



- [SC'24] Xuan Wu, Qian Gong, Jieyang Chen, Qing Liu, Norbert Podhorszki, **Xin Liang\***, Scott Klasky, "Error-controlled Progressive Retrieval of Scientific Data under Derivable Quantities of Interest." *Accepted in the 36th ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis*, Atlanta, GA, USA, Nov 17 - 22, 2024. (\*: Corresponding authors)
- [SC'24] Jiajun Huang, Sheng Di, Xiaodong Yu, Yujia Zhai, Jinyang Liu, Zizhe Jian, **Xin Liang**, Kai Zhao, Xiaoyi Lu, Zizhong Chen, Franck Cappello, "hZCC: Accelerating Collective Communication with Co-designed Operation-supported Compression." *Accepted in the 36th ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis*, Atlanta, GA, USA, Nov 17 - 22, 2024.
- [VIS'24] Yuxiao Li, **Xin Liang**, Bei Wang, Yongfeng Qiu, Lin Yan, Hanqi Guo, "MSz: An Efficient Parallel Algorithm for Correcting Morse-Smale Segmentations in Error-Bounded Lossy Compressors." *Conditionally accepted in the 2024 IEEE VIS Conference*, St. Pete Beach, FL, USA, Oct 13 - 18, 2024.
- [EuroVis'24] Congrong Ren, **Xin Liang**, Hanqi Guo, "A Prediction-Traversal Approach for Compressing Scientific Data on Unstructured Meshes with Bounded Error." *Proceedings of 26th EG Conference on Visualization*, Odense, Denmark, May 27 - May 31, 2024.
- [IPDPS'24] Zizhe Jian, Sheng Di, Jinyang Liu, Kai Zhao, **Xin Liang**, Haiying Xu, Robert Underwood, Shixun Wu, Jiajun Huang, Zizhong Chen, Franck Cappello, "CliZ: Optimizing Lossy Compression for Climate Datasets with Adaptive Fine-tuned Data Prediction." *Proceedings of 38th IEEE International Parallel & Distributed Processing Symposium*, San Francisco, California, May 27 - May 31, 2024.
- [SIGMOD'24] Jinyang Liu, Sheng Di, Kai Zhao, **Xin Liang**, Sian Jin, Zizhe Jian, Jiajun Huang, Shixun Wu, Zizhong Chen, Franck Cappello, "High-performance Effective Scientific Error-bounded Lossy Compression with Auto-tuned Multi-component Interpolation." *Proceedings of the 2024 ACM SIGMOD International Conference on Management of Data*, Santiago, Chile, June 9 - Jun 15, 2024.
- [ICDE'24] Mingze Xia, Sheng Di, Franck Cappello, Pu Jiao, Kai Zhao, Jinyang Liu, Xuan Wu, **Xin Liang\***, and Hanqi Guo, "Preserving Topological Feature with Sign-of-Determinant Predicates in Lossy Compression: A Case Study of Vector Field Critical Points." *Proceedings of the 40th IEEE International Conference on Data Engineering*, Utrecht, Netherlands, May 13 - May 16, 2024. (\*: Corresponding authors)
