Dr. SHENG DI

Computer Scientist, **MCS, Argonne National Laboratory**
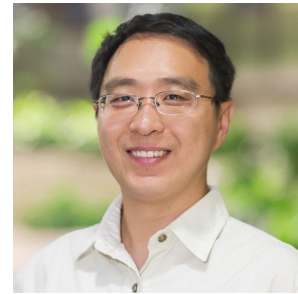*Senior Member* **of IEEE**
Scientist at Large through the *Consortium for Advanced Science and Engineering* at the University of Chicago.
Institute Fellow of Northwestern-Argonne Institute of Science and Engineering (NAISE)
phone: (+1) 630-252-1520, sdi1@anl.gov
Home page: http://www.mcs.anl.gov/~shdi
Google citation: https://scholar.google.co.il/citations?user=zh3foWUAAAAJ&hl=en

Education

- 2007~2011, Ph.D., The University of Hong Kong, Hong Kong, China
- 2004~2007, M.Phil./Master's degree, Department of Computer Science, Huazhong University of Science and Technology, Wuhan, China
- 2000~2004, B.S., Computer Science, South-Central University for Nationalities, China

Research Experience

- 2019~present   Computer Scientist, MCS, Argonne National Laboratory (USA).
- 2017~2019   Assistant Computer Scientist, MCS, Argonne National Laboratory (USA).
- 2014~2017   Postdoctoral Fellow, Argonne National Laboratory (USA)
- 2012~2014   Postdoctoral Researcher, INRIA (France)

Entire Academic Accomplishments (2006-2022)

- **130+** refereed journal/conference/workshop/poster publications
- **120**+ invited reviews on international conference/journal papers
- **50**+ invited program committee members or program chairs
- **3738** citations of his publications (based on Google scholar up to 09/14/2022)
- h-index=**32**, i10-index=**75** (based on Google scholar)
- **40+** invited talks/presentations
- **10+** key software/libraries in the HPC and cloud community
- **30+** mentored students in total

During the past 17 years, Dr. Di has made a great contribution on the distributed computing research related to many significant research issues, including in-situ high performance computing (HPC) data compression for large-scale scientific simulations, detection of silent data corruption for exa-scale computing, optimization of fault tolerance performance for HPC and cloud systems, optimization of cloud resource allocation, optimization of P2P communication and Grid computing performance, optimization of hostload prediction for Google cluster, and so on.

The lossy data compressor (called SZ) he developed is one of the best lossy compressors for significantly reducing the scientific data size while keeping the data valid for scientists on demand meanwhile. This library has been widely used by 10+ projects/researchers (UCAR, LANL, USTC, JSC, UIUC, ANL, Politecnico di Milano, Riken, etc.) from multiple countries (including USA, Germany, France, China, Japan, Italy, etc). Researchers have demonstrated in their experiments that SZ is the best in class from among all lossy compressors in many cases. SZ has been integrated into the SPACK software stack and is one of the most important lossy compressors designated to the exa-scale computing (ECP) project under the Department of Energy (DOE). The corresponding publications appear in multiple top conferences/journals such as TPDS and IPDPS.

The adaptive impact-driven detector (AID) developed by Dr. Di is a very efficient library that can detect the silent data corruption (SDC) effectively for extreme-scale HPC scientific applications. This library has been demonstrated by many researchers as one of the best SDC error detectors in the HPC environment. He also explored other effective SDC detection methods with his colleagues. All

his publications appear in the outstanding journals TPDS, SUSCOM and a set of well-known conferences such as CCGrid and Europar.

The Z-checker toolkit/library he developed is a critical library to assess the compression quality comprehensively and conveniently for researchers. It is a significant module in the ECP-CODAR project. It can provide a significant assistance for scientists to select the best-fit lossy compressor based on their specific scientific dataset and for data compressor developers to understand deeply the pros and cons of the compressors and improve the compression quality accordingly. It was published in a good journal IJHPCA.

He is the first researcher to build a theoretical model of optimizing multi-level checkpointing intervals for HPC applications based on fault tolerance interface (FTI). He proposed an efficient algorithm to optimize the multi-level checkpointing intervals, which has been very effective based on the evaluation of running real -world scientific applications on a supercomputer. His related publications appear in top journals/conference including TPDS, SC, and IPDPS.

He developed a very effective hostload prediction algorithm based on Google cloud data center, and also derived a state-of-the-art formula that can optimize the checkpointing interval for cloud tasks, which is the first attempt to solve the cloud computing fault tolerance issue by checkpointing model. They were published in the top conference SC in 2012 and 2013.

The optimal algorithm he proposed for optimizing cloud resource allocation can significantly improve the throughput of the resource allocation and minimize the payment cost from the perspective of users. The related publications appear in top journals TPDS, TC, JPDC, and well known conference such as CLOUD and ICPP.

Awards and Honors

- 2022, Best paper finalist, IEEE/ACM The International Conference for High Performance computing, Networking, Storage and Analysis (IEEE/ACM SC2022), 2022.
- 2021, DOE ASCR Early Career Research Program Award (ECRP)
- 2021, DOE R&D 100 award (in recognition of leading SZ – a lossy compression framework for scientific data)
- 2019, DOE R&D 100 award (in recognition of participating in SCR: Scalable Checkpoint/Restart Framework)
- 2019, IEEE-Chicago Distinguished Research and Development Award, in recognition of the research on scientific data compression and contribution to software development
- 2018 IEEE-Chicago Distinguished Mentoring Award (in recognition of mentoring as a scientist in the area of data compression and software development), 2018.
- Overall Best paper award and Best paper award in Application, Algorithms and Libraries track: IEEE International Conference on Cluster Computing (IEEE Cluster 2018), 2018.
- Best paper award in Data, Storage, and Visualization track: IEEE International Conference on Cluster Computing (IEEE Cluster 2018), 2018.
- Best paper nominated: The 8th IEEE Symposium on Large Data Analysis and Visualization (IEEE LDAV) in conjunction with IEEE VIS 2018.
- Best paper nominated: IEEE International Conference on Cluster Computing (IEEE Cluster 2014), 2014.
- Best paper nominated: 40th International Conference on Parallel Processing (IEEE ICPP2011), 2011.
- Best student paper ward: International Conference on Utility and Cloud Computing
- Best paper award: International Conference on the Digital Society (IEEE ICDS2008), 2008.
- Sum Tuition Scholarship, 2005-2006, Huazhong University of Science and Technology
- "Triple-A" Outstanding Student, 2005-2006, Huazhong University of Science and Technology
- First-Class Scholarship, 2004-2005, Huazhong University of Science and Technology
- Sum Tuition Scholarship, 2004-2005, Huazhong University of Science and Technology
- Excellent Leadership Award, 2003-2004, South-Central University for Nationalities
- Second-Class Scholarship, 2002-2003, South-Central University for Nationalities (top 2%)
- "Triple-A" Outstanding Student, 2002-2003, South-Central University for Nationalities
- First-class Scholarship, 2001-2002, South-Central University for Nationalities (top 1%)
- "Triple-A" Outstanding Student, 2000-2001, South-Central University for Nationalities

Funding

- PI: NSF OAC ROCCI, Elements: ROCCI: Integrated Cyberinfrastructure for In Situ Lossy Compression Optimization Based on Post Hoc Analysis Requirements - $320K.
- PI: DOE ASCR SDR (Early Career Award): Scalable Dynamic Scientific Data Reduction - $2.5M.
- Co-PI: DOE ASCR Data Reduction: "Automatic Generation of Algorithms for High-Speed Reliable Lossy Compression", 2021-2024. (PI: Martin Burtscher) - $400,000.
- Co-PI: NSF: "CDS&E: Collaborative Research: HyLoC: Objective-driven Adaptive Hybrid Lossy Compression", 2020-2023. (PI: Dingwen Tao) - $264,429
- Co-PI: NSF: "ALETHEIA: A Framework for Automatic Detection/Correction of Corruptions in Extreme Scale Scientific Executions", 2016-2021. (PI: Tom Peterka) - $250,000
- Senior Personnel: DOE ECP: "VeloC-SZ", renewal and combination of the ECP VeloC and ECP VeloC/SZ projects, 2019-2023. (PI: Franck Cappello) - $4,862,531
- Senior Personnel: DOE CODAR: "CODAR: Co-design Center for Online Data Analyhsis and Reduction at Exascale", 2016-2020 (PI: Ian Foster) - $5,438,715
- Senior Personnel: ARAMCO: "Exploration of Lossy Data Compression for Seismic Imaging Application", 2019-2021. (PI: Franck Cappello) - $1,026,853

Professional Activities

- Member of ACM
- Senior Member of IEEE
- Scientist at Large through the Consortium for Advanced Science and Engineering at the University of Chicago
- Institute Fellow of Northwestern-Argonne Institute of Science and Engineering (NAISE)

Publications

Refereed Journal Articles

1. Xin Liang, Kai Zhao, **Sheng Di**, Sihuan Li, Robert Underwood, Ali M. Gok, Jiannan Tian, Junjing Deng, Jon C. Calhoun, Dingwen Tao, Zizhong Chen, Franck Cappello, "SZ3: A Modular Framework for Composing Prediction-Based Error-Bounded Lossy Compressors", IEEE Transactions on Big Data (***IEEE TBD***), 2022.

2. Yuanjian Liu, **Sheng Di**, Kai Zhao, Sian Jin, Cheng Wang, Kyle Chard, Dingwen Tao, Ian Foster, Franck Cappello, "Optimizing Error-Bounded Lossy Compression for Scientific Data with Diverse Constraints", in IEEE Transactions on Distributed and Computer Systems (***IEEE TPDS***), 2022.

3. Ian Foster, Mark Ainsworth, Julie Bessac, Franck Cappello, Jong Choi, **Sheng Di**, et al., "Online data analysis and reduction: An important Co-design motif for extreme-scale computers", in The International Journal of High Performance Computing Applications (***IJHPCA***), 2022.

4. Robert Underwood, Jon C. Calhoun, **Sheng Di**, Amy Apon, Franck Cappello, "OptZConfig: Efficient Parallel Optimization of Lossy Compression Configuration", in IEEE Transactions on Distributed and Computer Systems (***IEEE TPDS***), 2022.

5. Ian Foster, Mark Ainsworth, Julie Bessac, Franck Cappello, Jong Choi, **Sheng Di**, et al. "Online data analysis and reduction: An important Co-design motif for extreme-scale computers", in The International Journal of High Performance Computing Applications (***IJHPCA***), 2021.

