

## Dr. SHENG DI

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### Summary (a brief cover letter)

- I received my Ph.D diploma from The University of Hong Kong in 2011/2012. Now, I am a computer scientist at Argonne National Laboratory (Lemont, USA).
- With 15 years solid experience in developing distributed computing projects (including Cloud, HPC/Grid, P2P) via C/C++, Java, Fortran, and Bash shell, my strengths include theoretical analysis, system design/development and performance optimization.
- I have 100+ refereed journal and conference papers (including TPDS, TC, TCC, TKDE, JPDC, IJHPCA, PPOPP, SC'XY, IPDPS, HPDC, PACT, MSST, DSN, ICPP, CLUSTER, BigData, IWQoS, CCGrid, HiPC, Grid, CLOUD, UCC, EuroPar, ICPADS, Europar, and so on).
- My Ph.D thesis was focused on the design of optimal algorithm for cloud resource allocation, theoretical analysis, and system implementation. I designed an optimal algorithm via convex-optimization based on the divisible-resource isolation technology and proved its optimality approximation upper-bound with possible inaccurate information aggregated, as compared to the optimal result with accurate information.
- My recent work is focused on data reduction, fault tolerance, performance optimization for HPC environment and Cloud computing environment, large-scale log analysis, etc.

### Research Interests

- Fast In-situ High Performance Computing Exascale Data Compression
- Detection of Silent Data Corruption (SDC) for exascale HPC applications
- Characterization and Analysis of Failures, Errors, Faults for Supercomputing Environment
- Optimization of distributed resource discovery for Cloud systems, P2P architecture, and self-organizing architecture (Theory and Practical System)
- Optimization of fault tolerance performance for Cloud systems and HPC
- Optimization of Cloud/HPC resource allocation
- Performance/Workload modeling and prediction for Cloud Systems and HPC environment

### Education and Research Experience

- 2019, Oct. ~ Present, Computer Scientist, MCS, Argonne National Laboratory (USA).
- 2017, April ~ 2019, Oct., Assistant Computer Scientist, MCS, Argonne National Laboratory (USA).
- 2014, May ~ 2017, April, Post-doctoral Fellow, Argonne National Laboratory (USA)
- 2011, Dec. ~ 2014, May, Post-doctor Researcher, INRIA (France)
- 2007~2011, Nov. Ph.D, The University of Hong Kong, Hong Kong, China
- 2004~2007, Mphil/Master 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
- 1997-2000, high school, Shandong Experimental High School, Jinan, Shandong, China

## Refereed Journal Publications

1. 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.
2. 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.
3. 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.
4. Hao Fan, Jiang Xiao, Song Wu, Zhenjiang Xie, **Sheng Di**, Xinyu Zhao, Hai Jin, "Accelerating Parallel Applications in Cloud Platforms via Adaptive Time-Slice Control", in IEEE Transactions on Computers ([IEEE ToC](#)), 2019.
5. Franck Cappello, **Sheng Di**, Sihuan Li, Xin Liang, Ali M. Gok, Dingwen Tao, Chun Hong Yoon, Xin-Chuan Wu, Yuri Alexeev, Federic T. Chong, "Use cases of lossy compression for floating-point data in scientific datasets", in The International Journal of High Performance Computing Applications ([JHPCA](#)), 2019.
6. Dingwen Tao, **Sheng Di**, Xin Liang, Zizhong Chen, Franck Cappello, "Optimizing Lossy Compression Rate-Distortion from Automatic Online Selection between SZ and ZFP", in IEEE Transactions on Parallel and Distributed Systems ([IEEE TPDS](#)), 2019.
7. **Sheng Di**, Dingwen Tao, Xin Liang, Franck Cappello, "Efficient Lossy Compression for Scientific Data based on Pointwise Relative Error Bound", in IEEE Transactions on Parallel and Distributed Systems ([IEEE TPDS](#)), 2018.
8. **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", in IEEE Transactions on Parallel and Distributed Systems ([IEEE TPDS](#)), 2018.
9. Xinhou Wang, Kezhi Wang, Song Wu, **Sheng Di**, Hai Jin, Kun Yang, Shumao Ou, "Dynamic Resource Scheduling in Mobile Edge Cloud with Cloud Radio Access Network", in IEEE Transactions on Parallel and Distributed Systems ([IEEE TPDS](#)), 2018.
10. Omer Subasi, **Sheng Di**, Leonardo Bautista-Gomez, Prasanna Balaprakash, Osman Unsal, Jesus Labarta, Adrian Cristal, Sriram Krishnamoorthy, Franck Cappello, "Exploring The Capabilities of Support Vector Machines in Detecting Silent Data Corruptions", in Journal of Sustainable Computing, Informatics and Systems ([SUSCOM](#)), 2018.
11. Eduardo Berrocal, Leonardo Bautista-Gomez, **Sheng Di**, Zhiling Lan, and Franck Cappello, "Toward General Software Level Silent Data Corruption Detection for Parallel Applications, " in IEEE Transaction on Parallel and Distributed Systems ([IEEE TPDS](#)), 2017.
12. Dingwen Tao, **Sheng Di**, Hanqi Guo, Zizhong Chen, and Franck Cappello, "Z-checker: A Framework for Assessing Lossy Compression of Scientific Data", in The International Journal of High Performance Computing Applications ([JHPCA17](#)), 2017.
13. **Sheng Di**, Franck Cappello, "Optimization of Error-Bounded Lossy Compression for Hard-to-Compress HPC Data, " in IEEE Transaction on Parallel and Distributed Systems ([IEEE TPDS](#)), 2017.
14. Xinhou Wang, Kezhi Wang, Song Wu, **Sheng Di**, Hai Jin, Kun Yang, Shumao Ou, "Dynamic Resource Scheduling in Mobile Edge Cloud with Cloud Radio Access Network", in Transactions on Parallel and Distributed Systems ([IEEE TPDS](#)), 2017.
15. 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", in Transactions on Parallel and Distributed Systems ([IEEE TPDS](#)), 2017.
16. Xuanhua Shi, Junling Liang, Xuan Luo, **Sheng Di**, Bingsheng He, Lu Lu, Hai Jin, "Frog: Asynchronous Graph Processing on GPU with Hybrid Coloring Model", in IEEE Transactions on Knowledge and Data Engineering ([IEEE TKDE](#)), 2017.