- [Big Data'23] Jinyang Liu, Sheng Di, Sian Jin, Kai Zhao, **Xin Liang**, Zizhong Chen, Franck Cappello, "Scientific Error-bounded Lossy Compression with Super-resolution Neural Networks." *Proceedings of the 2023 IEEE International Conference on Big Data*, Sorrento, Italy, Dec 15 - Dec 18, 2023.
- [HiPC'23] Pu Jiao, Sheng Di, Jinyang Liu, **Xin Liang\***, and Franck Cappello, "Characterization and Detection of Artifacts for Error-controlled Lossy Compressors." *Proceedings of the 30th IEEE International Conference on High Performance Computing, Data, and Analytics*, Goa, India, Dec 18 - Dec 21, 2023. (\*: Corresponding authors)
- [VIS'23] Lin Yan, **Xin Liang**, Hanqi Guo, Bei Wang, "TopoSZ: Preserving Topology in Error-Bounded Lossy Compression." *Proceedings of the 2023 IEEE VIS Conference*, Melbourne, Australia, Oct 22 - 27, 2023.
- [HPDC'23] Lipeng Wan, Jieyang Chen, **Xin Liang**, Ana Gainaru, Qian Gong, Qing Liu, Ben Whitney, Joy Arulraj, Zhengchun Liu, Ian Foster, Scott Klasky, "RAPIDS: Reconciling Availability, Accuracy, and Performance in Managing Geo-Distributed Scientific Data." *Proceedings of the 32nd International Symposium on High-Performance Parallel and Distributed Computing*, Orlando, FL, Jun 20 - 23, 2023.
- [HPDC'23] Boyuan Zhang, Jiannan Tian, Sheng Di, Xiaodong Yu, Yunhe Feng, **Xin Liang**, Dingwen Tao, Franck Cappello, "FZ-GPU: A Fast and High-Ratio Lossy Compressor for Scientific Computing Applications on GPUs." *Proceedings of the 32nd International Symposium on High-Performance Parallel and Distributed Computing*, Orlando, FL, Jun 20 - 23, 2023.
- [ICS'23] Jinyang Liu, Sheng Di, Kai Zhao, **Xin Liang**, Zizhong Chen, Franck Cappello, "FAZ: A flexible auto-tuned modular error-bounded compression framework for scientific data." *Proceedings of the 37th International Conference on Supercomputing*, Orlando, FL, Jun 21 - 23, 2023. **Nominated in the Best Paper Finalist.**
- [ICDE'23] Jinzhen Wang, **Xin Liang**, Ben Whitney, Jieyang Chen, Qian Gong, Xubin He, Lipeng Wan, Scott Klasky, Norbert Podhorszki, Qing Liu, "Improving Progressive Retrieval for HPC Scientific Data using Deep Neural Network." *Proceedings of the 39th International Conference on Data Engineering*, Anaheim, CA, Apr 4 - 6, 2023.