6. Kai Zhao, **Sheng Di**, Sihuan Li, Xin Liang, Yujia Zhai, Jieyang Chen, Kaiming Ouyang, Franck Cappello and Zizhong Chen, "FT-CNN: Algorithm-Based Fault Tolerance for Convolutional Neural Networks", IEEE Transactions on Parallel and Distributed Systems (***IEEE TPDS***) Special Section on Parallel and Distributed Computing Techniques for AI, ML and DL (***TPDS-SS-AI 2020***), 2020.

7. Hao Fan, Song Wu, Xinyu Zhao, Zhenjiang Xie, **Sheng Di**, Jiang Xiao, Chen Yu, Hai Jin, "Accelerating Parallel Applications in Cloud Platforms via Adaptive Time-Slice Control", IEEE Transactions on Computers (***IEEE TC***), 2020.

8. Xiangyu Zou, Tao Lu, Wen Xia, Xuan Wang, Weizhe Zhang, Haijun Zhang, **Sheng Di**, Dingwen Tao, and Franck Cappello, "Performance Optimization for Relative-Error-Bounded Lossy Compression on Scientific Data", IEEE Transactions on Parallel and Distributed Systems (***IEEE TPDS***), 2020.

9. Franck Cappello, **Sheng Di**, Sihuan Li, Xin Liang, Ali M. Gok, Dingwen Tao, Chun Hong Yoon , Xin-Chuan Wu, Yuri Alexeev, and Federic T. Chong, "Use cases of lossy compression for floating-point data in scientific datasets," in The International Journal of High Performance Computing Applications (***IJHPCA***), 33(6), 1201–1220, 2019.

10. Dingwen Tao, **Sheng Di**, Xin Liang, Zizhong Chen, and Franck Cappello, "Optimizing Lossy Compression Rate-Distortion from Automatic Online Selection between SZ and ZFP," IEEE Transactions on Parallel and Distributed Systems (***IEEE TPDS***), 30(8):1857-1871, 2019.

11. **Sheng Di**, Dingwen Tao, Xin Liang, and Franck Cappello, "Efficient Lossy Compression for Scientific Data based on Pointwise Relative Error Bound," IEEE Transactions on Parallel and Distributed Systems (***IEEE TPDS***), 30(2):331-345, 2019.

12. **Sheng Di**, Hanqi Guo, Rinku Gupta, Eric R. Pershey, Marc Snir, and Franck Cappello, "Exploring Properties and Correlations of Fatal Events in a Large-Scale HPC System," IEEE Transactions on Parallel and Distributed Systems (***IEEE TPDS***), 30(2):361-374, 2019.

13. Xinhou Wang, Kezhi Wang, Song Wu, **Sheng Di**, Hai Jin, Kun Yang, and Shumao Ou, "Dynamic Resource Scheduling in Mobile Edge Cloud with Cloud Radio Access Network," in IEEE Transactions on Parallel and Distributed Systems (***IEEE TPDS***), 29(11):2429-2445, 2018.

14. Omer Subasi, **Sheng Di**, Leonardo Bautista-Gomez, Prasanna Balaprakash, Osman Unsal, Jesus Labarta, Adrian Cristal, Sriram Krishnamoorthy, and Franck Cappello, "Exploring the Capabilities of Support Vector Machines in Detecting Silent Data Corruptions,"Journal of Sustainable Computing, Informatics and Systems (***SUSCOM***) 19:277-290, 2018.

15. Eduardo Berrocal, Leonardo Bautista-Gomez, **Sheng Di**, Zhiling Lan, and Franck Cappello, "Toward General Software Level Silent Data Corruption Detection for Parallel Applications," IEEE Transactions on Parallel and Distributed Systems (***IEEE TPDS***) 28(12):3642-3655, 2017.

16. Dingwen Tao, **Sheng Di**, Hanqi Guo, Zizhong Chen, and Franck Cappello, "Z-checker: A Framework for Assessing Lossy Compression of Scientific Data," The International Journal of High Performance Computing Applications (***IJHPCA17***) 33(2):285-303, 2017.

17. **Sheng Di** and Franck Cappello, "Optimization of Error-Bounded Lossy Compression for Hard-to-Compress HPC Data," IEEE Transactions on Parallel and Distributed Systems (***IEEE TPDS***) 29(1):129-143, 2017.

18. Song Wu, Yihong Wang, Wei Luo, **Sheng Di**, Haibao Chen, Xiaolin Xu, Hai Jin, and Ran Zheng, "ACStor: Optimizing Access Performance of Virtual Disk Images in Clouds," IEEE Transactions on Parallel and Distributed Systems (***IEEE TPDS***)28(9):2414-2427, 2017.

19. Xuanhua Shi, Junling Liang, Xuan Luo, **Sheng Di**, Bingsheng He, Lu Lu, and Hai Jin, "Frog: Asynchronous Graph Processing on GPU with Hybrid Coloring Model," IEEE Transactions on Knowledge and Data Engineering (***IEEE TKDE***)30(1):29-42, 2017.

20. **Sheng Di**, Yves Robert, Frédéric Vivien, and Franck Cappello, "Towards an Optimal Online Checkpoint Solution under a Two-Level HPC Checkpoint Model," IEEE Transactions on Parallel and Distributed Systems (***IEEE TPDS***) 28(1):244-259, 2017.

21. **Sheng Di** and Franck Cappello, "Adaptive Impact-Driven Detection of Silent Data Corruption for HPC Applications," IEEE Transactions on Parallel and Distributed Systems (***IEEE TPDS***) 27(10):2809-2823, 2016.

22. Song Wu, Haibao Chen, **Sheng Di**, Bingbing Zhou, Zhenjiang Xie, Hai Jin, and Xuanhua Shi, "Synchronization-Aware Scheduling for Virtual Clusters in Cloud," IEEE Transactions on Parallel and Distributed Systems (***IEEE TPDS***) 26(10):2880-2902, 2014.

23. Hai Jin, Xinhou Wang, Song Wu, **Sheng Di**, and Xuanhua Shi, "Towards Optimized Fine-Grained Pricing of IaaS Platform," IEEE Transactions on Cloud Computing (***IEEE TCC***) 3(4):436-448, 2014.

24. **Sheng Di** and Franck Cappello, "GloudSim: Google Trace based Cloud Simulator with Virtual Machines," Journal of Software – Practice and Experience (***Wiley SPE***) 45(11), 1571-1590, 2014.

25. **Sheng Di**, Derrick Kondo, and Franck Cappello, "Characterizing and Modeling Cloud Applications/Jobs on a Google Data Center," in Journal of Supercomputing (***Springer JS***), 69(1):139-160, 2014.

26. **Sheng Di**, Derrick Kondo, and Cho-Li Wang, "Optimization of Composite Cloud Service Processing with Virtual Machines," IEEE Transactions on Computers (***IEEE TC***) 2014.

27. **Sheng Di**, Derrick Kondo, and Walfredo Cirne, "Google Hostload Prediction based on Bayesian Model with Optimized Feature Combination," Journal of Parallel Distributed Computing (***Elsevier JPDC***) 74(1):1820-1832, 2014.

28. **Sheng Di** and Cho-Li Wang, "Error-tolerant Resource Allocation and Payment Minimization for Cloud System," IEEE Transactions on Parallel and Distributed Systems **(*IEEE TPDS*)** 24(6): 1097-1106, 2013.

29. **Sheng Di** and Cho-Li Wang, "Dynamic Optimization of Multi-Attribute Resource Allocation in Self-Organizing Clouds," IEEE Transactions on Parallel and Distributed Systems **(*IEEE TPDS*)** 24(3):464-478, 2012, http://doi.ieeecomputersociety.org/10.1109/TPDS.2013.144.

30. **Sheng Di**, Cho-Li Wang, and Franck Cappello, "Adaptive Algorithm for Minimizing Cloud Task Length with Load Prediction Errors," IEEE Transactions on Cloud Computing **(*IEEE TCC*)** 2(2):194-207, 2013.

31. **Sheng Di** and Cho-Li Wang, "Decentralized Proactive Resource Allocation for Maximizing Throughput of P2P Grid," Journal of Parallel Distributed Computing **(*Elsevier JPDC*)**,72(2):308-321, 2012, **doi:10.1016/j.jpdc.2011.10.010**, available online 4 Nov. 2011.

32. **Sheng Di**, Cho-Li Wang, and Ling Chen, "Ex-Post Efficient Resource Allocation for Self-organizing Cloud," Journal of Computers and Electrical Engineering **(*elsevier JCEE*)**,39(7):2342-2356, 2013, **http://dx.doi.org/10.1016/j.compeleceng.2012.12.018**.

33. Yinfeng Wang, Hao Liu, **Sheng Di** and Haoyu Hu, "A Parallel Index Mechanism for Large Scale High Dimensional Data," Journal of Huazhong University of Science and Technology (Nature Science Edition, 39(1), June 2011, in Chinese.

Refereed Conference Publications

34. Zhaoyuan Su, Sheng Di, Ali Murat Gok, Yue Cheng, Franck Cappello, "Understanding Impact of Lossy Compression on Derivative-related Metrics in Scientific Datasets", in Proceedings of the 7th International Workshop on Data Reduction for Big Scientific Data (*DRBSD-8*), in conjunction with IEEE/ACM The International Conference for High Performance computing, Networking, Storage and Analysis (*IEEE/ACM SC2022*), 2022.

35. Robert Underwood, Julie Bessac, **Sheng Di**, Franck Cappello, "Understanding the Effects of Modern Compressors on the Community Earth Science Model", in Proceedings of the 7th International Workshop on Data Reduction for Big Scientific Data (*DRBSD-8*), in conjunction with IEEE/ACM The International Conference for High Performance computing, Networking, Storage and Analysis (*IEEE/ACM SC2022*), 2022.

36. Maxim Dmitriev, Thierry Tonellot, Hussain Salim, **Sheng Di**, "Error-bounded lossy compression in Reverse Time Migration", Sixth EAGE High Performance Computing Workshop (*EAGE22*), 2022.

37. Griffin Dube, Jiannan Tian, **Sheng Di**, Dingwen Tao, Jon C. Calhoun, Franck Cappello, "Efficient Error-Bounded Lossy Compression for CPU Architectures", 30th International Symposium on the Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (*IEEE MASCOTS 2022*), Nice, France, 2022.