17. **Sheng Di**, Yves Robert, Frédéric Vivien, Franck Cappello, "Towards Optimal Online Checkpoint Solution under A Two-Level HPC Checkpoint Model", in IEEE Transaction on Parallel and Distributed Systems ([IEEE TPDS](#)), 2017.
18. **Sheng Di**, Franck Cappello, "Adaptive Impact-Driven Detection of Silent Data Corruption for HPC Applications", in IEEE Transaction on Parallel and Distributed Systems ([IEEE TPDS](#)), 2016.
19. Song Wu, Haibao Chen, **Sheng Di**, Bingbing Zhou, Zhenjiang Xie, Hai Jin, Xuanhua Shi", Synchronization-Aware Scheduling for Virtual Clusters in Cloud", in IEEE Transaction on Parallel and Distributed Systems ([IEEE TPDS](#)), 2014.
20. Hai Jin, Xinhou Wang, Song Wu, **Sheng Di**, Xuanhua Shi, "Towards Optimized Fine-Grained Pricing of IaaS Platform", in IEEE Transactions on Cloud Computing ([IEEE TCC](#)), 2014.
21. **Sheng Di**, Franck Cappello, "GloudSim: Google Trace based Cloud Simulator with Virtual Machines", in Journal of Software – Practice and Experience ([Wiley SPE](#)), 2014.
22. **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), pp. 139-160, 2014. DOI 10.1007/s11227-014-1131-z
23. **Sheng Di**, Derrick Kondo, and Cho-Li Wang, "Optimization of Composite Cloud Service Processing with Virtual Machines", in IEEE Transactions on Computers ([IEEE TC](#)), 2014.
24. **Sheng Di**, Derrick Kondo, and Walfredo Cirne, "Google Hostload Prediction based on Bayesian Model with Optimized Feature Combination", in Journal of Parallel Distributed Computing ([elsevier JPDC](#)), 74(1): 1820-1832, 2014.
25. **Sheng Di** and Cho-Li Wang, "Error-tolerant Resource Allocation and Payment Minimization for Cloud System", in IEEE Transactions on Parallel and Distributed Systems ([IEEE TPDS](#)), 24(6): 1097-1106, 2013.
26. **Sheng Di**, Cho-Li Wang, "Dynamic Optimization of Multi-Attribute Resource Allocation in Self-Organizing Clouds", in IEEE Transactions on Parallel and Distributed Systems ([IEEE TPDS](#)), 2012, <http://doi.ieeecomputersociety.org/10.1109/TPDS.2013.144>.
27. **Sheng Di**, Cho-Li Wang, Franck Cappello, "Adaptive Algorithm for Minimizing Cloud Task Length with Load Prediction Errors", in IEEE Transactions on Cloud Computing ([IEEE TCC](#)), pp. 194-207, 2013.
28. **Sheng Di** and Cho-Li Wang, "Decentralized Proactive Resource Allocation for Maximizing Throughput of P2P Grid", in Journal of Parallel Distributed Computing ([elsevier JPDC](#)), [doi:10.1016/j.jpdc.2011.10.010](https://doi.org/10.1016/j.jpdc.2011.10.010), available online 4 Nov. 2011.
29. **Sheng Di**, Cho-Li Wang, and Ling Chen, "Ex-post Efficient Resource Allocation for Self-organizing Cloud", in Journal of Computers and Electrical Engineering ([elsevier JCEE](#)), 2013, <http://dx.doi.org/10.1016/j.compeleceng.2012.12.018>.
30. Yinfeng Wang, Hao Liu, **Sheng Di** and Haoyu Hu, "A Parallel Index Mechanism for Large Scale High Dimensional Data", in Journal of Huazhong University of Science and Technology (Nature Science Edition), June, 2011, 39(1), in Chinese.

