

# Jieyang Chen

Department of Computer Science  
University of Alabama at Birmingham

## PROFESSIONAL PREPARATION

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**Ph.D.**, Major: Computer Science 09/2015 - 03/2019  
Advisor: Dr. Zizhong Chen *University of California, Riverside*  
**Master of Science**, Major: Computer Science 09/2012 - 12/2014  
Advisor: Dr. Zizhong Chen *University of California, Riverside*  
**Bachelor of Engineering**, Major: Computer Science and Technology 09/2008 - 07/2012  
Advisor: Dr. Dan Wang *Beijing University of Technology*

## RESEARCH INTERESTS

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- Parallel and Distributed Systems
- Scientific Visualization/Data Analytics
- High Performance Computing
- GPU Computing

## APPOINTMENTS

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**Assistant Professor** 01/2023 - present  
*University of Alabama at Birmingham*

**Computer Scientist** 12/2020 - 12/2022  
*Oak Ridge National Laboratory*

**Postdoctoral Research Associate** 05/2019 - 11/2020  
*Oak Ridge National Laboratory*

## AWARDED GRANTS

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**Accelerating I/O of exascale computing using data reduction and refactoring on GPUs**  
07/2023 - 12/2023  
Awarded amount: \$90K (Role: PI) *ORNL Research Grant*

**ESAMR: Enabling Scalable Analytics using Multiprecision Refactoring**  
10/2020 - 09/2022  
Awarded amount: \$640K (Role: PI) *DOE/ORNL Directed Research & Development*

## PENDING GRANTS

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**ProStream: Enabling Progressive Streaming for Distributed Scientific Data Analytics**  
05/2024 - 05/2027  
Pending amount: \$300K (Role: PI) *NSF:SHF Core*

**Accelerating AI Surrogate Model in Scientific Applications With Data Reduction**  
07/2024 - 07/2027  
Pending amount: \$250K (Role: PI) *BSF Research Grants*

**RAPIDS: Resilient, Adaptable and Performant Inter-Regional Data Streaming for Enabling Timely and Efficient Cross-Facility Scientific Workflows**  
09/2024 - 09/2026  
Pending amount: \$150K (Role: PI) *NSF:SHF Core*

## TEACHING EXPERIENCE

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- University of Alabama at Birmingham
  - Spring 2023: CS452/652/752: Advanced Algorithms & Applications
  - Fall 2023: CS452/652/752: Advanced Algorithms & Applications
  - Spring 2024: CS629/729: GPU Programming