38. Ruiwen Shan, **Sheng Di**, Jon C. Calhoun, Franck Cappello, "Exploring Light-weight Cryptography for Efficient and Secure Lossy Data Compression", in *IEEE CLUSTER2022*, 2022.

39. Yafan Huang, Shengjian Guo, **Sheng Di**, Guanpeng Li, Franck Cappello, "Mitigating Silent Data Corruptions in HPC Applications across Multiple Program Inputs", IEEE/ACM The International Conference for High Performance computing, Networking, Storage and Analysis (*IEEE/ACM SC2022*), 2022. **best paper finalist**

40. Sian Jin, Dingwen Tao, Houjun Tang, **Sheng Di**, Suren Byna, Zarija Lukic, Franck Cappello, "Accelerating Parallel Write via Deeply Integrating Predictive Lossy Compression with HDF5", IEEE/ACM The International Conference for High Performance computing, Networking, Storage and Analysis (*IEEE/ACM SC2022*), 2022.

41. Jinyang Liu, **Sheng Di**, Kai Zhao, Xin Liang, Zizhong Chen, Franck Cappello, "Dynamic Quality Metric Oriented Error Bounded Lossy Compression for Scientific Datasets", IEEE/ACM The International Conference for High Performance computing, Networking, Storage and Analysis (*IEEE/ACM SC2022*), 2022.

42. Khalid Ayedh Alharthi, Arshad Jhumka, **Sheng Di**, Franck Cappello, "Clairvoyant: A Log-Based Transformer-Decoder for Failure Prediction in Large-Scale Systems", International Conference on Supercomputing (*ACM ICS2022*), 2022.

43. Xiaodong Yu, **Sheng Di**, Kai Zhao, Jiannan Tian, Dingwen Tao, Xin Liang, Franck Cappello, "Ultra-fast Error-bounded Lossy Compression for Scientific Dataset", 31st International Symposium on High-Performance Parallel and Distributed Computing (*ACM HPDC2022*), 2022.

44. Kai Zhao, **Sheng Di**, Danny Perez, Xin Liang, Zizhong Chen, Franck Cappello, "MDZ: An Efficient Error-bounded Lossy Compressor for Molecular Dynamics", in Proceeding of the 38th IEEE International Conference on Data Engineering (***IEEE ICDE2022***), Virtual Event, May 9-12, 2022.

45. Sian Jin, **Sheng Di**, Jiannan Tian, Suren Byna, Dingwen Tao, and Franck Cappello, "Significantly Improving Prediction-Based Lossy Compression Via Ratio-Quality Modeling", in Proceedings of the 38th IEEE International Conference on Data Engineering (***IEEE ICDE2022***), Virtual Event, May 9-12, 2022.

46. Cody Rivera, **Sheng Di**, Xiaoding Yu, Jiannan Tian, Dingwen Tao, and Franck Cappello, "Optimizing Huffman Decoding for Error-Bounded Lossy Compression on GPUs", in Proceedings of the 36th IEEE International Parallel and Distributed Processing Symposium (***IPDPS2022***), Lyon, France, May 30-June 3, 2022.

47. Franck Cappello, **Sheng Di**, and Robert Underwood, "Improving lossy compression for climate datasets with SZ3", ***EGU General Assembly 2022***, Vienna, Austria, 23-27 May 2022, EGU22-9741, https://doi.org/10.5194/egusphere-egu22-9741, 2022.

48. Julie Bessac, David Krasowksa, Robert Underwood, **Sheng Di**, Jon C. Calhoun, and Franck Cappello, "Exploring Lossy Compressibility through Statistical Correlations of Geophysical Datasets", ***EGU General Assembly 2022***, Vienna, Austria, 23-27 May 2022, EGU22-9948, https://doi.org/10.5194/egusphere-egu22-9948, 2022.

49. Robert Underwood, **Sheng Di**, and Franck Cappello, "Understanding the effects of Modern Lossless and Lossy Compressors on the Community Earth Science Model", ***EGU General Assembly 2022***, Vienna, Austria, 23-27 May 2022, EGU22-10774, https://doi.org/10.5194/egusphere-egu22-10774, 2022.

50. Xavier Yepes-Arbos, **Sheng Di**, Kim Serradell, Franck Cappello, and Mario C. Acosta, "Exploring the SZ lossy compressor use for the XIOS I/O server", ***EGU General Assembly 2022***, Vienna, Austria, 23-27 May 2022, EGU22-9153, https://doi.org/10.5194/egusphere-egu22-9153, 2022.

51. Xiaodong Yu, **Sheng Di**, Ali Murat Gok, Dingwen Tao, Franck Cappello, "cuZ-Checker: A GPU-Based Ultra-Fast Assessment System for Lossy Compressions", in ***IEEE Cluster2021***, 2021.

52. Ruiwen Shan, **Sheng Di**, Jon C. Calhoun, Franck Cappello, "Towards Combining Error-bounded Lossy Compression and Cryptography for Scientific Data", in IEEE High Performance Extreme Computing (***IEEE HPEC2021***), 2021.

53. Jinyang Liu, **Sheng Di**, Kai Zhao, Sian Jin, Dingwen Tao, Xin Liang, Zizhong Chen, Franck Cappello, "Exploring Autoencoder-Based Error-Bounded Compression for Scientific Data", in ***IEEE Cluster2021***, 2021.

54. Jiannan Tian, **Sheng Di**, Xiaodong Yu, Cody Rivera, Kai Zhao, Sian Jin, Yunhe Feng, Xin Liang, Dingwen Tao, Franck Cappello, "Optimizing Error-Bounded Lossy Compression for Scientific Data on GPUs", in ***IEEE Cluster2021***, 2021.

55. Hongyuan Liu, Bogdan Nicolae, **Sheng Di**, Franck Cappello, Adwait Jog, "Accelerating DNN Architecture Search at Scale using Selective Weight Transfer", in ***IEEE Cluster2021***, 2021.

56. Sihuan Li, **Sheng Di**, Kai Zhao, Xin Liang, Zizhong Chen, and Franck Cappello, "Resilient Error-bounded Lossy compressor for Data Transfer", in the 33rd ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis (***SC2021***), St. Louis, Missouri, USA, Nov 14 - 19, 2021.

57. Kai Zhao, **Sheng Di**, Maxim Dmitriev, Thierry-Laurent D. Tonellot, Zizhong Chen, and Franck Cappello, "Optimizing Error-Bounded Lossy Compression for Scientific Data by Dynamic Spline Interpolation", Proceeding of the 37th IEEE International Conference on Data Engineering (***ICDE2021***), Chania, Crete, Greece, Apr 19 - 22, 2021.

58. Khalid Ayedh Alharthi, Arshad Jhumka, **Sheng Di**, Franck Cappello, Edward Chuah, "Sentiment Analysis based Error Detection for Large-Scale Systems", IEEE/IFIP 51st International Conference on Dependable Systems and Networks (***IEEE DSN2021***), 2021.

59. Jiannan Tian, Cody Rivera, **Sheng Di**, Jieyang Chen, Xin Liang, Dingwen Tao, and Franck Cappello, "Revisiting Huffman Coding: Toward Extreme Performance on Modern GPU Architectures", Proceedings of the 35th IEEE International Parallel and Distributed Processing Symposium (*IPDPS2021*), Portland, Oregon, May 17-21, 2021.

60. Jiannan Tian, **Sheng Di**, Kai Zhao, Cody Rivera, Megan Hickman, Robert Underwood, Sian Jin, Xin Liang, Jon Calhoun, Dingwen Tao, and Franck Cappello, "cuSZ: An Efficient GPU Based Error-Bounded Lossy Compression Framework for Scientific Data", Proceedings of the 29th International Conference on Parallel Architectures and Compilation Techniques (*PACT'20*), Atlanta, GA, USA, October 3 - 7, 2020.

61. Sihuan Li, **Sheng Di**, Kai Zhao, Xin Liang, Zizhong Chen and Franck Cappello, "Towards End-to-end SDC Detection for HPC Applications Equipped with Lossy Compression", in *IEEE CLUSTER 2020*, 2020.

62. Franck Cappello, **Sheng Di**, Ali M. Gok, "Fulfilling the Promises of Lossy Compression forScientific Applications", Smoky Mountain Computational Science and Engineering Conference (*SMC2020*), USA, Aug. 25-27, 2020.

63. Kai Zhao, **Sheng Di**, Xin Liang, Sihuan Li, Dingwen Tao, Zizhong Chen, Franck Cappello, "Significantly Improving Lossy Compression for HPC Datasets with Second-Order Prediction and Parameter Optimization", 29th International Symposium on High-Performance Parallel and Distributed Computing (*ACM HPDC20*), 2020.

64. Robert Underwood, **Sheng Di**, Jon Calhoun, Franck Cappello, "FRaZ: A Generic High-Fidelity Fixed-Ratio Lossy Compression Framework for Scientific Floating-point Data", in Proceedings of the 34th IEEE International Parallel and Distributed Symposium (*IEEE IPDPS2020*), New Orleans, LA, May 18-22, 2020.

65. Jiannan Tian, **Sheng Di**, Chengming Zhang, Xin Liang, Sian Jin, Dazhao Cheng, Dingwen Tao, and Franck Cappello, "waveSZ: A Hardware-Algorithm Co-Design of Efficient Lossy Compression for Scientific Data", Proceedings of the 25th ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (*ACM PPoPP2020*), San Diego, California, USA, February 22-26, 2020.

66. Xin Liang, Hanqi Guo, Sheng Di, Franck Cappello, Mukund Raj, Chunhui Liu, Kenji Ono, Zizhong Chen and Tom Peterka, "Towards Feature Preserving 2D and 3D Vector Field Compression", in the 13rd IEEE Pacific Visualization Symposium (*IEEE PacificVis2020*), Tianjin, China, Apr 14-17, 2020.

67. Tasmia Reza, Kristopher Keipert, Sheng Di, Xin Liang, Jon C. Calhoun, Franck Cappello, "Analyzing the Performance and Accuracy of LossyCheckpointing on Sub-iteration of NWChem," in Proceedings of the 5th International Workshop on Data Reduction for Big Scientific Data (*DRBSD-5*), in conjunction with IEEE/ACM 29th The International Conference for High Performance computing, Networking, Storage and Analysis (*SC2019*).

68. Xin Liang, **Sheng Di**, Dingwen Tao, Sihuan Li, Bogdan Nicolae, Zizhong Chen, Franck Cappello, "Improving Performance of Data Dumping with Lossy Compression for Scientific Simulation," in *IEEE CLUSTER 2019*, 2019.