## Refereed Conference Publications

31. 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.
32. 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.
33. Franck Cappello, **Sheng Di**, Ali M. Gok, "Fulfilling the Promises of Lossy Compression for Scientific Applications", Smoky Mountain Computational Science and Engineering Conference ([SMC2020](#)), USA, Aug. 25-27, 2020.
34. 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.

35. 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.
36. 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.
37. 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.
38. 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](#)).
39. 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.
40. Xin-Chuan Wu, **Sheng Di**, Emma Maitreyee Dasgupta, Yuri Alexeev, Hal Finkel, Frederic T. Chong, "Full State Quantum Circuit Simulation by Using Data Compression", in IEEE/ACM 30th The International Conference for High Performance computing, Networking, Storage and Analysis ([IEEE/ACM SC2019](#)), 2019.
41. 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", in IEEE/ACM 30th The International Conference for High Performance computing, Networking, Storage and Analysis ([IEEE/ACM SC2019](#)), 2019.
42. 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", in IEEE/ACM 30th The International Conference for High Performance computing, Networking, Storage and Analysis ([IEEE/ACM SC2019](#)), 2019.
43. 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", Proceedings of the 28th ACM International Symposium on High-Performance Parallel and Distributed Computing ([ACM HPDC19](#)), Phoenix, AZ, USA, June 24 - 28, 2019.
44. **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, USA, 2019.
45. 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.
46. 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.
47. Xin-Chuan Wu, **Sheng Di**, Franck Cappello, Hal Finkel, Yuri Alexeev, Frederic T. Chong, "Memory-Efficient Quantum Circuit Simulation by Using Lossy Data Compression", The 3rd International Workshop on Post-Moore Era Supercomputing in conjunction with IEEE/ACM 29th The International Conference for High Performance computing, Networking, Storage and Analysis ([SC2018](#)), 2018.
48. 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 The International Conference for High Performance computing, Networking, Storage and Analysis ([SC2018](#)), 2018.
49. 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.
  50. 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 The International Conference for High Performance computing, Networking, Storage and Analysis ([SC2018](#)). [poster]
  51. Sihuan Li, **Sheng Di**, Xin Liang, Zizhong Chen, Franck Cappello, "Improving Error-bounded Compression for Cosmological Simulation", in IEEE/ACM 29th The International Conference for High Performance computing, Networking, Storage and Analysis ([SC2018](#)). [poster]
  52. Sihuan Li, **Sheng Di**, Xin Liang, Zizhong Chen, Franck Cappello, "Optimizing Lossy Compression with Adjacent Snapshots for N-body Simulation", in [IEEE Bigdata2018](#), 2018.
  53. 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.
  54. 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.
  55. 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.
  56. Dingwen Tao, **Sheng Di**, Xin Liang, Zizhong Chen, Franck Cappello, "Fixed-PSNR Lossy Compression for Scientific Data", in [IEEE CLUSTER 2018](#), 2018.
  57. 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*
  58. 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*
  59. 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.
  60. 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.
  61. Dingwen Tao, **Sheng Di**, Zizhong Chen, and Franck Cappello, "In-Depth Exploration of Single-Snapshot Lossy Compression Techniques for N-Body Simulations", Proceedings of the 2017 IEEE International Conference on Big Data ([BigData2017](#)), Boston, MA, USA, December 11 - 14, 2017.
  62. 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 The International Conference for High Performance computing, Networking, Storage and Analysis ([SC2017](#)). [poster]
  63. **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 The