## SELECTED PUBLICATIONS

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- PPoPP'23** Jieyang Chen, Xin Liang, Kai Zhao, Hadi Zamani Sabzi, Laxmi Bhuyan, Zizhong Chen. "Improving Energy Saving of One-sided Matrix Decompositions on CPU-GPU Heterogeneous Systems." *The 28th ACM SIGPLAN Annual Symposium on Principles and Practice of Parallel Programming*, Montreal, Canada. Feb 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*. June 2023
- IPDPS'21** Jieyang Chen, Lipeng Wan, Xin Liang, Ben Whitney, Qing Liu, David Pugmire, Nicholas Thompson, Jong Youl Choi, Matthew Wolf, Todd Munson, Ian Foster, Scott Klasky. Accelerating Multigrid-based Hierarchical Scientific Data Refactoring on GPUs. *35th IEEE International Parallel and Distributed Processing Symposium*, Portland, Oregon, USA, May 2021.
- ICPP'21** Chenhao Xie, Jieyang Chen, Jesun S. Firoz, Jiajia Li, Shuaiwen Leon Song, Kevin Barker, Mark Raugas, and Ang Li. "Fast and Scalable Sparse Triangular Solver for Multi-GPU Based HPC Architectures." *The 50th International Conference on Parallel Processing*, Chicago, Illinois, USA, Aug. 9-12, 2021
- ASE'21** Jake Tronge, Jieyang Chen, Patricia Grubel, Tim Randles, Rusty Davis, Quincy Wofford, Steven Anaya, and Qiang Guan. "BeeSwarm: Enabling Parallel Scaling Performance Measurement in Continuous Integration for HPC Applications." *36th IEEE/ACM International Conference on Automated Software Engineering*, Melbourne, Australia, Nov. 15-19, 2021
- JPDC** Cody Rivera\*, Jieyang Chen\*, Nan Xiong, Jing Zhang, Shuaiwen Leon Song, Dingwen Tao. TSM2X: High-performance tall-and-skinny matrix-matrix multiplication on GPUs. *Elsevier Journal of Parallel and Distributed Computing (JPDC)*, Published in 2021. \*Authors contributed equally
- ICS'19** Jieyang Chen, Nan Xiong, Xin Liang, Dingwen Tao, Sihuan Li, Kaiming Ouyang, Nathan DeBardleben, Qiang Guan, Zizhong Chen. TSM2: Optimizing Tall-and-skinny Matrix-Matrix Multiplication on GPUs. *33rd ACM International Conference on Supercomputing (ICS)*, Phoenix, Arizona, USA, Jun. 26-28, 2019, Acceptance Rate: 23.3% (45/193)
- TPDS** Ang Li, Shuaiwen Leon Song, Jieyang Chen, Jiajia Li, Xu Liu, Nathan Tallent, and Kevin Barker. Evaluating Modern GPU Interconnect: PCIe, NVLink, NV-SLI, NVSwitch and GPUDirect. *IEEE Transactions on Parallel and Distributed Systems*, Published in 2019
- 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, Dec. 10-13, 2018. Acceptance Rate: 18.9% (98/518)

- SC'18 Jieyang Chen**, Hongbo Li, Sihuan Li, Panruo Wu, Xin Liang, Dingwen Tao, Kaiming Ouyang, Yuanlai Liu, Kai Zhao, Qiang Guan, and Zizhong Chen. Fault Tolerant 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 James Vernon, Allen McPherson, Li-Ta Lo, Patricia Grubel, Tim Randles, Zizhong Chen, and James Paul Ahrens. BeeFlow : A Workflow Management System for In-Situ Processing Across HPC and Cloud Systems, *38th IEEE International Conference on Distributed Computing Systems*, Jul. 2 – 5, 2018, Vienna, Austria. Acceptance Rate: 20.6% (78/378)
- 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)
- 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).  
\*Authors contributed equally
- 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)

## PROFESSIONAL SERVICE

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Review board member:

- IEEE Transactions on Parallel and Distributed Systems (2021 - present)

Reviewer/Committee:

- IEEE/ACM International Conference for High Performance Computing, Networking, Storage, and Analysis 2018
- IEEE International Green and Sustainable Computing Conference 2018
- Elsevier Sustainable Computing, Informatics and Systems 2019
- IEEE Access 2019
- Elsevier Journal of Systems Architecture 2019
- IEEE Workshop on Silicon Errors in Logic – System Effects 2020
- Elsevier Journal of Systems Architecture 2020
- ACM Transactions on Knowledge Discovery from Data 2020
- China Visualization and Visual Analytics Conference 2020

- IEEE International Conference on High Performance Computing and Communications 2020
- IEEE International Conference on Cluster Computing 2020
- IEEE International Workshop on Big Data Reduction 2020
- ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming 2020
- IEEE International Parallel and Distributed Processing Symposium 2021
- IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems 2021
- IEEE International Conference on Distributed Computing Systems 2021
- IEEE Workshop on Silicon Errors in Logic – System Effects 2021
- IEEE International Conference on Scalable Computing and Communications 2021
- IEEE International Workshop on Big Data Reduction 2021
- ACM International Conference on Parallel Processing 2021
- ACM International Conference on Supercomputing 2021
- IEEE International Conference on High Performance Computing and Communications 2021
- IEEE International Workshop on Data Analysis and Reduction for Big Scientific Data 2021
- International Journal of High Performance Computing Applications 2022
- IEEE Transactions on Parallel and Distributed Systems 2022
- IEEE Workshop on Silicon Errors in Logic – System Effects 2022
- International Journal of Computing and Digital Systems 2022
- ACM Transactions on Embedded Computing Systems 2022
- IEEE Access 2022
- Mobile Information Systems 2022
- Elsevier Parallel Computing 2022
- ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming 2022
- IEEE International Workshop on Data Analysis and Reduction for Big Scientific Data 2022
- IEEE International Conference on High Performance Big Data and Intelligent Systems 2022
- International Journal of Aerospace Engineering 2022
- International Workshop on In Situ Infrastructures for Enabling Extreme-scale Analysis and Visualization 2022