69. Xin-Chuan Wu, **Sheng Di**, Emma Maitreyee Dasgupta, Yuri Alexeev, Hal Finkel, Frederic T. Chong, "Full State Quantum Circuit Simulation by Using Data Compression," to appear in IEEE/ACM 30th The International Conference for High Performance computing, Networking, Storage and Analysis (*IEEE/ACM SC2019*), 2019.

70. Xin Liang, **Sheng Di**, Sihuan Li, Dingwen Tao, Bogdan Nicolae, Zizhong Chen, Franck Cappello, "Significantly Improving Lossy Compression Quality based on an Optimized Hybrid Prediction Model," to appear in IEEE/ACM 30th International Conference for High Performance computing, Networking, Storage and Analysis (*IEEE/ACM SC2019*), 2019.

71. Sihuan Li, Hongbo Li, Xin Liang, Jieyang Chen, Elizabeth Giem, Kaiming Ouyang, Kai Zhao, **Sheng Di**, Franck Cappello, and Zizhong Chen, "FT-iSort: Efficient Fault Tolerance for Introsort," to appear in IEEE/ACM 30th International Conference for High Performance Computing, Networking, Storage and Analysis (***IEEE/ACM SC2019***), 2019.

72. Sian Jin, **Sheng Di**, Xin Liang, Jiannan Tian, Dingwen Tao, Franck Cappello, "DeepSZ: A Novel Framework to Compress Deep Neural Networks by Using Error-Bounded Lossy Compression," in Proceedings of the 28th ACM International Symposium on High-Performance Parallel and Distributed Computing (***ACM HPDC19***), Phoenix, AZ, USA, June 24-28, 2019.

73. **Sheng Di**, Hanqi Guo, Eric Pershey, Marc Snir, Franck Cappello, "Characterizing and Understanding HPC Job Failures over the 2K-Day Life of IBM BlueGene/Q System," IEEE/IFIP 49th International Conference on Dependable Systems and Networks (***IEEE DSN19***), Portland, OR, USA, 2019.

74. XiangYu Zou, Tao Lu, **Sheng Di**, Dingwen Tao, Wen Xia, Xuan Wang, Weizhe Zhang, Qing Liao, "Accelerating Lossy Compression on HPC Datasets via Partitioning Computation for Parallel Processing," in the 21st IEEE International Conference on High Performance Computing and Communications (***IEEE HPCC19***), 2019.

75. XiangYu Zou, Tao Lu, Wen Xia, Xuan Wang, Weizhe Zhang, **Sheng Di**, Dingwen Tao, Franck Cappello, "Accelerating Relative-error Bounded Lossy Compression for HPC datasets with Precomputation-Based Mechanisms," in Proceedings of the 35th International Conference on Massive Storage Systems and Technology (***IEEE MSST19***), 2019.

76. Xin-Chuan Wu, **Sheng Di**, Franck Cappello, Hal Finkel, Yuri Alexeev, Frederic T. Chong, "Memory-Efficient Quantum Circuit Simulation by Using Lossy Data Compression," in the 3rd International Workshop on Post-Moore Era Supercomputing in conjunction with IEEE/ACM 29th International Conference for High Performance Computing, Networking, Storage and Analysis (***SC2018***), 2018.

77. Xin-Chuan Wu, **Sheng Di**, Franck Cappello, Hal Finkel, Yuri Alexeev, Frederic T. Chong, "Amplitude-Aware Lossy Compression for Quantum Circuit Simulation," in Proceedings of the 4th International Workshop on Data Reduction for Big Scientific Data (***DRBSD-4***), in conjunction with IEEE/ACM 29th he International Conference for High Performance Computing, Networking, Storage and Analysis (***SC2018***), 2018.

78. Xin Liang, **Sheng Di**, Dingwen Tao, Sihuan Li, Zizhong Chen, Franck Cappello, "Improving In-situ Lossy Compression with Spatio-Temporal Decimation based on SZ Model," in Proceedings of the 4th International Workshop on Data Reduction for Big Scientific Data (***DRBSD-4***), in conjunction with IEEE/ACM 29th The International Conference for High Performance Computing, Networking, Storage and Analysis (***SC2018***), 2018.

79. Sihuan Li, **Sheng Di**, Xin Liang, Zizhong Chen, Franck Cappello, "Optimizing Lossy Compression with Adjacent Snapshots for N-body Simulation," in ***IEEE Bigdata2018***, 2018.

80. Wenbin He, Hanqi Guo, Tom Peterka, **Sheng Di**, Franck Cappello, Han-Wei Shen, "Parallel Partial Reduction for Extreme-Scale Data Analysis and Visualization," in the 8th IEEE Symposium on Large Data Analysis and Visualization (***LDAV2018***) in conjunction with ***IEEE VIS2018***, Berlin, Germany, October 21, 2018.

81. Xin Liang, **Sheng Di**, Dingwen Tao, Zizhong Chen, Franck Cappello, "Error-Controlled Lossy Compression Optimized for High Compression Ratios of Scientific Datasets," in ***IEEE Bigdata2018***, 2018.

82. Jong Youl Choi, Choong-Seock Chang, Julien Dominski, Scott Klasky, Gabriele Merlo, Eric Suchyta, M. Ainsworth, Bryce Allen, Franck Cappello, Michael Churchill, Philip Davis, **Sheng Di,** Greg Eisenhauer, Stephane Ethier, Ian Foster, Berk Geveci, Hanqi Guo, Kevin Huck, Frank Jenko, Mark Kim, James Kress, Seung-Hoe Ku, Qing Liu, Jeremy Logan, Allen Malony, Kshitij Mehta, Kenneth Moreland, Todd Munson, Manish Parashar, Tom Peterka, Norbert Podhorszki, Dave Pugmire, Ozan Tugluk, Ruonan Wang, Ben Whitney, Matthew Wolf, and Chad Wood, "Coupling Exascale Multiphysics Applications: Methods and Lessons Learned," In Proceedings of IEEE International Conference on *IEEE eScience18*, Amsterdam, Netherlands, October 29--November 1, 2018.

83. Dingwen Tao, **Sheng Di**, Xin Liang, Zizhong Chen, Franck Cappello, "Fixed-PSNR Lossy Compression for Scientific Data," in *IEEE CLUSTER 2018,* 2018.

84. Xin Liang, **Sheng Di**, Dingwen Tao, Zizhong Chen, Franck Cappello, "Efficient Transformation Scheme for Lossy Data Compression with Point-wise Relative Error Bound," in *IEEE CLUSTER 2018*, 2018. *best paper award*

85. Ali Murat Gok, **Sheng Di**, Yuri Alexeev, Dingwen Tao, Vladimir Mironov, Franck Cappello, "PaSTRI: Error-bounded Lossy Compression for Two-Electron Integrals in Quantum Chemistry," in *IEEE CLUSTER 2018*, 2018. *best paper award*

86. Hanqi Guo, **Sheng Di**, Rinku Gupta, Tom Peterka, Franck Cappello, "La VALSE: Scalable Visual Analysis of Logs for Fault Characterization on Supercomputers," in EG Symposium on Parallel Graphics and Visualization (*ECPGV2018*), 2018.

87. Dingwen Tao, **Sheng Di**, Xin Liang, Zizhong Chen and Franck Cappello, "Optimization of Fault Tolerance for Iterative Methods with Lossy Checkpointing," in 27th ACM Symposium on High-Performance Parallel and Distributed Computing (*ACM HPDC 2018*), 2018.

88. Dingwen Tao, **Sheng Di**, Zizhong Chen, and Franck Cappello, "In-Depth Exploration of Single-Snapshot Lossy Compression Techniques for N-Body Simulations," in Proceedings of the 2017 IEEE International Conference on Big Data (*BigData2017*), Boston, MA, USA, December 11-14, 2017.

89. **Sheng Di**, Dingwen Tao, Franck Cappello, "An Efficient Approach to Loss Compression with Point-wise Relative Error Bound," in Proceedings of the 1st International Workshop on Data Reduction for Big Scientific Data (*DRBSD-2*) in conjunction with IEEE/ACM 29th International Conference for High Performance computing, Networking, Storage and Analysis (*SC2017*), 2017.

90. Xinhou Wang, Song Wu, Kezhi Wang, **Sheng Di**, Hai Jin, Kun Yang and Shumao Ou, "Maximizing the Profit of Cloud Broker with Priority Aware Pricing," in the 23rd IEEE International Conference on Parallel and Distributed Systems (*ICPADS17*), 2017.

91. Ian T. Foster, Mark Ainsworth, Bryce Allen, Julie Bessac, Franck Cappello, Jong Youl Choi, Emil M. Constantinescu, Philip E. Davis, **Sheng Di**, et al., "Computing Just What You Need: Online Data Analysis and Reduction at Extreme Scales," in 23rd International European Conference on Parallel and Distributed Computing (*Euro-Par2017*), 2017. pp. 3-19.

92. Franck Cappello, Rinku Gupta, **Sheng Di**, Emil Constantinescu, Thomas Peterka, and Stefan M. Wild, "Understanding and Improving the Trust in Results of Numerical simulations and scientific Data Analytics," in 10th workshop on resilience in high performance computing (resilience) in Clusters, Clouds and Grids, in conjunction with the 23rd International European Conference on Parallel and Distributed Computing (*Euro-Par2017*), 2017.

93. Omer Subasi, **Sheng Di,** Leonardo Bautista-Gomez, Prasanna Balaprakash, Osman Unsal, Jesus Labarta, Adrian Cristal, Franck Cappello, "MACORD: Online Adaptive Learning Framework for Silent Error Detection," in International Workshop of Fault Tolerant Systems (*FTS17*), in conjunction with the IEEE International Conference on Cluster Computing (*Cluster 2017*), 2017.

94. Dingwen Tao, **Sheng Di**, Zizhong Chen, and Franck Capello, "Exploration of Pattern-Matching Techniques for Lossy Compression on Cosmology Simulation Data Set," in Proceedings of the 1st International Workshop on Data Reduction for Big Scientific Data (***DRBSD17***) in conjunction with ISC'17, Frankfurt, Germany, June 22, 2017.

95. **Sheng Di**, Rinku Gupta, Marc Snir, Franck Cappello, "LogAider: A Tool for Mining Potential Correlations in HPC Log Events," in IEEE/ACM 17th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (***ACM CCGrid2017***), 2017

96. Dingwen Tao, **Sheng Di**, Franck Cappello, "Significantly Improving Lossy Compression for Scientific Data Sets Based on Multidimensional Prediction and Error-Controlled Quantization," in International Parallel and Distributed Processing Symposium (***IEEE/ACM IPDPS 2017***), Chicago, 2017.