- International Conference for High Performance computing, Networking, Storage and Analysis ([SC2017](#)), 2017.
64. 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.
  65. 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.
  66. 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 the conjunction with 23rd International European Conference on Parallel and Distributed Computing ([Euro-Par2017](#)), 2017.
  67. **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. [poster]
  68. 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.
  69. Dingwen Tao, **Sheng Di**, Zizhong Chen, and Franck Capello, "Exploration of Pattern-Matching Techniques for Lossy Compression on Cosmology Simulation Data Sets", Proceedings of the 1st International Workshop on Data Reduction for Big Scientific Data ([DRBSD17](#)) in conjunction with ISC'17, Frankfurt, Germany, June 22, 2017.
  70. **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
  71. 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.
  72. 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.
  73. 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.
  74. **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.
  75. 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.
  76. 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.
  77. **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.
  78. 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.
79. 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, [poster].
  80. **Sheng Di**, Eduardo Berrocal, Leonardo Bautista-Gomez<sup>1</sup>, Katherine Heisey, Rinku Gupta<sup>1</sup>, Franck Cappello, “Towards Effective Detection of Silent Data Corruptions for HPC Applications”, in IEEE/ACM 26th The International Conference for High Performance computing, Networking, Storage and Analysis ([IEEE/ACM SC2014](#)), 2014, [poster]
  81. 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**.
  82. **Sheng Di**, Leonardo Bautista-gomez, Franck Cappello, “Optimization of Multi-level Checkpoint Model with Uncertain Execution Scales”, in IEEE/ACM 26th The International Conference for High Performance computing, Networking, Storage and Analysis ([IEEE/ACM SC2014](#)), 2014.
  83. 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.
  84. **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, 2014.
  85. **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.
  86. **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 The International Conference for High Performance computing, Networking, Storage and Analysis ([IEEE/ACM SC2013](#)), pp. 64:1-64:12, 2013.
  87. **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.
  88. **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.
  89. **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.
  90. **Sheng Di**, Derrick Kondo, Walfredo Cirne, “Host Load Prediction in a Google Compute Cloud with a Bayesian Model”, in IEEE/ACM 24th The International Conference for High Performance computing, Networking, Storage and Analysis ([IEEE/ACM SC2012](#)), 2012.
  91. **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.
  92. **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.
  93. **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.
  94. 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**

95. 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**
96. **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
97. **Sheng Di** and Cho-Li Wang, "Conflict-minimizing Dynamic Load Balancing for P2P Desktop Grid", Proc. of IEEE/ACM 11th International Conference on Grid Computing ([IEEE/ACM Grid2010](#)), Brussels, Belgium, Oct 24-29, pp. 137-144, 2010.
98. **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.
99. **Sheng Di** and Cho-Li Wang, "Task Scheduling based on Dynamic Critical Task Estimation in P2P Grid Workflow" (in Chinese), [CNGridAnnual2009](#), pp. 1-8, 2009.
100. Ling Chen, **Sheng Di**, "RSR-CGSF: A Robust Cooperative Grid Service Framework based on Semantic Resource", Proc. of [IEEE ICIECS2009](#), pp. 1-4, 2009.
101. 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**
102. **Sheng Di**, Hai Jin, Shengli Li, Ling Chen, Li Qi, Chengwei Wang, "Ontology Based Grid Information Interoperation", ainaw, 21st International Conf. on Advanced Information Networking and Applications Workshops ([IEEE AINAW2007](#)), pp. 91-96, 2007.
103. **Sheng Di**, Hai Jin, Shengli Li, Jing Tie, and Ling Chen, "Efficient Time Series Data Classification and Compression for Distributed Monitoring", Proc. Of the 2007 International Workshop on High Performance Data Mining and Applications ([HPDMA2007](#), in conjunction with [LNCS PAKDD2007](#)), pp. 389-400, 2007.
104. **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.
105. 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.
106. **Sheng Di**, Hai Jin, Shengli Li, and Ling Chen, Chengwei Wang, "GlobalWatch: A Distributed Service Grid Monitoring Platform with High Flexibility and Usability", Asia-Pacific Service Computing Conference ([IEEE APSCC2006](#)), pp. 440-446, 2006.

## Patents

107. 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).

## Awards and Honors

1. 2019, IEEE-Chicago Distinguished Research and Development Award, in recognition of the research on scientific data compression and contribution to software development
2. 2019, DOE R&D 100 award (in recognition of participating in SCR: Scalable Checkpoint/Restart Framework)
3. 2018, IEEE Distinguished Mentoring Award (Chicago Section), in recognition of mentoring as a scientist in the area of data compression and software development
4. 2018, Overall best paper award in IEEE CLUSTER2018
5. 2018, best paper award in the area of Applications, Algorithms and Libraries, IEEE CLUSTER18
6. 2018, best paper award in the area of Data, Storage and Visualization, IEEE CLUSTER2018
7. 2018, best paper nominated (honorable mention) in Lдав 2018 Symposium
8. 2016, Outstanding Contribution in Reviewing Award for JPDC journal
9. 2014, Best paper nominated in International Conf. on Cluster Computing (IEEE CLUSTER2014)