## FULL PUBLICATION LIST

C: CONFERENCE PAPERS; J: JOURNAL PAPERS; B: BOOK CHAPTERS

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- [C39]** Qian Gong, Chengzhu Zhang, Xin Liang, Viktor Reshniak, **Jieyang Chen**, Anand Rangarajan, Sanjay Ranka, Nicolas Vidal, Lipeng Wan, Paul Ullrich, Norbert Podhorszki, Robert Jacob, Scott Klasky. "Spatiotemporally adaptive compression for scientific dataset with feature preservation—a case study on simulation data with extreme climate events analysis." *2023 IEEE 19th International Conference on e-Science (e-Science)*. October 2023

- [C38] Tania Banerjee, Jaemoon Lee, Jong Choi, Qian Gong, **Jieyang Chen**, Choongseok Chang, Scott Klasky, Anand Rangarajan, Sanjay Ranka. "Online and Scalable Data Compression Pipeline with Guarantees on Quantities of Interest." *2023 IEEE 19th International Conference on e-Science (e-Science)*. October 2023
- [C36] 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*. June 2023
- [J10] Hadi Zamani, Laxmi Bhuyan, **Jieyang Chen**, Zizhong Chen. "GreenMD: Energy-efficient Matrix Decomposition on Heterogeneous Multi-GPU Systems." *ACM Transactions on Parallel Computing*. June 2023
- [C35] Jay Wang, Tushar Athawale, Ken Moreland, **Jieyang Chen**, Chris Johnson, Dave Pugmire. "FunMC<sup>2</sup>: A Filter for Uncertainty Visualization of Marching Cubes on Multi-Core Devices." *Eurographics Symposium on Parallel Graphics and Visualization (EGPGV)*, Leipzig, Germany. June 2023
- [C34] Akhlaque Ahmad, Lyuheng Yuan, Da Yan, Guimu Guo, **Jieyang Chen**, Chengcui Zhang. "Accelerating k-Core Decomposition by a GPU." *2023 IEEE 39th International Conference on Data Engineering (ICDE)*, Anaheim, California. April 2023
- [C33] 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." *2023 IEEE 39th International Conference on Data Engineering (ICDE)*, Anaheim, California. April 2023
- [C32] **Jieyang Chen**, Xin Liang, Kai Zhao, Hadi Zamani Sabzi, Laxmi Bhuyan, Zizhong Chen. "Improving Energy Saving of One-sided Matrix Decompositions on CPU-GPU Heterogeneous Systems." *The 28th ACM SIGPLAN Annual Symposium on Principles and Practice of Parallel Programming*, Montreal, Canada. Feb 2023
- [C31] Qian Gong, Ben Whitney, Chengzhu Zhang, Xin Liang, Anand Rangarajan, **Jieyang Chen**, Lipeng Wan, Paul Ullrich, Qing Liu, Robert Jacob, Sanjay Ranka, Scott Klasky. "Region-adaptive, Error-controlled Scientific Data Compression using Multilevel Decomposition." *the 34th International Conference on Scientific and Statistical Database Management*, Copenhagen, Denmark, ACM, Jul. 2022
- [J9] Ana Gainaru, Lipeng Wan, Ruonan Wang, Eric Suchyta, **Jieyang Chen**, Norbert Podhorszki, James Kress, David Pugmire, Scott Klasky. "Understanding the Impact of Data Staging for Coupled Scientific Workflows." *IEEE Transactions on Parallel and Distributed Systems*, Published in 2022
- [J8] Huizhang Luo, Junqi Wang, Qing Liu, **Jieyang Chen**, Scott Klasky, Norbert Podhorszki. "zMesh: Theories and Methods to Exploring Application Characteristics to Improve Lossy Compression Ratio for Adaptive Mesh Refinement." *IEEE Transactions on Parallel and Distributed Systems*, Published in 2022
- [B1] David Pugmire, Norbert Podhorszki, Scott Klasky, Matthew Wolf, James Kress, Mark Kim, Nicholas Thompson, Jeremy Logan, Ruonan Wang, Kshitij Mehta, Eric Suchyta, William Godoy, Jong Choi, George Ostrouchov, Lipeng Wan, **Jieyang Chen**, Berk Geveci, Chuck Atkins, Caitlin Ross, Greg Eisenhauer, Junmin Gu, John Wu, Axel Huebl, Seiji Tsutsumi. "The Adaptable IO System (ADIOS)." *In Situ Visualization for Computational Science*, Published in 2022