97. Eduardo Berrocal, Leonardo Bautista-Gomez, **Sheng Di**, Zhiling Lan, and Franck Cappello, "Exploring Partial Replication to Improve Lightweight Silent Data Corruption Detection for HPC Applications," in LNCS 22nd International European Conference on Parallel and Distributed Computing (***LNCS Euro-par 2016***), 2016.

98. Omer Subasi, **Sheng Di**, Leonardo Bautista-Gomez, Prasanna Balaprakash, Osman Unsal, Jesus Labarta, Adrian Cristal, Franck Cappello, "Spatial Support Vector Regression to Mitigate Silent Errors in the Exascale Era," in 16th IEEE/ACM International Symposium of Cluster, Cloud and Grid Computing (***ACM CCGrid 2016***), 2016.

99. **Sheng Di**, Franck Cappello, "Fast Error-bounded Lossy HPC Data Compression with SZ," in International Parallel and Distributed Processing Symposium (***IEEE/ACM IPDPS 2016***), Chicago, 2016.

100. Song Wu, Zhenjiang Xie, Haibao Chen, **Sheng Di**, Xinyu Zhao, and Hai Jin, "Dynamic Acceleration of Parallel Applications in Cloud Platforms by Adaptive Time-Slice Control," in International Parallel and Distributed Processing Symposium (***IEEE/ACM IPDPS 2016***), Chicago, 2016.

101. Xinhou Wang, Kezhi Wang, Song Wu, **Sheng Di**, Kun Yang, and Hai Jin, "Dynamic Resource Scheduling in Cloud Radio Access Network with Mobile Cloud Computing, " in the 24st International Symposium on Quality of Service (***IEEE/ACM IWQoS 2016***), 2016.

102. **Sheng Di**, Eduardo Berrocal, and Franck Cappello, "An Efficient Silent Data Corruption Detection Method with Error-feedback Control and Even Sampling for HPC Applications," in IEEE/ACM 15th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (***ACM CCGrid2015***), 2015.

103. Eduardo Berrocal, Leonardo Bautista-Gomez, **Sheng Di**, Zhiling Lan, and Franck Cappello, "Lightweight Silent Data Corruption Detection based on Runtime Data Analysis for HPC Applications," in 24th ACM Symposium on High-Performance Parallel and Distributed Computing (***ACM HPDC2015***), short paper, 2015.

104. Xuanhua Shi, Haohong Lin, Hai Jin, Bingbing Zhou, Zuoning Yin, **Sheng Di** and Song Wu, "GIRAFFE: A Scalable Distributed Coordination Service for Large-scale Systems," in IEEE Proc. of 16th International Conference on Cluster Computing (***IEEE CLUSTER2014***), Madrid, Spain, 2014, ***best paper nominated***.

105. **Sheng Di**, Leonardo Bautista-Gomez, Franck Cappello, "Optimization of Multi-level Checkpoint Model with Uncertain Execution Scales," in IEEE/ACM 26th International Conference for High Performance computing, Networking, Storage and Analysis (***IEEE/ACM SC2014***), 2014.

106. Haibao Chen, Song Wu, **Sheng Di**, Bingbing Zhou, Zhenjiang Xie, Hai Jin, and Xuanhua Shi, "Communication-Driven Scheduling for Virtual Clusters in Cloud," in ACM Symposium on High-Performance Parallel and Distributed Computing (***ACM HPDC2014***), short paper, 2014.

107. **Sheng Di**, Mohamed Slim Bouguerra, Leonardo Bautista-Gomez, Franck Cappello, "Optimization of Multi-level Checkpoint Model for Large-scale HPC Applications," in International Parallel and Distributed Processing Symposium (***IEEE/ACM IPDPS 2014***), Phoenix, AZ, 2014.

108. **Sheng Di**, Cho-Li Wang, "Minimization of Cloud Task Execution Length with Workload Prediction Errors," in International Conference on High Performance Computing (***IEEE/ACM HiPC 2013***), 2013.

109. **Sheng Di**, Yves Robert, Frédéric Vivien, Derrick Kondo, Cho-Li Wang, Franck Cappello, "Optimization of Cloud Service Processing with Checkpoint-Restart Mechanism," in IEEE/ACM 25th International Conference for High Performance computing, Networking, Storage and Analysis (***IEEE/ACM SC2013***), pp. 64:1-64:12, 2013.

110. **Sheng Di**, Derrick Kondo, Cho-Li Wang, "Optimization and Stabilization of Composite Service Processing in a Cloud System," in the 21st International Symposium on Quality of Service (***IEEE/ACM IWQoS 2013***), pp. 41-50, 2013.

111. **Sheng Di**, Cho-Li Wang, Derrick Kondo, Guodong Han, "Towards Payment Bound Analysis for Cloud Systems with Workload Prediction Errors," in IEEE 6th International Conference on Cloud Computing (***IEEE CLOUD 13***), pp. 502-509, 2013.

112. **Sheng Di**, Derrick Kondo, Franck Cappello, "Characterizing Cloud Applications on a Google Data Center," in Proc. of 42th International Conference on Parallel Processing (***IEEE ICPP2013***), 2013.

113. **Sheng Di**, Derrick Kondo, Walfredo Cirne, "Host Load Prediction in a Google Compute Cloud with a Bayesian Model," in IEEE/ACM 24th International Conference for High Performance computing, Networking, Storage and Analysis (***IEEE/ACM SC2012***), 2012.

114. **Sheng Di**, Derrick Kondo, Walfredo Cirne, "Characterization and Comparison of Cloud versus Grid Workloads," in IEEE Proc. of 14th International Conference on Cluster Computing (***IEEE CLUSTER2012***), 2012.

115. **Sheng Di**, Cho-Li Wang, Weida Zhang, Luwei Cheng, "Probabilistic Best-fit Multi-dimensional Range Query in Self-Organizing Cloud," in Proc. of 40th International Conference on Parallel Processing (***IEEE ICPP2011***), pp. 763-772, 2011.

116. **Sheng Di**, Cho-Li Wang, Luwei Cheng, Ling Chen, "Social-optimized Win-win Resource Allocation for Self-organizing Cloud," in IEEE International Conference on Cloud and Service Computing (***IEEE CSC2011***), 2011.

117. Zheming Xu, **Sheng Di**, Weida Zhang, Cho-Li Wang, and Luwei Cheng, "WAVNet: Wide-Area Network Virtualization for Elastic Cloud Computing," in Proc. of 40th International Conference on Parallel Processing (***IEEE ICPP2011***), pp. 285-294, 2011. ***best paper nominated***

118. Luwei Cheng, Cho-Li Wang, **Sheng Di**, "Defeating Network Jitter for Virtual Machines," in IEEE/ACM International Conference on Utility and Cloud Computing (***IEEE/ACM UCC2011***), 2011. ***best student paper***

119. **Sheng Di** and Cho-Li Wang, "Dual-Phase Just-in-Time Workflow Scheduling in P2P Grid Systems," Proc. of IEEE 39th International Conference on Parallel Processing (***IEEE ICPP2010***), pp.238-247, 2010

120. **Sheng Di** and Cho-Li Wang, "Conflict-minimizing Dynamic Load Balancing for P2P Desktop Grid," in Proc. of IEEE/ACM 11th International Conference on Grid Computing (***IEEE/ACM Grid2010***), Brussels, Belgium, Oct 24-29, pp. 137-144, 2010.

121. **Sheng Di** and Cho-li Wang, Dexter H. Hu, "Gossip-based Dynamic Load Balancing in Self-organized Desktop Grid," in Proc of 10th High-Performance Computing in Asia-Pacific Region (***HPCAsia -27th APAN***), Taiwan, pp. 85-92, 2009.

122. **Sheng Di** and Cho-Li Wang, "Task Scheduling based on Dynamic Critical Task Estimation in P2P Grid Workflow" (in Chinese), in ***CNGridAnnual2009***, pp. 1-8, 2009.

123. Ling Chen, **Sheng Di**, "RSR-CGSF: A Robust Cooperative Grid Service Framework based on Semantic Resource," Proc. of *IEEE ICIECS2009*, pp. 1-4, 2009.

124. Ling Chen, Hai Jin, **Sheng Di**, "A Semantic Double-Buffer Based Approach to Enhance Semantic Web Search," in 2nd International Conference on the Digital Society (*IEEE ICDS2008*), pp. 111-116, 2008. *best paper award*

125. **Sheng Di**, Hai Jin, Shengli Li, Ling Chen, Li Qi, Chengwei Wang, "Ontology Based Grid Information Interoperation." In 21st International Conf. on Advanced Information Networking and Applications Workshops (*IEEE AINAW2007*), pp. 91-96, 2007.

126. **Sheng Di**, Hai Jin, Shengli Li, Jing Tie, and Ling Chen, "Efficient Time Series Data Classification and Compression for Distributed Monitoring," in Proc. Of the 2007 International Workshop on High Performance Data Mining and Applications (*HPDMA2007*, in conjunction with *LNCS PAKDD2007*), pp. 389-400, 2007.

127. **Sheng Di**, Hai Jin, and Shengli Li, "A Flexible Two-Level Mechanism in Querying and Presenting Large-scale Historical Monitoring Data," in Proc. of the 13rd IEEE Asia-Pacific Conference on Communications (*IEEE APCC2007*), pp. 211-214, 2007.

128. Hai Jin, Chuanjiang Yi, **Sheng Di**, "A Composite-Service Authorization Prediction Platform for Grid Environment," in 4th International Conference on Cooperative Design, Visualization, and Engineering (*LNCS CDVE2007*), pp. 217-22, 2007.

129. **Sheng Di**, Hai Jin, Shengli Li, and Ling Chen, Chengwei Wang, "GlobalWatch: A Distributed Service Grid Monitoring Platform with High Flexibility and Usability," in Asia-Pacific Service Computing Conference (*IEEE APSCC2006*), pp. 440-446, 2006.