10. 2011, Best paper nominated in 40th International Conf. on Parallel Processing (IEEE ICPP2011)
11. 2011, Best student paper award in IEEE/ACM UCC2011
12. 2008, Best paper award in International Conference on the Digital Society (ICDS)
13. 2006, Sum Tuition Scholarship, 2005-2006, Huazhong university of Science and Technology
14. 2006, Triple-A Outstanding Student, 2005-2006, Huazhong univ. of Science and Technology
15. 2005, First-class Scholarship, 2004-2005, Huazhong university of Science and Technology
16. 2005, Sum tuition Scholarship, 2004-2005, Huazhong university of Science and Technology
17. 2005, First-class Scholarship, 2004-2005, Huazhong university of Science and Technology
18. 2004, Excellent Leadership Award, 2003-2004, South-Central University for Nationalities
19. 2003, Triple-A Outstanding Student, 2002-2003, South-Central University for Nationalities
20. 2003, Second-class Scholarship, 2002-2003, South-Central University for Nationalities (top 2%)
21. 2002, First-class Scholarship, 2001-2002, South-Central University for Nationalities (top 1%)
22. 2001, Triple-A Outstanding Student, 2000-2001, South-Central University for Nationalities
23. 2001, First-class Scholarship, 2000-2001, South-Central University for Nationalities (top 1%)
24. 1999, Provincial First Prize, National High School Mathematics League, China
25. 1999, National Third Prize, National High School Mathematics League, China
26. 1998, National Second Prize, National High School Mathematics League, China

## Technical Background

- Programming Languages: Java, C/C++, Fortran, Python, Bash, MPI, OpenMP, Prolog, JSP.
- Tools: Autotool, CMAKE, LaTeX, Ant, XML, XSL, HTML, Doc book, etc.
- System and Database: Unix/Linux, MySQL, Oracle, etc.
- Network Communications: Socket, RMI, Web Service (Axis, Apache Muse, Globus, etc).
- Virtualization: XEN, VMWare, Virtual Box
- High-Layer Technology: GIS (ArcGIS, OpenMap) / GUI
- Others: Network Virtualization, OpenPBS/Torque, Design Pattern, UML, Matlab, Visio, etc.

## Selected Projects

1. **NSF HyLoC (NSF Project)**, 2020-present: Optimizing the performance for scientific application using lossy compression techniques.
2. **ECP Sky (DOE project)**, 2016-2019: Our work in this project aims at exploring a set of very efficient compression techniques for Cosmology simulation.
3. **ECP VeloC (DOE project)**, 2016-2019: Our work in this collaboration project aims at providing a very flexible checkpoint/restart interface for scientific users, by integrating the advantages of two successful multi-level checkpoint libraries, FTI and SCR. Another objective is to enable the checkpoint/restart operations to adapt to different features of I/O environments (such as burst buffer) or file systems.
4. **ECP EZ (DOE project)**, 2016-2019: EZ project aims to develop a very effective, efficient, generic lossy compressor for significantly reducing the scientific data for scientists.
5. **ECP CODAR (DOE project)**, 2016-2019: Our work in this collaboration project aims at providing an easy-to-use, efficient software/tool for exploring the characteristics of the data regarding data compression and assessing lossy compression quality.
6. **Catalog Project (DOE project)**, 2015 – 2019: In-depth characterization and analysis of the errors, failures and faults for large-scale (or exascale) supercomputing environment.
7. **ALETHEIA**, 2016-2019: A framework for automatic detection/correction of corruptions in extreme scale scientific executions.
8. **PARIS: Data-knowledge based Extreme-Scale Resilience**, 2013 – 2016: This project, referred to PARIS, explores 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 (SDCs). For details, please read my papers published in SC14, IPDPS14, IPDPS15, and TPDS16.