- [VLDB'23] Pu Jiao, Sheng Di, Hanqi Guo, Kai Zhao, Jiannan Tian, Dingwen Tao, **Xin Liang\***, and Franck Cappello, "Toward Quantity-of-Interest Preserving Lossy Compression for Scientific Data." *Proceedings of the 49th International Conference on Very Large Data Bases*, Vancour, Canada, Aug 28 - Sep 1, 2023. (\*: Corresponding authors).
- [PPoPP'23] Jieyang Chen, **Xin Liang**, Kai Zhao, Hadi Zamani Sabzi, Laxmi Bhuyan, and Zizhong Chen, "Improving Energy Saving of One-sided Matrix Decompositions on CPU-GPU Heterogeneous Systems." *Proceedings of the 28th ACM SIGPLAN Annual Symposium on Principles and Practice of Parallel Programming*, Montreal, Canada. Feb 25 - Mar 1, 2023.
- [HiPC'22] Arindam Khanda, Sanjukta Bhowmick, **Xin Liang**, Sajal K Das., "Parallel Vertex Color Update on Large Dynamic Networks." *Proceedings of the 29th IEEE International Conference on High Performance Computing, Data, and Analytics*, Bangalore, India, Dec 18 - 21, 2022.
- [SC'22] Jinyang Liu, Sheng Di, Kai Zhao, **Xin Liang**, Zizhong Chen, and Franck Cappello, "Dynamic Quality Metric Oriented Error Bounded Lossy Compression for Scientific Datasets." *Proceedings of the 34th ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis*, Dallas, TX, USA, Nov 13 - 18, 2022.
- [SSDBM'22] Qian Gong, Ben Whitney, Chengzhu Zhang, **Xin Liang**, Anand Rangarajan, Jieyang Chen, Lipeng Wan, Paul Ullrich, Qing Liu, Robert Jacob, Sanjay Ranka, and Scott Klasky, "Region-adaptive, Error-controlled Scientific Data Compression using Multilevel Decomposition." *Proceedings of the 34th International Conference on Scientific and Statistical Database Management*, Copenhagen, Denmark, July 6-8, 2022.
- [HPDC'22] Xiaodong Yu, Sheng Di, Kai Zhao, Jiannan Tian, Dingwen Tao, **Xin Liang**, and Franck Cappello, "Ultra-fast Error-bounded Lossy Compression for Scientific Dataset." *Proceedings of the 31st ACM International Symposium on High-Performance Parallel and Distributed Computing*, Minneapolis, MN, June 27-July 1, 2022. Acceptance Rate: 19% (21/108)
- [ICDE'22] Kai Zhao, Sheng Di, Danny Perez, **Xin Liang**, Zizhong Chen, and Franck Cappello, "MDZ: An Efficient Error-bounded Lossy Compressor for Molecular Dynamics." *Proceedings of the 38th IEEE International Conference on Data Engineering*, Virtual, May 9 - 12, 2022.
- [Cluster'21] Jinyang Liu, Sheng Di, Kai Zhao, Sian Jin, Dingwen Tao, **Xin Liang**, Zizhong Chen, and Franck Cappello, "Exploring Autoencoder-Based Error-Bounded Compression for Scientific Data." *Proceedings of the 2021 IEEE International Conference on Cluster Computing*, Portland, OR, USA, September 7-10, 2021. Acceptance Rate: 29% (48/163)
- [Cluster'21] Jiannan Tian, Sheng Di, Xiaodong Yu, Cody Rivera, Kai Zhao, Sian Jin, Yunhe Feng, **Xin Liang**, Dingwen Tao, and Franck Cappello, "Optimizing Error-Bounded Lossy Compression for Scientific Data on GPUs." *Proceedings of the 2021 IEEE International Conference on Cluster Computing*, Portland, OR, USA, September 7-10, 2021. Acceptance Rate: 29% (48/163)
- [SC'21] **Xin Liang**, Qian Gong, Jieyang Chen, Ben Whitney, Lipeng Wan, Qing Liu, David Pugmire, Rick Archibald, Norbert Podhorszki, and Scott Klasky, "Error-controlled, Progressive, and Adaptable Retrieval of Scientific Data with Multilevel Decomposition." *Proceedings of the 33rd ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis*, St. Louis, Missouri, USA, Nov 14 - 19, 2021. Acceptance Rate: 23.6% (86/365)
- [SC'21] Sihuan Li, Sheng Di, Kai Zhao, **Xin Liang**, Zizhong Chen, and Franck Cappello, "Resilient Error-bounded Lossy compressor for Data Transfer." *Proceedings of the 33rd ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis*, St. Louis, Missouri, USA, Nov 14 - 19, 2021. Acceptance Rate: 23.6% (86/365)
- [IPDPS'21] Jieyang Chen, Lipeng Wan, **Xin Liang**, Ben Whitney, Qing Liu, Dave Pugmire, Nicholas Thompson, Matthew Wolf, Todd Munson, Ian Foster, and Scott Klasky, "Accelerating Multigrid-based Hierarchical Scientific Data Refactoring on GPUs." *Proceedings of the 35th IEEE International Parallel and Distributed Symposium*, Portland, Oregon, May 17-21, 2021. Acceptance Rate: 23% (105/462)
- [IPDPS'21] 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 Symposium*, Portland, Oregon, May 17-21, 2021. Acceptance Rate: 23% (105/462)
- [Cluster'20] 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." *Proceedings of the 22nd IEEE International Conference on Cluster Computing*, Kobe, Japan, September 14 - 17 2020. Acceptance Rate: 20% (27/132)