- [C30] Qian Gong, Xin Liang, Ben Whitney, Jong Youl Choi, **Jieyang Chen**, Lipeng Wan, Stéphane Ethier, Seung-Hoe Ku, R Michael Churchill, C-S Chang, Mark Ainsworth, Ozan Tugluk, Todd Munson, David Pugmire, Richard Archibald, Scott Klasky. "Maintaining Trust in Reduction: Preserving the Accuracy of Quantities of Interest for Lossy Compression." *2021 Smoky Mountains Computational Sciences and Engineering Conference*, Virtual, Oct. 2021
- [C29] Xinying Wang, Lipeng Wan, **Jieyang Chen**, Qian Gong, Ben Whitney, Jinzhen Wang, Ana Gainaru, Qing Liu, Norbert Podhorszki, Dongfang Zhao, Feng Yan, Scott Klasky. "Unbalanced Parallel I/O: An Often-Neglected Side Effect of Lossy Scientific Data Compression." *2021 7th International Workshop on Data Analysis and Reduction for Big Scientific Data*, St. Louis, Missouri, ACM, Nov. 2021
- [C28] Xin Liang, Qian Gong, **Jieyang Chen**, Ben Whitney, Lipeng Wan, Qing Liu, David Pugmire, Rick Archibald, Norbert Podhorszki, Scott Klasky. "Error-controlled, progressive, and adaptable retrieval of scientific data with multilevel decomposition." *Proceedings of the 33th ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis*, St. Louis, Missouri, ACM, Nov. 2021
- [J7] 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, Scott Klasky. "Improving I/O Performance for Exascale Applications through Online Data Layout Reorganization." *IEEE Transactions on Parallel and Distributed Systems*, Published in 2021
- [C27] Jake Tronge, **Jieyang Chen**, Patricia Grubel, Tim Randles, Rusty Davis, Quincy Wofford, Steven Anaya, and Qiang Guan. "BeeSwarm: Enabling Parallel Scaling Performance Measurement in Continuous Integration for HPC Applications." *36th IEEE/ACM International Conference on Automated Software Engineering*, Melbourne, Australia, Nov. 15-19, 2021
- [C26] Chenhao Xie, **Jieyang Chen**, Jesun S. Firoz, Jiajia Li, Shuaiwen Leon Song, Kevin Barker, Mark Raugas, and Ang Li. "Fast and Scalable Sparse Triangular Solver for Multi-GPU Based HPC Architectures." *The 50th International Conference on Parallel Processing*, Chicago, Illinois, USA, Aug. 9-12, 2021
- [J6] Xin Liang, Ben Whitney, **Jieyang Chen**, Lipeng Wan, Qing Liu, Dingwen Tao, James Kress, Dave Pugmire, Matthew Wolf, Norbert Podhorszki, Scott Klasky. MGARD+: Optimizing Multilevel Methods for Error-bounded Scientific Data Reduction. *IEEE Transactions on Computers*, Published in 2021
- [C25] 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. *35th IEEE International Parallel and Distributed Processing Symposium*, Portland, Oregon, USA, May 2021
- [C24] Huizhang Luo, Junqi Wangy, Qing Liu, **Jieyang Chen**, Scott Klasky, Norbert Podhorszki, zMesh: Exploring Application Characteristics to Improve Lossy Compression Ratio for Adaptive Mesh Refinement. *35th IEEE International Parallel and Distributed Processing Symposium*, Portland, Oregon, USA, May 2021
- [C23] **Jieyang Chen**, Lipeng Wan, Xin Liang, Ben Whitney, Qing Liu, David Pugmire, Nicholas Thompson, Jong Youl Choi, Matthew Wolf, Todd Munson, Ian Foster, Scott Klasky. Accelerating Multigrid-based Hierarchical Scientific Data Refactoring on GPUs. *35th IEEE International Parallel and Distributed Processing Symposium*, Portland, Oregon, USA, May 2021.