Reports

- 2011, Aug. 22-23, **Final-check Report** for HKU-Grid project, on behalf of System Research Group of The University of Hong Kong, Beijing (Peking), China.
- 2011, Jan. 12-13, **Stage Report** of the development progress for HKU-Grid project, on behalf of System Research Group of The University of Hong Kong, Beiijng (Peking), China.
- 2010, July. 29-Aug. 1, **Stage Report** of the development progress for HKU-Grid, on behalf of System Research Group of The University of Hong Kong, at Xilinhot, Inter Mongolia, China.
- 2008, Dec.18-20, **Stage Report** of development progress for HKU-Grid project, on behalf of System Research Group of The University of Hong Kong, at Shanghai, China.
- 2008, July 24-25, **Stage Report** of the development progress for HKU-Grid project, on behalf of System Research Group of The University of Hong Kong, at Wuxi, Jiangsu, China.
- 2008, June 22-25, **Stage Report** of the development progress for HKU-Grid project, on behalf of System Research Group of The University of Hong Kong, at Beijing (Peking), China.
- 2007, July 24-25, **Stage Report** of the development progress for HKU-Grid project, on behalf of System Research Group of The University of Hong Kong, at Beijing (Peking), China.

Invited Presentations/Talks at Major Conferences and Workshops

- 2022, Dec 16, 'Compression session' of 13th Joint Laboratory for Extreme-Scale Computing (JLESC) workshop, Virtual meeting.
- 2022, Jan. White paper presentation at ASCR Workshop on the Management and Storage of Scientific Data, title: Boosting Scientific Data Access with Usage-Driven Lossy Compression.
- 2022, 04/15. Invited talk at 'Breakout session on data reduction for ECP Applications' section in ECP annual meeting.
- 2022, 09/29. Invited talk at 'Compression session' of 14th Joint Laboratory for Extreme-Scale Computing (JLESC) workshop, NCSA.

- 2022, 08/30. Invited talk at DOE Computer Graphics Forum (DOECGF 2022). Title: Scalable Dynamic Scientific Data Reduction.

- 2021, April, Invited talk at 'Lossy data reduction for ECP applications' session in ECP annual meeting, Virtual meeting.

- 2021, April, Invited talk at 'ECP Community BOF: Tools for Data-driven Analysis and Improvement of HPC Scientific Software Development', Virtual meeting.

- 2021, Feb., Invited talk at Joint Laboratory for Extreme-Scale Computing (JLESC) workshop, Virtual meeting.

- 2019, Nov. Tutorial Speaker in Compression for Scientific Data at Supercomputing (SC19), 2019, Denver, USA.

- 2019, Oct, Invited talk at Illinois Institute of Technology (IIT), Chicago, USA.

- 2019, Oct, Invited talk at Wayne State University (WSU), Detroit, USA.

- 2019, April, Invited talk at Joint Laboratory for Extreme Scale Computing (JLESC) workshop, Tennessee, Knoxville, USA.

- 2019, March, Invited talk at ECP CODAR all-hands meeting in ORNL, USA.

- 2019, March, Invited talk at ECP Exasky all-hands meeting in Santa Fe, USA.

- 2018, June 18-20, Invited talk at 13th Scheduling for Large Scale Systems workshop, Berkeley, CA.

- 2017, July, Invited talk at Joint Laboratory for Extreme-Scale Computing (JLESC) workshop, Champaign, USA.

- 2016, Dec., Invited talk at Joint Laboratory for Extreme-Scale Computing (JLESC) workshop, Kobe, Japan.

- 2016, Nov. Invited talk at Youth Workshop, Kobe, Japan.

- 2016, Sept. 15, Invited talk at Fault Tolerant Systems workshop, in conjunction with IEEE CLUSTER conference, Taipei, Taiwan.

- 2013, Nov. 25-27, Invited talk at 10th Workshop of the INRIA-Illinois Joint Laboratory on Petascale Computing, UIUC, USA.

- 2013, June 12-14, Invited talk at 9th Workshop of the INRIA-Illinois Joint Laboratory on Petascale Computing, Lyon, France.

- 2012, Nov. 19-22, Invited talk at Google (Mountain View, California), USA.

Invited talks at Seminars and Colloquia

- 2016, June, Invited talk at Huazhong University of Science and Technology, Wuhan, China.
- 2016, May 5, Invited talk at Hubei University of Technology, Wuhan, China.
- 2016, March, Invited poster presentation at Los Alamos National Laboratory (LANL), USA.
- 2014, November 25, invited talk at 2nd Joint Lab of Extreme-Scale Computing (JLESC) Workshop, Chicago, IL, USA.
- 2014, May 8, Invited talk at Argonne National Laboratory, Lemont, IL, USA.
- 2014, April 2, Invited talk at University of California – Merced, Merced, CA, USA.
- 2014, Feb. 11, Invited talk at Huazhong University of Science and Technology, Wuhan, China.
- 2014, Jan. 24, Invited talk at Shenzhen Institutes of Advanced Technology, Shenzhen, China.
- 2014, Jan. 23, Invited talk at The University of Hong Kong, Hong Kong, China.

Paper presentation talks

- 2019: IEEE MSST2019, IEEE DSN2019
- 2018: DRBSD-4
- 2016: IEEE IPDPS2016, DRBSD-2

- 2014: IEEE IPDPS2014, IEEE/ACM SC2014
- 2013: IEEE ICPP2013, IEEE CLOUD2013, IEEE/ACM IWQoS2013, IEEE/ACM SC2013, IEEE/ACM HiPC2013
- 2012: IEEE CLUSTER2012, IEEE/ACM SC2012
- 2011: IEEE ICPP2011, IEEE CSC2011
- 2010: IEEE/ACM Grid2010, IEEE ICPP2010
- 2009: CNGridAnnual2009, HPCAsia -27th APAN
- 2007: PAKDD2007
- 2006: IEEE APSCC2006

Other Presentations: Posters

- Milan Shah, Xiaodong Yu, Sheng Di, Franck Cappello, Michela Becchi, "Compressing Quantum Circuit Simulation Tensor Data", IEEE/ACM The International Conference for High Performance computing, Networking, Storage and Analysis (***IEEE/ACM SC2022***), 2022.

- Dingwen Tao and Sheng Di. "Collaborative Research: HyLoC: Objective-driven Adaptive Hybrid Lossy Compression Framework for Extreme-Scale Scientific Applications." Poster presented at the The Fifth ACSIC Symposium on Frontiers in Computing (***SOFC 2022***), null, August 5, 2022- August 6, 2022.

- Yafan Huang, Shengjian Guo, **Sheng Di**, Guanpeng Li, Franck Cappello, "Hardening Selective Protection across Multiple Program Inputs for HPC Applications", Principles and Practice of Parallel Programming (***PoPP2022***), 2022.

- Xin-Chuan Wu, **Sheng Di**, Franck Cappello, Hal Finkel, Yuri Alexeev, Frederic T. Chong, "Full State Quantum Circuits Simulation by Using Data Compression," in IEEE/ACM 29th International Conference for High Performance Computing, Networking, Storage and Analysis (***IEEE/ACM SC2018***).

- Sihuan Li, **Sheng Di**, Xin Liang, Zizhong Chen, Franck Cappello, "Improving Error-bounded Compression for Cosmological Simulation," in IEEE/ACM 29th International Conference for High Performance computing, Networking, Storage and Analysis (***IEEE/ACM SC2018***).

- **Sheng Di**, Dingwen Tao, Hanqi Guo, Zizhong Chen, Franck Cappello, "Towards Efficient Error-controlled Lossy Compression for Scientific Data," in Greater Chicago Area Systems Research Workshop (***GCASR17***), 2017.

- Ali Murat Gok, Dingwen Tao, **Sheng Di**, Vladimir Mironov, Yuri Alexeev, Franck Cappello, "PaSTRI: A Novel Data Compression Algorithm for Two-Electron Integrals in Quantum Chemistry," in IEEE/ACM 29th International Conference for High Performance computing, Networking, Storage and Analysis (***IEEE/ACM SC2017***).

- Xuanhua Shi, Junling Liang, **Sheng Di**, Bingsheng He, Hai Jin, Lu Lu, Zhixiang Wang, Xuan Luo, and Jianlong Zhong, "Optimization of Asynchronous Graph Processing on GPU with Hybrid Coloring Model," in 20th ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (***PPoPP2015***), 2015.

- **Sheng Di**, Eduardo Berrocal, Leonardo Bautista-Gomez1, Katherine Heisey, Rinku Gupta1, Franck Cappello, "Towards Effective Detection of Silent Data Corruptions for HPC Applications," in IEEE/ACM 26th International Conference for High Performance computing, Networking, Storage and Analysis (***IEEE/ACM SC2014***), 2014.

Editorial Board of Journal

- Editorial Board Member, Frontiers in High Performance Computing Journal.
- Review Board Member, Transactions on Parallel and Distributed Systems (TPDS)

Organization of Conferences/Workshops

- **Review Committee Board Member**: DOE Data Visualization FOA, 2022.
- **Program Committee Member**: IEEE/ACM The International Conference for High Performance computing, Networking, Storage and Analysis (SC2022), 2022.
- **Program Co-chair**: 3rd International Workshop on Big Data Reduction (IWBDR2022), in conjunction with IEEE Bigdata conference, 2022.
- **Program Chair**: International Workshop on Data Analysis and Reduction for Big Scientific Data (DRBSD-8), in conjunction with SC2022.
- **Program Committee Member**: 51st International Conference on Parallel Processing (ICPP2022), 2022.
- **Review Committee Board Member**: DOE Early Career Research Program (ECRP), 2022.
- **Program Committee Member**: 36th IEEE International Parallel and Distributed Processing Symposium (IPDPS 2022), 2022.
- **Program Co-chair**: 2nd International Workshop on Big Data Reduction (IWBDR2021), in conjunction with IEEE Bigdata conference, 2021.
- **Program Committee Member:** IEEE Special Section on Parallel and Distributed Computing Techniques for AI, ML, and DL (IEEE TPDS-SS-AI 2021), 2021.
- **Program Committee Member:** IEEE 2021 International Conference on Machine Learning and Applications (IEEE ICMLA2021), 2021.
- **Program Committee Member:** IEEE International Conference on Big Data (IEEE Bigdata2021), 2021.
- **Program Committee Member:** 18th IEEE Workshop on Silicon Errors in Logic -- System Effects (SELSE2021), 2021.
- **Program Committee Member**: IEEE Transactions on Parallel and Distributed Systems (IEEE TPDS) Special Section on Parallel and Distributed Computing Techniques for AI, ML and DL (IEEE TPDS-SS-AI 2020).
- **Program Committee Member**: International Workshop on Data Analysis and Reduction for Big Scientific Data (DRBSD-5), in conjunction with SC2020.
- **Program Committee Member**: IEEE International Conference on High Performance Computing , Data, and Analytics (IEEE HiPC2020), 2020.
- **Program Committee Member (Data, Storage, and Visualization track and poster section)**: IEEE International Conference on Cluster Computing (IEEE CLUSTER-2020), 2020
- **Program Committee Member**: IEEE Asia-Pacific Services Computing Conference (APSCC 2019), 2019.
- **Program Committee Member**: IEEE congress on BigData, 2019.
- **Program Committee Member**: IEEE International Conf. on SmartData (SmartData), 2019.
- **Program Committee Member**: IEEE Asia-Pacific Services Computing Conference (APSCC 2018), 2018.
- **Track Chair/Program Committee Member**: IEEE BigData Congress, USA, July, 2018.
- **Program Committee Member** [poster session]: IEEE/ACM The International Conference for High Performance Computing, Networking, Storage and Analysis (SC'18), 2018.
- **Program Committee Member**: 32nd IEEE International Parallel and Distributed Processing Symposium (IPDPS'18), 2018.
- **Program Committee Member**: 18th IEEE/ACM International Symposium of Cluster, Cloud and Grid Computing (CCGrid'17), 2017.
- **Program Committee Member**: IEEE Workshop on Fault Tolerant Systems (FTS 2017), in conjunction with IEEE CLUSTER 2017.
- **Program Committee Member:** IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid17), 2017.
- **Program Chair**: IEEE Workshop on Fault Tolerant Systems (FTS 2016), in conjunction with IEEE CLUSTER 2016.