- **[PACT'20]** 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*, Atlanta, GA, USA, October 3 - 7, 2020. Acceptance Rate: 25% (35/137)
- **[HPDC'20]** Kai Zhao, Sheng Di, **Xin Liang**, Sihuan Li, Dingwen Tao, Zizhong Chen, and Franck Cappello, “Significantly Improving Lossy Compression for HPC Datasets with Second-Order Prediction and Parameter Optimization.” *Proceedings of the 28th ACM International Symposium on High-Performance Parallel and Distributed Computing*, Stockholm, Sweden, June 23 - 26, 2020. Acceptance Rate: 22% (16/71)
- **[PPOPP'20]** 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*, San Diego, California, USA, February 22 - 26, 2020. Acceptance Rate: 23% (28/121)
- **[PacificVis'20]** **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.” *Proceedings of the 13rd IEEE Pacific Visualization Symposium*, Tianjin, China, Apr 14 - 17, 2020. Acceptance Rate: 24% (23/96)
- **[SC'19]** **Xin Liang**, Sheng Di, Sihuan Li, Dingwen Tao, Bogdan Nicolae, Zizhong Chen, and Franck Cappello, “Significantly Improving Lossy Compression Quality based on An Optimized Hybrid Prediction Model.” *Proceedings of the 31st ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis*, Denver, Colorado, USA, Nov 17 - 22, 2019. Acceptance Rate: 25.3% (87/344)
- **[SC'19]** Sihuan Li, Hongbo Li, **Xin Liang**, Jieyang Chen, Elisabeth Giem, Kaiming Ouyang, Kai Zhao, Sheng Di, Franck Cappello, and Zizhong Chen, “FT-iSort: Efficient Fault Tolerance for Introsort.” *Proceedings of the 31st ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis*, Denver, Colorado, USA, Nov 17 - 22, 2019. Acceptance Rate: 25.3% (87/344)
- **[Cluster'19]** **Xin Liang**, Sheng Di, Dingwen Tao, Sihuan Li, Bogdan Nicolae, Zizhong Chen, and Franck Cappello, “Improving Performance of Data Dumping with Lossy Compression for Scientific Simulation.” *Proceedings of the 2019 IEEE International Conference on Cluster Computing*, Albuquerque, New Mexico USA, September 23 - 26, 2019.
- **[ICS'19]** Jieyang Chen, Nan Xiong, **Xin Liang**, Dingwen Tao, Sihuan Li, Kaiming Ouyang, Kai Zhao, Nathan DeBardeleben, Qiang Guan, and Zizhong Chen, “TSM2: Optimizing Tall-and-Skinny Matrix-Matrix Multiplication on GPUs.” *Proceedings of the 33rd ACM International Conference on Supercomputing*, Phoenix, AZ, USA, June 26 - 28, 2019. Acceptance Rate: 23.3% (45/193)
- **[HPDC'19]** Sian Jin, Sheng Di, **Xin Liang**, Jiannan Tian, Dingwen Tao, and 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*, Phoenix, AZ, USA, June 24 - 28, 2019. Acceptance Rate: 20.7% (22/106)
- **[BigData'18]** **Xin Liang**, Sheng Di, Dingwen Tao, Sihuan Li, Shaomeng Li, Hanqi Guo, Zizhong Chen, and Franck Cappello, “Error-Controlled Lossy Compression Optimized for High Compression Ratios of Scientific Datasets.” *Proceedings of the 2018 IEEE International Conference on Big Data*, Seattle, WA, USA, December 10 - 13, 2018. Acceptance Rate: 18.9% (98/518)
- **[BigData'18]** Sihuan Li, Sheng Di, **Xin Liang**, Zizhong Chen, and Franck Cappello, “Optimizing Lossy Compression with Adjacent Snapshots for N-body Simulation Data.” *Proceedings of the 2018 IEEE International Conference on Big Data*, Seattle, WA, USA, December 10 - 13, 2018. Acceptance Rate: 18.9% (98/518)
- **[BigData'18]** Jieyang Chen, Qiang Guan, **Xin Liang**, Paul Bryant, Patricia Grubel, Allen McPherson, Li-Ta Lo, Timothy Randles, Zizhong Chen and James Ahrens, “Build and Execution Environment (BEE): an Encapsulated Environment Enabling HPC Applications Running Everywhere.” *Proceedings of the 2018 IEEE International Conference on Big Data*, Seattle, WA, USA, December 10 - 13, 2018. Acceptance Rate: 18.9% (98/518)
- **[Cluster'18]** **Xin Liang**, Sheng Di, Dingwen Tao, Zizhong Chen, and Franck Cappello, “An Efficient Transformation Scheme for Lossy Data Compression with Point-wise Relative Error Bound.” (**Best Paper Award in the Data, Storage, and Visualization area**) *Proceedings*