- [J5] Cody Rivera, **Jieyang Chen**, Nan Xiong, Jing Zhang, Shuaiwen Leon Song, Dingwen Tao. TSM2X: High-performance tall-and-skinny matrix–matrix multiplication on GPUs. *Elsevier Journal of Parallel and Distributed Computing (JPDC)*, Published in 2021
- [J4] Kai Zhao, Sheng Di, Sihuan Li, Xin Liang, Yujia Zhai, **Jieyang Chen**, Kaiming Ouyang, Zizhong Chen, and Franck Cappello. FT-CNN: Algorithm-Based Fault Tolerance for Convolutional Neural Networks. *IEEE TPDS Special Section on Parallel and Distributed Computing Techniques for AI/ML/DL*, Published in 2021
- [C22] Igor Yakushin, Kshitij Mehta, **Jieyang Chen**, Matthew Wolf, Ian Foster, Scott Klasky, Todd Munson. Feature-preserving Lossy Compression for In Situ Data Analysis. *49th International Conference on Parallel Processing-ICPP: Workshops*, Edmonton, AB, Canada, Aug. 17-20, 2020
- [C21] Lipeng Wan, Matthew Wolf, Feiyi Wang, Jong Youl Choi, George Ostrouchov, **Jieyang Chen**, Norbert Podhorszki, Jeremy Logan, Kshitij Mehta, Scott Klasky, Dave Pugmire. I/O Performance Characterization and Prediction through Machine Learning on HPC Systems. *Cray User Group Conference*, 2020
- [C20] Bingbing Li, Santosh Pandey, Haowen Fang, Yanjun Lyv, Ji Li, **Jieyang Chen**, Mimi Xie, Lipeng Wan, Hang Liu, Caiwen Ding. FTRANS: energy-efficient acceleration of transformers using FPGA. *the ACM/IEEE International Symposium on Low Power Electronics and Design*, Aug. 10 - 12, 2020
- [C19] Zhenbo Qiao, Qing Liu, Norbert Podhorszki, Scott Klasky, **Jieyang Chen**. Taming I/O Variation on QoS-Less HPC Storage: What Can Applications Do? *Proceedings of the 32nd ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis*, Atlanta, Georgia, USA, Nov. 2020 Acceptance Rate: 25.1% (95/378)
- [C18] David Pugmire, James Kress, **Jieyang Chen**, Hank Childs, Jong Choi, Dmitry Ganyushin, Berk Geveci, Mark Kim, Scott Klasky, Xin Liang, Jeremy Logan, Nicole Marsaglia, Kshitij Mehta, Norbert Podhorszki, Caitlin Ross, Eric Suchyta, Nick Thompson, Steven Walton, Lipeng Wan, and Matthew Wolf. Visualization as a Service for Scientific Data. *Smoky Mountains Computational Science and Engineering Conference*, 2020
- [J3] Zhenlu Qin, Jinzhen Wang, Qing Liu, **Jieyang Chen**, Dave Pugmire, Norbert Podhorszki, Scott Klasky. Estimating Lossy Compressibility of Scientific Data Using Deep Neural Networks. *IEEE Letters of the Computer Society*, Published in 2020
- [J2] Jeremy Logan, Mark Ainsworth, Chuck Atkins, **Jieyang Chen**, Jong Choi, Junmin Gu, James Kress, Greg Eisenhauer, Berk Geveci, William Godoy, Mark Kim, Tahsin Kurc, Qing Liu, Kshitij Mehta, George Ostrouchov, Norbert Podhorszki, David Pugmire, Eric Suchyta, Nicolas Thompson, Ozan Tugluk, Lipeng Wan, Ruonan Wang, Ben Whitney, Matthew Wolf, Kesheng Wu, Scott Klasky. Extending the Publish/Subscribe Abstraction for High-Performance I/O and Data Management at Extreme Scale. *IEEE The Bulletin of the Technical Committee on Data Engineering*, Published in 2020
- [C17] 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(SC)*, Denver, Colorado, USA, Nov. 17 - 22, 2019. Acceptance Rate: 20.9% (72/344)
- [C16] **Jieyang Chen**, Nan Xiong, Xin Liang, Dingwen Tao, Sihuan Li, Kaiming Ouyang, Nathan DeBardleben, Qiang Guan, Zizhong Chen. TSM2: Optimizing Tall-and-skinny Matrix-Matrix Multiplication on GPUs. *33rd ACM International Conference on Supercomputing (ICS)*, Phoenix, Arizona, USA, Jun. 26-28, 2019, Acceptance Rate: 23.3% (45/193)