9. **AMFT Project**, 2012 – 2015: The AMFT prototype (GENCI/INRIA, BSC, and GENCI/CINES) exploits 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. It also aims to detect and correct silent data corruptions for HPC applications. Please read my papers published in CCGrid15, SC13, SC14, ICPP13, HiPC13, IPDPS14 for details.
10. **Predicting Idleness of Data Centers**, 2012 - 2013: This project, a Google Research Award, aims to model and predict workload/hostload for Google data centers, also aiming to improve system performance. Please read my Cluster12, SC12, JPDC14 papers.
11. **Cloud@HOME**, 2012 – 2013: It is funded by the national French science foundation (called ANR) for running complex services over unreliable (Internet) resources, maximizing resource utilization and Quality of Service (QoS). My contribution is optimizing and stabilizing a best-suited queuing policy and a virtual resource allocation scheme. The prototype implemented is leveraging ParallelColt matrix-computation library and the resource isolation technology by XEN 4.0. Please read my papers published in IEEE CLOUD2013 and IEEE/ACM IWQoS2013 for details.
12. **Desktop Cloud / Self-organizing Cloud**, 2010-2011: This project is supported by Hong Kong RGC grant HKU 7179/09E and HKU Basic Research grant (Grant No. 10401460), and also in part by Hong Kong UGC Special Equipment Grant (SEG HKU09). My contribution is developing a set of core optimization algorithms - optimal resource allocation with fully distributed resource discovery protocols. Please read my TPDS2012, JPDC2012, ICPP2011, UCC2011 papers for details.
13. **CNGrid**, 2007-2011: This project is a key national project under the High-Tech R&D Program (China-863 program) in China. I am mainly in charge of the construction and development of HKU-Grid Point, one of the key Grid points along with other nine ones. The research contribution includes two papers, which are published in ICPP2010 and the Journal of Huazhong University of Science and Technology 2011 respectively.
14. **SemREX**, 2006-2008: This project is funded by China-973 Project of National Basic Research and Development Plan. My major contribution is co-designing and co-developing the relationship-searching engine, coauthoring a paper which was awarded as best-paper in IEEE ICDS2008.
15. **CGSV(ChinaGrid SuperVision)**, 2005-2006: ChinaGrid SuperVison (CGSV) is sponsored by HP Inc. It is a key monitoring-software that provide real-time monitoring support for ChinaGrid. My major contribution is taking part in designing its whole architecture, developing Graphic User Interface and Archive module independently, and developing Registry and Windows Sensor cooperatively. Please read my PAKDD2007 and APCC2007 papers for more information.
16. **GPE4CGSP(Sponsored by Intel)**, 2006: The goal of this project is to integrate two well-known grid platforms: ChinaGrid/CGSP and UNICORE/GPE. My major contribution is analyzing 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. Please read my AINAW2007 paper for more information.
17. **CGSP(ChinaGrid Supported Platform)**, 2005-2006: CGSP, the biggest grid project in China, is sponsored by Ministry of Education. It is designed and developed by about forty developers from twelve top-ranking universities in China. My major contribution is making a GUI to display its key information, such as jobs, applications, services and so on, and providing web service interfaces with Geo-Information System (GIS) support and security support. More information could be found in my LNCS CDVE2007 paper.
18. **CoGIS**, 2004-2005: My major contribution is integrating it with a distributed monitoring system (namely GlobalWatch system) and installing and administering Globus, GridFTP and debugging a Dynamic Replica Transmission platform. Detailed information could be found in my patent NO. 200610125570. 9.
19. **GlobalWatch(A distributed monitoring system)**, 2004-2005: GlobalWatch is a distributed monitoring system used to monitor grid platforms. My contribution is developing the server and client software with another developer. We develop the server with Servlet technology and the sensor (Web Service) with Webservice Application Server (WAS). Please read my APSCC2007 paper for details.

## Software/libraries I developed (all available to download for free)

1. **SZ** (Core Developer): Error-bounded High-Performance Computing in-situ Data Compressor. <https://collab.cels.anl.gov/display/ESR/SZ> or <http://github.com/szcompressor/SZ>
2. **Z-checker** (Core developer): Exascale Scientific Data Analysis Library with Lossy Compression <https://github.com/CODARcode/Z-checker>
3. **Z-checker-installer** (Core developer): one-command installation for z-checker and all dependencies. <https://github.com/CODARcode/z-checker-installer>
4. **VeloC**: multi-level checkpoint-restart runtime for HPC supercomputing infrastructures <https://veloc.readthedocs.io/en/latest/>
5. **QCAT** (Core developer): Quick compression analysis toolkit (qcat) is a lightweight data analysis tool for lossy data compression, such as converting binary data to txt files and vice versa, resizing the data, and data visualization. <https://github.com/szcompressor/qcat>
6. **AID** (Core Developer): Adaptive Impact-driven Detector (for detecting SDC on HPC environment) <https://collab.cels.anl.gov/display/ESR/AID>
7. **LogAider** (Core developer): A tool for mining potential correlations in HPC system logs <https://github.com/disheng222/LogAider>
8. **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>).