of the 2018 IEEE International Conference on Cluster Computing, Belfast, UK, September 10 - 13, 2018.

- [Cluster'18] Ali Murat Gok, Sheng Di, Yuri Alexeev, Dingwen Tao, Vladimir Mironov, **Xin Liang**, and Franck Cappello, "PaSTRI: Error-Bounded Lossy Compression for Two-Electron Integrals in Quantum Chemistry." (**Best Paper Award in the Application, Algorithms and Libraries area, Overall Best Paper Award**) *Proceedings of the 2018 IEEE International Conference on Cluster Computing*, Belfast, UK, September 10 - 13, 2018.
- [Cluster'18] Dingwen Tao, Sheng Di, **Xin Liang**, Zizhong Chen, and Franck Cappello, "Fixed-PSNR Lossy Compression for Scientific Data." (short paper) *Proceedings of the 2018 IEEE International Conference on Cluster Computing*, Belfast, UK, September 10 - 13, 2018.
- [SC'18] Jieyang Chen, Hongbo Li, Sihuan Li, **Xin Liang**, Panruo Wu, Dingwen Tao, Kaiming Ouyang, Yuanlai Liu, Qiang Guan, and Zizhong Chen, "FT-MAGMA: Fault Tolerance Dense Matrix Decomposition on Heterogeneous Systems with GPUs." *Proceedings of the 30th ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis*, Dallas, Texas, USA, Nov 11 - 16, 2018. Acceptance Rate: 19.1% (55/288)
- [ICDCS'18] Jieyang Chen, Qiang Guan, Zhao Zhang, **Xin Liang**, Louis Vernon, Allen McPherson, Li-Ta Lo, Zizhong Chen, Patricia Grubel, and James Ahrens, "BeeFlow : a Workflow Management System for In situ Processing Across HPC and Cloud Systems." *Proceedings of the 38th IEEE International Conference on Distributed Computing Systems*, Vienna, Austria, July 2-5, 2018. Acceptance Rate: 20.6% (78/378).
- [HPDC'18] Dingwen Tao, Sheng Di, **Xin Liang**, Zizhong Chen, and Franck Cappello, "Improving Performance of Iterative Methods by Lossy Checkpointing." *Proceedings of the 27th ACM International Symposium on High-Performance Parallel and Distributed Computing*, Tempe, AZ, USA, June 11 - 15, 2018. Acceptance Rate: 19.6% (22/112)
- [SC'17] **Xin Liang**, Jieyang Chen, Dingwen Tao, Sihuan Li, Panruo Wu, Hongbo Li, Kaiming Ouyang, Yuanlai Liu, Fengguang Song, and Zizhong Chen, "Correcting Soft Errors Online in Fast Fourier Transform." *Proceedings of the 29th ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis*, Denver, Colorado, USA, Nov 12 - 17, 2017. Acceptance Rate: 18.6% (61/327)
- [PPoPP'17] Panruo Wu, Qiang Guan, Nathan DeBardeleben, Sean Blanchard, Jieyang Chen, Dingwen Tao, **Xin Liang**, Sihuan Li, Kaiming Ouyang, and Zizhong Chen, "Silent Data Corruption Resilient Two-sided Matrix Factorizations." *Proceedings of the 22nd ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming*, Austin, Texas, USA, February 4 - 8 2017. Acceptance Rate: 21.9%. 29/132)
- [SC'16] Jieyang Chen, Li Tan, Panruo Wu, Dingwen Tao, Hongbo Li, **Xin Liang**, Sihuan Li, Rong Ge, Laxmi Bhuyan, and Zizhong Chen, "GreenLA: Green Linear Algebra Software for GPU-Accelerated Heterogeneous Computing." *Proceedings of the 28th ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis*, Salt Lake City, Utah, USA, Nov 13 - 18, 2016. Acceptance Rate: 18.4% (82/446).
- [HPDC'16] Dingwen Tao, Shuaiwen Leon Song, Sriram Krishnamoorthy, Panruo Wu, **Xin Liang**, Zheng Eddy Zhang, Darren Kerbyson, and Zizhong Chen, "New-Sum: A Novel Online ABFT Scheme for General Iterative Methods." *Proceedings of the 25th ACM International Symposium on High-Performance Parallel and Distributed Computing*, Kyoto, JAPAN, May 31- June 4, 2016 Acceptance Rate: 15.5% (20/129).
- [HPDC'16] Panruo Wu, Qiang Guan, Nathan DeBardeleben, Sean Blanchard, Dingwen Tao, **Xin Liang**, Jieyang Chen, and Zizhong Chen, "Towards Practical Algorithm Based Fault Tolerance in Dense Linear Algebra." *Proceedings of the 25th ACM International Symposium on High-Performance Parallel and Distributed Computing*, Kyoto, JAPAN, May 31 - June 4, 2016. Acceptance Rate: 15.5% (20/129).
- [IPDPS'16] Jieyang Chen, **Xin Liang**, and Zizhong Chen, "Online Algorithm-Based Fault Tolerance for Cholesky Decomposition on Heterogeneous Systems with GPUs." *Proceedings of the 30th IEEE International Parallel & Distributed Processing Symposium*, Chicago, Illinois, USA, May 23-27, 2016. Acceptance Rate: 22.98% (114/496).
- [HPCC'15] Teresa Davies, **Xin Liang**, Jieyang Chen, Zizhong Chen, "Simulated Annealing to Generate Numerically Stable Real Number Error Correction Codes." *Proceedings of the 2015 IEEE 17th International Conference on High Performance Computing and Communications*, New York, USA, August 24 - 26, 2015
- [IPDPSW] Avah Banerjee, **Xin Liang**, and Tod Rohid, "Locality-aware Qubit Routing for the Grid Architecture." *Proceedings of IPDPS Workshops*, Lyon, France, May 30 - June 3,