- **Program Committee Member:** IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid16), 2016.
- **Program Committee Member**: IEEE fourth International Workshop on Cloud Computing Interclouds, Multiclouds, Federations, and Interoperability (IEEE Intercloud'15)
- **Organizing Chair**: Postdoc-Ph.D-Student Session at JLESC Workshop, Chicago, November 24-26th, 2014.
- **Program Committee Member**: 5th International Conference on Scalable Information Systems (Infoscale2014), Seoul, South Korea, 2014.
- **Program Committee Member**: Asia-Pacific Services Computing Conference (APSCC-2014), 2014.
- **Program Committee Member**: 6th IEEE International Conference on Cloud Computing Technology and Science (CloudCom-2014), 2014.
- **Program Committee Member**: International Workshop on Mobile Internet Big Data, Wuhan, 2014.
- **Program Committee Member**: IEEE International Workshop on Advanced Technologies of Cloud Computing, IWATCC14, 2014.
- **Program Committe Member**: IEEE International Conference on Services Computing (SCC-2014), 2014.
- **Program Committee Member**: IEEE Third International Workshop on Cloud Computing Interclouds, Multiclouds, Federations, and Interoperability (IEEE Intercloud'14)
- **Program Committee Member**: The 8th International Conference on Complex, Intelligent, and Software Intensive Systems (CISIS 2014), Birmingham, UK.
- **Program Committee Member**: The 5th IEEE International Conference on Cloud Computing Technology and Science (CloudCom-2013)
- **Program Committee Member**: The 27th IEEE International Conference on Advanced Information Networking and Applications (AINA-2013)
- **Program Committee Member**: The 4th IEEE International Conference on Cloud Computing Technology and Science (CloudCom-2012)
- **Program Committee Member**: IEEE Asia Pacific Cloud Computing Conference, 2012 (APCloud-2012)
- **Local Organizing Committee member**: PRAGRMA Conference 2011
- **Local Organizing Committee member**: The 6th OMII-CNGrid Training 2008

Patent

Hai Jin, Pingpeng Yuan, Li Huang, Feng Mao, **Sheng Di**, Sheng Sun, Shilun Yuan, Changqin Li, Yanxia Li, Qin Shi: "Grid Data Transmission Platform with High QoS and Multi-replica," **NO. 200610125570.9**, 2006 (in Chinese).

Major Software (all available to download for free)

- **MMD-SZ** (Core Developer): Error-bounded Lossy Compressor Customized for Molecular Dynamic Datasets. https://github.com/szcompressor/MMD-SZ
- **Interp-SZ** (Core Developer): Interpolation-based Error-bounded Lossy Compressor. https://github.com/szcompressor/SZ3_Private
- **SZx** (Core developer): Ultra-fast error-bounded lossy compressor. https://github.com/szcompressor/SZx
- **Libpressio** (Co-developer): https://github.com/robertu94/libpressio
- **QCAT** (Core Developer): Quick Compression Analysis Toolkit. https://github.com/szcompressor/qcat
- **kSZ** (Co-developer): Kokkos-Based Error-Bounded Lossy Compressor for Scientific Data. https://github.com/szcompressor/kokkosSZ

- **cuSZ** (Co-developer): CUDA-Based Error-Bounded Lossy Compressor for Scientific Data. https://github.com/szcompressor/cuSZ/
- **SZ** (Core Developer): Error-bounded high-performance computing in situ data compressor. http://github.com/szcompressor/SZ
- **H5Z-SZ** (Core Developer): HDF5 filter for SZ compressor.
  https://github.com/disheng222/H5Z-SZ
- **PnetCDF-SZ** (Core Developer): Integration of SZ compression into PnetCDF.
  https://github.com/Parallel-NetCDF/PnetCDF-SZ
- **GloudSim** (Core developer): Google trace based cloud simulator with virtual machines https://code.google.com/p/gloudsim/ (source code has been moved to https://github.com/nThanksForAllTheFish/gloudsim).
- **Z-checker** (Core developer): Exascale scientific data analysis library with lossy compression https://github.com/CODARcode/Z-checker
- **Z-checker-installer** (Core developer): One-command installation for z-checker and all dependencies. https://github.com/CODARcode/z-checker-installer
- **SDA (**SimpleDataAnalysis**) toolkit** (Core developer)**:** Lightweight data analysis tool for lossy data compression, such as converting binary data to txt files and vice versa, resizing the data, and data slice visualization. http://www.mcs.anl.gov/~shdi/download/sda-0.1.tar.gz
- **AID** (Core developer): Adaptive Impact-driven detector (for detecting SDC on HPC environment) https://collab.cels.anl.gov/display/ESR/AID
- **LogAider** (Core developer): Tool for mining potential correlations in HPC system logs https://github.com/disheng222/LogAider

Selected Projects

- **DOE ASCR Data Reduction**, 2021-2024, co-PI: Automatic Generation of Algorithms for High-Speed Reliable Lossy Compression.
- **NSF CSSI ROCCI**, 2021-2024, PI: Elements: ROCCI: Integrated Cyberinfrastructure for In Situ Lossy Compression Optimization Based on Post Hoc Analysis Requirements, $320K.
- **DOE ASCR SDR (Early Career Award)** , 2021-2026, PI: Scalable Dynamic Scientific Data Reduction: The overarching goal of this ASCR research project is to develop a scalable data reduction (SDR) framework that will be smart enough to dynamically generate the best-qualified data reduction solution that meets user requirements for various scientific applications, $2.5M.
- **NSF CDS&E HyLoC**, 2020-2023, PI: Objective-driven Adaptive Hybrid Lossy Compression Framework for Extreme-Scale Scientific Application, $300K.
- **ECP VeloC-SZ (DOE project),** 2019-2023: VEry-Low Overhead Checkpointing System and Error-bounded Lossy Compression for Scientific HPC Datasets.
- **ECP Exasky (DOE project)**, 2016–2023: Exploring a set of very efficient compression techniques for Cosmology simulation. We developed and various effective compression methods for the cosmological simulations in this project.
- **ECP EZ (DOE project)**, 2016–2019: Developing an effective, efficient, generic lossy compressor for significantly reducing the scientific data for scientists. I am the technical lead and key developer in this project.
- **ECP CODAR (DOE project)**, 2016–2019: Exploring the characteristics of the data regarding data compression, and developing methodologies and tools (software) to assess the lossy compression error and its impact on application data.
- **Catalog Project (DOE project)**, 2015–2019: Conducting in-depth characterization and analysis of the errors, failures and faults for large-scale (or exascale) supercomputing environment. I am the core developer of the related analysis software (LogAider) and also the key researcher on the system log analysis.
- **ALETHEIA**, 2016-2019: Exploring how to design and implement end-to-end SDC detection when scientific applications are compressing their datasets with lossy compressors and storing the result on storage systems. I am leading the project as co-PI.

- **PARIS**: Data-knowledge based Extreme-Scale Resilience, 2013–2016: I explored fundamental properties of numerical science applications to improve the resilience of extreme-scale executions and to provide efficient solutions to system failures and silent data corruptions.
- **AMFT Project,** 2012–2015: I exploited new check-pointing technologies (Fault Tolerant Interface, FTI) and Multilevel Fault Tolerance (MFT) in combination with different storage levels and technologies, in the context of resilience of HPC.
- **Predicting Idleness of Data Centers**, 2012–2013 (Google Research Award): I helped model and predicte workload/hostload for Google data centers.
- **Cloud@HOME**, 2012–2013 (funded by the national French science foundation for running complex services over unreliable Internet resourcesI optimized and stabilized a best-suited queuing policy and a virtual resource allocation scheme.
- **Desktop Cloud / Self-organizing Cloud**, 2010-2011 (supported by Hong Kong grants): I developed a set of core optimization algorithms with fully distributed resource discovery protocols.
- **CNGrid**, 2007-2011 (key national project under the High-Tech R&D Program in China): I was mainly in charge of the construction and development of HKU-Grid Point, one of the key Grid points along with other nine ones.
- **SemREX**, 2006-2008 (funded by China-973 Project of National Basic Research and Development Plan): I co-designied and co-developed the relationship-searching engine.
- **CGSV (ChinaGrid SuperVision)**, 2005-2006 (Sponsored by HP Inc. providing real-time monitoring support for ChinaGrid): I helped design its whole architecture, developing a graphic user interface and archive module.
- **GPE4CGSP(Sponsored by Intel)**, 2006: Analyzed the code of GPE and developing a middleware to integrate the Information Center of CGSP and that of GPE, supported by a GUI as well.
- **CGSP(ChinaGrid Supported Platform)**, 2005-2006 (the biggest grid project in China): I devised a GUI to display its key information, such as jobs, applications, and services and provided web service interfaces with Geo-Information System support and security support..
- **CoGIS**, 2004-2005: I integrated it with the GlobalWatch system and installed and administered Globus, GridFTP, and debugging a Dynamic Replica Transmission platform.
- **GlobalWatch (a distributed monitoring system)**, 2004-2005: I developed the server and client software with another developer.