- [C15] **Jieyang Chen**, David Pugmire, Matthew Wolf, Nicholas Thompson, Jeremy Logan, Kshitij Mehta, Lipeng Wan, Jong Youl Choi, Ben Whitney, Scott Klasky. Understanding Performance-Quality Trade-offs in Scientific Visualization Workflows with Lossy Compression, *The 5th International Workshop on Data Reduction for Big Scientific Data (DRBSD)*, Denver, Colorado, USA, Nov. 17, 2019
- [C14] Jong Youl Choi, Jeremy Logan, Kshitij Mehta, Eric Suchyta, William Godoy, Nicholas Thompson, Lipeng Wan, **Jieyang Chen**, Norbert Podhorszki, Matthew Wolf, Scott Klasky, Julien Dominski and Choong-Seock Chang. A Co-Design Study Of Fusion Whole Device Modeling Using Code Coupling, *The 5th International Workshop on Data Reduction for Big Scientific Data (DRBSD)*, Denver, Colorado, USA, Nov. 17, 2019
- [C13] Bo Fang, **Jieyang Chen**, Karthik Pattabiraman, Matei Ripeanu, Sriram Krishnamoorthy. Towards Predicting the Impact of Roll-Forward Failure Recovery for HPC Applications, *the 49th Annual IEEE/IFIP International Conference on Dependable Systems and Networks*, Portland, Oregon, USA, Jun. 24 – 27, 2019
- [J1] Ang Li, Shuaiwen Leon Song, **Jieyang Chen**, Jiajia Li, Xu Liu, Nathan Tallent, and Kevin Barker. Evaluating Modern GPU Interconnect: PCIe, NVLink, NV-SLI, NVSwitch and GPUDirect. *IEEE Transactions on Parallel and Distributed Systems*, Published in 2019
- [C12] **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, Dec. 10-13, 2018. Acceptance Rate: 18.9% (98/518)
- [C11] Ang Li, Shuaiwen Leon Song, **Jieyang Chen**, Xu Liu, Nathan Tallent, Kevin Barker. Tartan: Evaluating Modern GPU Interconnect via a Multi-GPU Benchmark Suite, *2018 IEEE International Symposium on Workload Characterization (IISWC)*, Raleigh, North Carolina, USA, Sept. 30-Oct. 2, 2018
- [C10] **Jieyang Chen**, Hongbo Li, Sihuan Li, Panruo Wu, Xin Liang, Dingwen Tao, Kaiming Ouyang, Yuanlai Liu, Kai Zhao, Qiang Guan, and Zizhong Chen. Fault Tolerant 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)
- [C9] **Jieyang Chen**, Qiang Guan, Zhao Zhang, Xin Liang, Louis James Vernon, Allen McPherson, Li-Ta Lo, Patricia Grubel, Tim Randles, Zizhong Chen, and James Paul Ahrens. BeeFlow : A Workflow Management System for In-Situ Processing Across HPC and Cloud Systems, *38th IEEE International Conference on Distributed Computing Systems*, Jul. 2 – 5, 2018, Vienna, Austria. Acceptance Rate: 20.6% (78/378)
- [C8] 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)
- [C7] 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, Feb. 4 - 8 2017. Acceptance Rate: 21.9% (29/132)