2022.

- [DRBSD-4] **Xin Liang**, Sheng Di, Sihuan Li, Dingwen Tao, Zizhong Chen, and Franck Cappello, “Exploring Best Lossy Compression Strategy By Combining SZ with Spatiotemporal Decimation.” *Proceedings of the 4th International Workshop on Data Reduction for Big Scientific Data@SC’18*, Dallas, Texas, USA, Nov 11 - 16, 2018.
- [DIDL-1] Xinyu Chen, Qiang Guan, **Xin Liang**, Li-Ta Lo, Simon Su, Trilce Estrada, and James Ahrens, “TensorViz: Visualizing the Training of Convolutional Neural Network Using Paraview.” *Proceedings of the 1st Workshop on Distributed Infrastructures for Deep Learning@Middleware’17*, Las Vegas, Nevada, USA, Dec 11 - 15, 2017.

REFEREED  
JOURNAL  
PUBLICATIONS

- [TVCG] **Xin Liang**, Sheng Di, Franck Cappello, Mukund Raj, Chunhui Liu, Kenji Ono, Zizhong Chen, Tom Peterka, and Hanqi Guo, “Toward Feature-Preserving Vector Field Compression.” *IEEE Transactions on Visualization and Computer Graphics*, 2022.
- [TBD] **Xin Liang\***, Kai Zhao\*, Sheng Di, Sihuan Li, Robert Underwood, Ali M. Gok, Jianan Tian, Junjing Deng, Jon C. Calhoun, Dingwen Tao, Zizhong Chen, and Franck Cappello, “SZ3: A Modular Framework for Composing Prediction-based Error-bounded Lossy Compressors.” (2023 Best Paper Award from IEEE Transactions on Big Data by the IEEE Computer Society Publications Board) *IEEE Transactions on Big Data*, 2022.
- [TC] **Xin Liang\***, Ben Whitney\*, Jieyang Chen, Lipeng Wan, Qing Liu, Dingwen Tao, James Kress, David Pugmire, Matthew Wolf, Norbert Podhorszki, and Scott Klasky, “MGARD+: Optimizing Multilevel Methods for Error-bounded Scientific Data Reduction.” *IEEE Transaction on Computers*, 2021.
- [TPDS-SS] Lipeng Wan, Axel Huebl, Junmin Gu, Franz Poeschel, Ana Gainaru, Ruonan Wang, Jieyang Chen, **Xin Liang**, Dmitry Ganyushin, Todd Munson, Ian Foster, Jean-Luc Vay, Norbert Podhorszki, Kesheng Wu, and Scott Klasky, “Improving I/O Performance for Exascale Applications through Online Data Layout Reorganization.” *IEEE Transactions on Parallel and Distributed Systems Special Section on Innovative R&D toward the Exascale Era*, 2021.
- [TVCG] Hanqi Guo, David Lenz, Jiayi Xu, **Xin Liang**, Wenbin He, Iulian R. Grindeanu, Han-Wei Shen, Tom Peterka, Todd Munson, and Ian Foster, “FTK: A Simplicial Spacetime Meshing Framework for Robust and Scalable Feature Tracking.” *IEEE Transactions on Visualization and Computer Graphics*, 2021.
- [TPDS-SS-AI] Kai Zhao, Sheng Di, Sihuan Li, **Xin Liang**, Yujia Zhai, Jieyang Chen, Kaiming Ouyang, Franck Cappello, and Zizhong Chen, “Algorithm-Based Fault Tolerance for Convolutional Neural Networks.” *IEEE Transactions on Parallel and Distributed Systems Special Section on Parallel and Distributed Computing Techniques for AI, ML and DL*, 2020.
- [IJHPCA] Franck Cappello, Sheng Di, Sihuan Li, **Xin Liang**, Ali Murat Gok, Dingwen Tao, Chun Hong Yoon, Xin-Chuan Wu, Yuri Alexeev, and Frederic T Chong, “Use Cases of Lossy Compression for Floating-Point Data in Scientific Data Sets.” *The International Journal of High Performance Computing Applications*, 2019.
- [TPDS] 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*, 2019.
- [TPDS] 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*, 2018.