Mentoring/Co-mentoring and Teaching

- 06/15/2022~present: Zhaoyuan Su, PhD student from George Mason University, USA.
- 07/01/2021~present: Ruiwen Shan, PhD student from Clemson University, USA.
- 06/01/2020~present: Mentoring Cody Rivera, Bachelor student from University of Alabama, USA.
- 09/01/2021~present: Mentoring Md Hasanur Rahman, PhD student from University of Iowa, USA.
- 07/01/2021~present: Mentoring Yafan Huang, PhD student from University of Iowa, USA.
- 01/2021~present: Mentoring Sian Jin, PhD student from Washington State University, USA.
- 06/2020~present: Mentoring Jinyang Liu, PhD student from University of California, Riverside, USA
- 08/2019~present: Mentoring Jiannan Tian, PhD student from Washington State University, USA.
- 03/2020~Present: Mentoring Khalid Alharthi, PhD student from The University of Warwick, UK.
- 06/2019~2022: Mentoring Robert Underwood, PhD student from Clemson University, USA.
- 06/2019~08/2022: Mentoring Kai Zhao, PhD student from University of California, Riverside, USA.
- 06/2019~12/2019: Mentoring Tasmia Reza, PhD student from Clemson University, USA.
- 06/2017~2019: Mentoring XinChuan (Ryan) Wu, PhD student from University of Chicago, USA.
- 06/2017~05/2021: Mentoring Sihuan Li, PhD student from University of California, Riverside, USA.
- 02/2017~01/2020: Mentoring Xin Liang, PhD student from University of California, Riverside, USA.
- 05/2017~03/2021: Mentoring Ali M. Gok, PhD student at Northwestern University, Chicago, USA.

- 06~09/2016: Mentoring Dingwen Tao, PhD Student at University of California, Riverside, USA.
- 2015: Mentoring Omer Subasi, PhD student at Barcelona Supercomputing Center (BSC), Spain.
- 2015: Mentoring Eduardo Berrocal, PhD student, Illinois Institute of Technology (IIT), USA.
- 2013: Mentoring Haibao Chen, PhD student, Huazhong University of Science and Technology (HUST), China.
- 2012–2013: Mentoring Xinhou Wang, PhD student, Huazhong University of Science and Technology (HUST), China.
- 2010–2011: Mentoring Hao Liu, Master student at The University of Hong Kong, China.
- 2009–2011: Mentoring Zheming Xu, Master student at The University of Hong Kong, China.
- 2010–2011: Teaching Assistant of Principles of Operating Systems (HKU)
- 2008–2009: Teaching Assistant of Principles of Operating Systems (HKU)
- 2007–2008: Teaching Assistant of Java-based object-oriented programming (HKU).

Invited External Reviewer

- IEEE Transaction on Computers (TC), 2008
- Journal of Parallel Distributed and Computing (JPDC 2008), 2008
- IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid09)
- High Performance Computing Asia (HPCAsia09), 2009
- IEEE International Conference on Cluster Computing (IEEE Cluster09), 2009
- International Conference on Parallel and Distributed Computing (ICPADS09), 2009
- IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid10)
- IEEE 4th International Conference on Cloud Computing (Cloud10), 2010
- Journal of Computer Science and Technology (JCST), 2010
- Heterogeneity in Computing Workshop (HCW10) in conjunction with IEEE/ACM IPDPS10
- CNGrid Annual Conference 2009/2010/2011
- IEEE/ACM International Parallel & Distributed Processing Symposium (IPDPS11), 2011
- International Conference on Parallel Processing (ICPP11), 2011
- Heterogeneity in Computing Workshop (HCW11) in conjunction with IPDPS11
- International Conference on Services Computing (SCC11), 2011
- Cloud Computing (CloudCom11), 2011
- International Journal of Computational Science and Engineering, 2012
- International Journal of Scientific Research and Essays, 2012
- IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid13)
- International Journal of Automated Software Engineering (ASE), 2013
- International Journal of Peer-to-Peer Networking and Applications (PPNA), 2013
- International Conference on Networking and Grid Cloud Computing (ICNGCC-2013)
- International Journal of Future Generation Computer Systems (FGCS), 2013
- KSII Transactions on Internet and Information Systems (TIIS), 2013
- Journal of Zhejiang University, 2013.
- IEEE Transactions on Parallel and Distributed Systems (TPDS), 2013.
- IEEE/ACM International Parallel & Distributed Processing Symposium (IPDPS13), 2013.
- IEEE Transactions on Cloud Computing (TCC), 2013.
- IEEE/ACM International Parallel & Distributed Processing Symposium (IPDPS14), 2014.
- KSII Transactions on Internet and Information Systems (TIIS), 2014.
- IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid14)
- Journal of Computer Science and Technology (JCST), 2014.
- IEEE Transactions on Cloud Computing (TCC), 2014.
- IEEE/ACM The International Conference for High Performance computing, Networking, Storage and Analysis (SC2014), 2014.
- IEEE Transactions on Parallel and Distributed Systems (TPDS), 2014.
- International Journal of Future Generation Computer Systems (FGCS), 2014
- IEEE/ACM International Parallel & Distributed Processing Symposium (IPDPS15), 2015.
- IEEE Transactions on Cloud Computing (TCC2015), 2015.
- Journal of Mathematical Problems in Engineering (MPE), 2015.
- IEEE International Workshop on Cloud Computing Interclouds, Multiclouds, Federations, and Interoperability (Intercloud 2015), 2015.

- elsevier Journal of Systems and Software (JSS), 2015.
- International ACM Symposium on High Performance Parallel and Distributed Computing (HPDC15), 2015.
- International Journal of Future Generation Computer Systems (FGCS), 2015.
- International Conference on Cluster Computing (IEEE CLUSTER-2015), 2015.
- IEEE Systems Journal (SJ), 2015.
- Journal of Software: Practice and Experience (SPE), 2015.
- Journal of Parallel Distributed and Computing (JPDC), 2015.
- The Computer Journal, 2015.
- The 12th Annual IFIP International Conference on Network and Parallel Computing (NPC15), 2015.
- IEEE Transactions on Parallel and Distributed Systems (TPDS), 2015.
- International Conference on Cloud Computing and Big Data (CCBD), 2015.
- IEEE Transactions on Services Computing (TSC), 2015.
- Journal of Knowledge based Systems (KBS), 2015.
- IEEE International Parallel and Distributed Processing Symposium (IPDPS'16), 2016.
- IEEE/ACM International Symposium of Cluster, Cloud and Grid Computing (CCGrid'16), 2016.
- IEEE International Symposium on ACM High Performance Parallel and Distributed Computing (HPDC'16), 2016.
- IEEE Transactions on Parallel and Distributed Systems (TPDS), 2016.
- ACM International Conference on Supercomputing (ICS'16), 2016.
- elsevier Journal of Parallel Computing (PARCO), 2016
- IIS. Journal of Information Science and Engineering, 2016.
- International Parallel and Distributed Processing Symposium (IPDPS17), 2017.
- IEEE/ACM International Symposium of Cluster, Cloud and Grid Computing (CCGrid'17), 2017.
- IEEE Transactions on Services Computing (TSC'17), 2017.
- International Conference on Cluster Computing (IEEE CLUSTER-2017), 2017.
- IEEE Transactions on Parallel and Distributed Systems (TPDS), 2017.
- The International Journal of High Performance Computing Applications (IJHPCA), 2017
- International Workshop of Fault Tolerant Systems (FTS17), 2017.
- IEEE Transactions on Parallel and Distributed Systems (TPDS), 2018.
- Elsevier Computer Physics Communications (CPC), 2018.
- Future Generation System Computing (FGCS), 2018.
- Journal of Supercomputing, 2018.
- IEEE congress on BigData, 2018.
- IEEE Cluster conference [poster], 2018.
- International Conference on Parallel Processing (ICPP18), 2018.
- Journal of Concurrency and Computation: Practice and Experience (CCPE), 2018.
- LNCS Asia-Pacific Services Computing Conference (APSCC2018), 2018.
- IEEE International Conference on Cluster Computing (IEEE CLUSTER-2019), 2019.
- ACM Transactions on Parallel Computing (TOPC), 2019
- IEEE Transactions on Parallel and Distributed Systems (TPDS), 2019.
- IEEE congress on BigData, 2019.
- ACM Symposium on High-Performance Parallel and Distributed Computing (HPDC), 2019.
- IEEE International Conference on Smart Data (SmartData-2019), 2019.
- International Conference on Parallel Processing (ICPP2019), 2019.
- Springer Peer-to-Peer Networking and Applications (PPNA2019, 2019.
- SIAM Journal on Scientific Computing, 2019.
- Springer Peer-to-Peer Networking and Applications (PPNA2020), 2020.
- International Journal of Electrical Power & Energy Systems (IJEPES), 2020.
- IEEE Transactions on Parallel and Distributed Systems (TPDS), regular track, 2020.
- IEEE Transactions on Parallel and Distributed Systems (TPDS), special section on Parallel and Distributed Computing Techniques for AI, ML and DL, 2020.
- IEEE International Conference on Cluster Computing (IEEE CLUSTER-2020), 2020.
- International Conference on High Performance Computing (IEEE/ACM HiPC 2020).
- ACM Computing Surveys (CSUR), 2020.
- IEEE SmartDataService conference, 2020.
- IEEE Transactions on Smart Grid, 2020.
- Journal of Mathematical Problems in Engineering (MPE), 2020.

- Journal of Information Sciences, 2021.
- EEE Transactions on Cloud Computing (TCC), 2021.
- IEEE Transactions on Parallel and Distributed Systems (TPDS), 2021.
- The International Journal of High Performance Computing Applications (IJHPCA), 2021.
- IEEE Special Section on Parallel and Distributed Computing Techniques for AI, ML, and DL (IEEE TPDS-SS-AI 2021), 2021.
- IEEE 2021 International Conference on Machine Learning and Applications (IEEE ICMLA2021), 2021.
- Journal of Concurrency and Computation: Practice and Experience (CCPE), 2022.
- Best paper nominated: 40th International Conference on Parallel Processing (IEEE ICPP), 2022.
- International Journal of High Performance Computing Applications (IJHPCA), 2022.
- IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid22), 2022.
- Journal of Computational Science (JOCSCI), 2022.
- IEEE/ACM International Parallel & Distributed Processing Symposium (IPDPS22), 2022.
- IEEE Transactions on Parallel and Distributed Systems (TPDS), 2022.