iqbal Ahamed, Dennis Brylow, James Early, Praveen Madiraju, Rong Ge, Stephen Merrill, Computational Thinking for the Sciences: A Three Day Workshop For High School Science Teachers. Proceedings of the 41th SIG on Computer Science Education (SIGCSE2010), March 2010. (Milwaukee, WI)

52. Byron Galbraith, Craig Struble, Scott Beardsley, and Rong Ge, POSTER: CUSUMMA: Scalable Matrix-Matrix Multiplication on GPUs with CUDA. The 21st ACM/IEEE International Conference on High Performance Computing and Communications (SC 2009), November 2009. (poster)

53. Rong Ge, Xizhou Feng, Kirk Cameron, Modeling and Evaluating Energy-Performance Efficiency of Parallel Processing on Multicore Based Power Aware Systems, The 5th High Performance Power Aware Computing workshop in conjunction with the 23th IEEE International Parallel and Distributed Processing Symposium (IPDPS'09), May 2009. (Rome, Italy)

54. Zhenwei Cao, Layne T. Watson, Kirk W. Cameron, Rong Ge, A Power Aware Study for VTDIRECT95 Using DVFS, High Performance Computing Symposium, June 2009. (Ontario, CA)

55. Rong Ge, Xizhou Feng, Wuchun Feng, and Kirk Cameron, CPU MISER: A Performance-Directed, Run-Time System for Power-Aware Clusters, International Conference on Parallel Processing (ICPP07), Sept. 2007. (Xi'an, China)

56. Rong Ge, and Kirk W. Cameron, Power-Aware Speedup, Proceedings of the 21st IEEE International Parallel and Distributed Processing Symposium (IPDPS 07), March 2007. (Long Beach, CA)

57. Rong Ge, Xizhou Feng, and Kirk W. Cameron, Performance-constrained, Distributed DVS Scheduling for Scientific Applications on Power-aware Clusters, Proceedings of 2005 ACM/IEEE conference on High Performance Computing, Networking and Storage Conference (SC 2005), Seattle, WA, 2005.

58. Xizhou Feng, Rong Ge, and Kirk W. Cameron, Power and Energy Profiling of Scientific Applications on Distributed Systems, Proceedings of the 19th IEEE International Parallel and Distributed Processing Symposium (IPDPS 05), April 2005. (Denver, CO)

59. Rong Ge, Xizhou Feng, and Kirk W. Cameron, Improvement of Power-Performance Efficiency for High-End Computing, Proceedings of the 19th IEEE International Parallel and Distributed Processing Symposium (IPDPS'05) - HPPAC '05 Workshop, April 2005. (Denver, CO)

60. Xizhou Feng, Rong Ge, and Kirk W. Cameron, ARGUS: Supercomputing in 1/10 Cubic Meter. Parallel and Distributed Computing and Networks (PDCN 2005), February 2005.

61. Kirk W. Cameron, Rong Ge, Xizhou Feng, Drew Varner, and Chris Jones, POSTER: High-performance, Power-aware Distributed Computing Framework. The 16th ACM/IEEE International Conference on High Performance Computing and Communications (SC 2004), November 2004. (poster)

62. Kirk W. Cameron and Rong Ge, Predicting and Evaluating Distributed Communication Performance, Proceedings of the 16th ACM/IEEE International Conference on High Performance Computing, Networking and Storage Conference (SC 2004), November, 2004. (Pittsburgh, PA)

Publications **Theses**

1. Rong Ge. Theories and Techniques for Efficient High-End Computing, Ph.D. thesis. Virginia Tech, Aug. 2007. (Doctoral Showcase in Supercomputing Conference 2007)

2. Rong Ge. The flow of Electro-rheological Fluids in Electro-rheological Devices, Master thesis. Tsinghua University, 1998. (Best Graduate Thesis Award)

3. Rong Ge. The Parallel-Flow of Electro-rheological Fluids in Elctro-rheological Devices, Bachelor thesis. Tsinghua University, 1995.