CONFERENCE  
POSTERS

- [SC’18] Sihuan Li, Sheng Di, **Xin Liang**, Zizhong Chen, Franck Cappello, “Improving Error-bounded Compression for Cosmological Simulation.” *Poster in the 30th ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis*, Dallas, Texas, USA, Nov 11 - 16, 2018.
- [SC’17] Xinyu Chen, Qiang Guan, **Xin Liang**, Li-Ta Lo, Trilce Estrada, and James Ahrens, “TensorViz: Visualizing the Training of Convolutional Neural Network Using Paraview.” *Poster in the 29th ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis*, Denver, Colorado, USA, Nov 12 - 17, 2017.

SERVICES

- **Guest Editor:** Electronics (Special Issue “New Trends for High-Performance Computing”)
- **Organizing Committee:** IWBDP, ScalComm, DRBSD
- **Programs Committee:** DRBSD, IWBDP, ChinaVis, HPCC, IEEE BigData, SSDBM, ICPP, SC, CIKM, CCGrid

- **Reviewers:** TPDS, TC, TCAD, JSA, JV, KAIS, KnoSys
- **Subreviewers:** HPDC, HiPC, SC, IPDPS, HPML, ICPADS

#### TEACHING

- **Instructor**, CS 621: Parallel and Distributed Computing, University of Kentucky, Lexington, KY, January–May, 2024.
- **Instructor**, CS/MA321: Introduction to Numerical Methods, University of Kentucky, Lexington, KY, August–December, 2023.
- **Instructor**, CS 621: Parallel and Distributed Computing, University of Kentucky, Lexington, KY, January–May, 2023.
- **Instructor**, CS/MA321: Introduction to Numerical Methods, University of Kentucky, Lexington, KY, August–December, 2022.
- **Instructor**, CS6001: High Performance Computing, Missouri S&T, Rolla, MO, January–May, 2022.
- **Instructor**, CS5200: Analysis of Algorithms, Missouri S&T, Rolla, MO, August–December, 2021.
- **Instructor**, CS2500: Algorithms, Missouri S&T, Rolla, MO, January–May, 2021.
- **Teaching Assistant**, CS150: Automata and Formal Languages, University of California, Riverside, Riverside, CA, April–June, 2016.
- **Teaching Assistant**, CS008: Introduction to Computing, University of California, Riverside, Riverside, CA, April–June, 2016.
- **Teaching Assistant**, CS161: Design & Architecture of Computer Systems, University of California, Riverside, Riverside, CA, January–March, 2016.
- **Teaching Assistant**, CS203: Advanced Computer Architecture, University of California, Riverside, Riverside, CA, January–March, 2016.
- **Teaching Assistant**, CS010: Intro: CS for Sci, Math & Engr I, University of California, Riverside, Riverside, CA, October–December, 2015.
- **Teaching Assistant**, CS008: Introduction to Computing, University of California, Riverside, Riverside, CA, October–December, 2015.