## Mentoring and Teaching Experience

1. 06/2020~present: Mentoring Jinyang Liu, PhD student from University of California, Riverside, USA
2. 03/2020~present: Mentoring Khalid Alharthi, PhD student from The University of Warwick, UK.
3. 08/2019~present: Mentoring Jiannan Tian, PhD student from University of Washington State, USA.
4. 06/2019~present: Mentoring Tasmia Reza, PhD student from Clemson University, USA.
5. 06/2019~present: Mentoring Robert Underwood, PhD student from Clemson University, USA.
6. 06/2019~present: Mentoring Kai Zhao, PhD student from University of California, Riverside, USA.
7. 06/2017~present: Mentoring Sihuan Li, PhD student from University of California, Riverside, USA.
8. 05/2017~present: Mentoring Ali Murat Gok, PhD student at Northwestern University, Chicago, USA.
9. 06/2017~2019: Mentoring XinChuan (Ryan) Wu, PhD student from University of Chicago, USA.
10. 02/2017~2019: Mentoring Xin Liang, PhD student from University of California, Riverside, USA.
11. 06/2016~09/2016: Mentoring Dingwen Tao, PhD Student at University of California, Riverside, USA.
12. 08/2015~11/2015: Mentoring Omer Subasi, PhD student at Barcelona Supercomputing Center (BSC), SPAIN.
13. 05/2015~08/2015: Mentoring Eduardo Berrocal, PhD student at Illinois Institute of Technology (IIT), USA.
14. 2013: Mentoring Haibao Chen, PhD student at Huazhong University of Science and Technology (HUST), China.
15. 2012 - 2013: Mentoring Xinhou Wang, PhD student at Huazhong University of Science and Technology (HUST), China. 2010 - 2011 : Hao Liu, Master student at The University of Hong Kong, China.
16. 2009 - 2011: Mentoring Zheming Xu, Master student at The University of Hong Kong, China.
17. 2010 - 2011: Teaching Assistant of Principles of Operating Systems (HKU).
18. 2008 - 2009: Teaching Assistant of Principles of Operating Systems (HKU).
19. 2007 - 2008: Teaching Assistant of Java-based object-oriented programming (HKU).

## Activities (Invited Talks/Seminars)

1. 2019, Oct. 31st, **Invited Talk** at Illinois Institute of Technology (IIT), Chicago, USA.
2. 2019, Oct, 17th, **Invited Talk** at Wayne State University (WSU), Detroit, USA.
3. 2019, April, **Invited Talk** at Joint Laboratory for Extreme-Scale Computing (JLESC) workshop, USA.
4. 2018, June 18-20, **Invited Talk** at the 13th scheduling for large scale systems workshop, Berkeley, CA.
5. 2017, July, **Invited Talk** at Joint Laboratory for Extreme-Scale Computing (JLESC) workshop, Champaign, USA.
6. 2016, Dec, **Invited Talk** at Joint Laboratory for Extreme-Scale Computing (JLESC) workshop, Kobe, Japan.
7. 2016, Nov, **Invited Talk** at Youth workshop, Kobe, Japan.
8. 2016, Sept. 15th, **Invited Talk** at Fault Tolerant System workshop, in conjunction with IEEE CLUSTER conference, Taipei, Taiwan.
9. 2016, June, **Invited Talk** at Huazhong University of Science and Technology, Wuhan, China.
10. 2016, May 5th, **Invited Talk** at Hubei University of Technology, Wuhan, China.
11. 2016, March, **Invited Poster Presentation** at Los Alamos National Laboratory (LANL), USA.
12. 2014, November 25th, **Invited Talk** at the 2nd Joint Lab of Extreme-Scale Computing ([JLESC](#)) Workshop, **Chicago, USA.**
13. 2014, May 8th, **Invited Talk** at Argonne National Laboratory, **Lemont, USA.**
14. 2014, April 2nd, **Invited Talk** at University of California – Merced, **Merced, USA.**
15. 2014, Feb. 11th, **Invited Talk** at Huazhong University of Science and Technology, **Wuhan, China.**
16. 2014, Jan. 24th, **Invited Talk** at Shenzhen Institutes of Advanced Technology, **Shenzhen, China.**
17. 2014, Jan. 23rd, **Invited Talk** at The University of Hong Kong, **Hong Kong, China.**
18. 2013, Nov. 25-27th, **Invited Talk** at the 10th Workshop of the INRIA-Illinois Joint Laboratory on Petascale Computing, **UIUC, USA.**
19. 2013, June 12-14th, **Invited Talk** at the 9th Workshop of the INRIA-Illinois Joint Laboratory on Petascale Computing, **Lyon, France.**
20. 2012, Nov. 19-22nd, **Invited Talk**, at **Google (Mountain View, California), USA.**
21. 2011, Aug. 22-23rd, **Final-check Report** for HKU-Grid project, on behalf of System Research Group of The University of Hong Kong, **Beijing (Peking), China.**
22. 2011, Jan. 12-13rd, **Stage Report** of the development progress for HKU-Grid project, on behalf of System Research Group of The University of Hong Kong, Beijing (Peking), China.
23. 2010, July. 29-Aug. 1st, **Stage Report** of the development progress for HKU-Grid, on behalf of System Research Group of The University of Hong Kong, at Xilinhote, Inner Mongolia, China.
24. 2008, Dec.18-20th, **Stage Report** of development progress for HKU-Grid project, on behalf of System Research Group of The University of Hong Kong, at Shanghai, China.
25. 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.
26. 2008, Jun. 22-25th, **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.
27. 2007, July 24-25th, **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.