#### TALKS AND PRESENTATIONS

- 10/2023, invited talk, Advancing Exascale Data Management with Trust-Driven Lossy Compression, University of Alabama at Birmingham, Birmingham, AL, USA.
- 04/2022, invited talk, Keeping-up with Exascale Data Flood via Trust-Aware Data Reduction, University of Kentucky, KY, USA.
- 11/2021, presentation, Error-controlled, Progressive, and Adaptable Retrieval of Scientific Data with Multilevel Decomposition, the 33rd ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis, St. Louis, Missouri, USA.
- 02/2020, invited talk, Fidelity-Oriented Data Reduction for Exascale Data Management, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
- 02/2020, invited talk, Keeping-up with Exascale Data Flood with Adaptive Error-bounded Lossy Compression, Missouri University of Science and Technology, Rolla, MO, USA.
- 12/2019, seminar talk, Keeping-up with Exascale Data Flood with Adaptive Error-bounded Lossy Compression, Argonne National Laboratory, Lemont, IL, USA.
- 11/2019, invited talk, Keeping-up with Exascale Data Flood with Adaptive Error-bounded Lossy Compression, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
- 11/2019, presentation, Significantly Improving Lossy Compression Quality based on An Optimized Hybrid Prediction Model, the 31st ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis, Denver, CO, USA.
- 09/2019, presentation, Improving Performance of Data Dumping with Lossy Compression for Scientific Simulation, the 2019 IEEE International Conference on Cluster Computing, Albuquerque, New Mexico, USA.
- 04/2019, presentation, DeepSZ: A Novel Framework to Compress Deep Neural Networks by Using Error-Bounded Lossy Compression, the Joint Laboratory for Extreme Scale Computing Workshop, Knoxville, TN, USA.
- 04/2019, poster presentation, Significantly Improving Lossy Compression Quality based on An Optimized Hybrid Prediction Model, the Joint Laboratory for Extreme Scale Computing Workshop, Knoxville, TN, USA.
- 01/2019, poster presentation, EZ: Exascale Lossy Compression for Scientific Data, 2019 ECP Annual Meeting, Houston, TX, USA.
- 12/2018, presentation, Error-Controlled Lossy Compression Optimized for High Compression

Ratios of Scientific Datasets, the 2018 IEEE International Conference on Big Data, Seattle, WA, USA.

- 09/2018, presentation, An Efficient Transformation Scheme for Lossy Data Compression with Point-wise Relative Error Bound, the 2018 IEEE International Conference on Cluster Computing, Belfast, UK.
- 11/2017, presentation, Correcting Soft Errors Online in Fast Fourier Transform, the 29th ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis, Denver, Colorado, USA.
- 08/2015, presentation, Simulated Annealing to Generate Numerically Stable Real Number Error Correction Codes. 17th IEEE International Conference on High Performance Computing and Communications, New York, USA.

#### HONOURS AND AWARDS

- 2023 Best Paper Award from IEEE Transactions on Big Data by the IEEE Computer Society Publications Board, IEEE. **2024**
- IEEE CS TCHPC Early Career Researchers Award For Excellence in High Performance Computing, IEEE. **2024**
- EPSCoR Research Fellows, the National Science Foundation. **2023**
- Best Paper Finalists, International Conference on Supercomputing 2023, Orlando, FL. **2023**
- CISE Research Initiation Initiative (CRII) Award, the National Science Foundation. **2022**
- 2021 R&D 100 Award (SZ compression framework) **2021**
- Best Paper Award in the Data, Storage, and Visualization area, IEEE Cluster 2018, Belfast, UK. **2018**
- Best Paper Award in the Application, Algorithms and Libraries area & Overall Best Paper Award, IEEE Cluster 2018, Belfast, UK. **2018**
- Dissertation Year Program (DYP) Fellowship, University of California, Riverside, Riverside, CA, USA. **2018**
- Dean's Distinguished Fellowship, University of California, Riverside, Riverside, CA, USA. **2014**

#### TRAVEL GRANTS

- Student Travel Grant, IEEE Big Data 2018 **2018**
- Student Travel Grant, IEEE Cluster 2018 **2018**
- Student Travel Grant, IEEE/ACM SC'16 **2016**
- Student Travel Grant, IEEE/ACM SC'15 **2015**

#### ACTIVITIES

- Student Volunteer, IEEE BigData'18 **2018**
- Student Volunteer, NAS'16 **2016**
- Student Volunteer, IEEE/ACM SC'16 **2016**
- Student Volunteer, IEEE/ACM SC'15 **2015**