## Program Committee Member & Organizing Chair

1. **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](#)).



2. **Program Committee Member:** International Workshop on Data Analysis and Reduction for Big Scientific Data ([DRBSD-5](#)), in conjunction with [SC2020](#).
3. **Program Committee Member:** IEEE International Conference on High Performance Computing , Data, and Analytics ([IEEE HiPC2020](#)), 2020.
4. **Program Committee Member (Data, Storage, and Visualization track and poster section):** IEEE International Conference on Cluster Computing ([IEEE CLUSTER-2020](#)), 2020
5. **Program Committee Member:** IEEE Asia-Pacific Services Computing Conference ([APSCC 2019](#)), 2019.
6. **Program Committee Member:** IEEE congress on [BigData](#), 2019.
7. **Program Committee Member:** IEEE International Conf. on SmartData ([SmartData](#)), 2019.
8. **Program Committee Member:** IEEE Asia-Pacific Services Computing Conference ([APSCC 2018](#)), 2018.
9. **Track Chair/Program Committee Member:** IEEE [BigData](#) Congress, USA, July, 2018.
10. **Program Committee Member** [poster session]: IEEE/ACM The International Conference for High Performance Computing, Networking, Storage and Analysis ([SC'18](#)), 2018.
11. **Program Committee Member:** 32nd IEEE International Parallel and Distributed Processing Symposium ([IPDPS'18](#)), 2018.
12. **Program Committee Member:** 18th IEEE/ACM International Symposium of Cluster, Cloud and Grid Computing ([CCGrid'17](#)), 2017.
13. **Program Committee Member:** IEEE Workshop on Fault Tolerant Systems ([FTS 2017](#)), in conjunction with IEEE CLUSTER 2017.
14. **Program Committee Member:** IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing ([CCGrid17](#)), 2017.
15. **Program Chair:** IEEE Workshop on Fault Tolerant Systems ([FTS 2016](#)), in conjunction with IEEE CLUSTER 2016.
16. **Program Committee Member:** IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing ([CCGrid16](#)), 2016.
17. **Program Committee Member:** IEEE fourth International Workshop on Cloud Computing Interclouds, Multiclouds, Federations, and Interoperability (IEEE [Intercloud'15](#))
18. **Organizing Chair:** Postdoc-Ph.D-Student Session at [JLESC Workshop](#), Chicago, November 24-26th, 2014.
19. **Program Committee Member:** 5th International Conference on Scalable Information Systems ([Infoscale2014](#)), Seoul, South Korea, 2014.
20. **Program Committee Member:** Asia-Pacific Services Computing Conference ([APSCC-2014](#)), 2014.
21. **Program Committee Member:** 6th IEEE International Conference on Cloud Computing Technology and Science ([CloudCom-2014](#)), 2014.
22. **Program Committee Member:** International Workshop on Mobile Internet Big Data, Wuhan, 2014.
23. **Program Committee Member:** IEEE International Workshop on Advanced Technologies of Cloud Computing, [IWATCC14](#), 2014.
24. **Program Committee Member:** IEEE International Conference on Services Computing ([SCC-2014](#)), 2014.
25. **Program Committee Member:** IEEE Third International Workshop on Cloud Computing Interclouds, Multiclouds, Federations, and Interoperability (IEEE [Intercloud'14](#))
26. **Program Committee Member:** The 8th International Conference on Complex, Intelligent, and Software Intensive Systems ([CISIS 2014](#)), Birmingham, UK.
27. **Program Committee Member:** The 5th IEEE International Conference on Cloud Computing Technology and Science ([CloudCom-2013](#))

28. **Program Committee Member:** The 27th IEEE International Conference on Advanced Information Networking and Applications ([AINA-2013](#))
29. **Program Committee Member:** The 4th IEEE International Conference on Cloud Computing Technology and Science ([CloudCom-2012](#))
30. **Program Committee Member:** IEEE Asia Pacific Cloud Computing Conference, 2012 ([APCloud-2012](#))
31. **Local Organizing Committee member:** [PRAGRMA Conference 2011](#)
32. **Local Organizing Committee member:** The 6th [OMII-CNGrid Training 2008](#)

### 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.
- IEEE International Parallel and Distributed Processing Symposium (IEEE IPDPS17), 2017.
- IEEE/ACM International Symposium of Cluster, Cloud and Grid Computing (CCGrid'17), 2017.
- IEEE Transactions on Services Computing (TSC'17), 2017.
- IEEE 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 (SISC), 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.