- [C6] **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).  
\*Authors contributed equally
- [C5] **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)
- [C4] Panruo Wu, Nathan DeBardeleben, Qiang Guan, 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-Jun. 4, 2016. Acceptance Rate: 15.5% (20/129)
- [C3] **Jieyang Chen**, Sihuan Li, and Zizhong Chen. GPU-ABFT: Optimizing algorithm-based fault tolerance for heterogeneous systems with GPUs, *IEEE International Conference on Networking, Architecture and Storage (NAS)*, Long Beach, CA, Aug. 8 - 10, 2016
- [C2] 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, 2015 IEEE 7th International Symposium on Cyberspace Safety and Security, and 2015 IEEE 12th International Conference on Embedded Software and Systems*, New York, USA, Aug. 24 - 26, 2015
- [C1] **Jieyang Chen** and Zizhong Chen. Cholesky Factorization on Heterogeneous CPU and GPU Systems, *9th IEEE International Conference on Foundations of Computer Science & Technology*, Dailian, China, Aug. 26 - 28, 2015

## TALKS AND PRESENTATIONS

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- Accelerating Multigrid-based Hierarchical Scientific Data Refactoring on GPUs.** 05/2021  
*35th IEEE International Parallel and Distributed Processing Symposium* Virtual
- Progressive Visualization via Hierarchical Scientific Data Refactoring on GPUs.** 04/2021  
*US Department of Energy Computer Graphics Forum* Virtual
- Understanding Performance-Quality Trade-offs in Scientific Visualization Workflows with Lossy Compression,** 11/2019  
*The 5th International Workshop on Data Reduction for Big Scientific Data* Denver, CO
- TSM2: Optimizing Tall-and-skinny Matrix-Matrix Multiplication on GPUs** 06/2019  
*33rd ACM International Conference on Supercomputing* Phoenix, AZ
- Fault tolerant and Energy Efficient One-sided Matrix decompositions on heterogeneous systems with GPUs** 03/2019  
*Ph.D. Dissertation Defence* Riverside, CA
- High Performance Computing at Extreme Scale: Resilience, Energy Efficiency, and Performance** 02/2019  
*New Mexico State University* Las Cruces, NM

- High Performance Computing at Extreme Scale: Resilience, Energy Efficiency, and Performance** 02/2019  
*Oak Ridge National Laboratory* *Oak Ridge, TN*
- High Performance Computing at Extreme Scale: Resilience, Energy Efficiency, and Performance** 02/2019  
*Tennessee Tech University* *Cookville, TN*
- High Performance Computing at Extreme Scale: Resilience, Energy Efficiency, and Performance** 02/2019  
*San Francisco State University* *San Francisco, CA*
- Build and Execution Environment (BEE): an Encapsulated Environment Enabling HPC Applications Running Everywhere.** 12/2018  
*Proceedings of the 2018 IEEE International Conference on Big Data* *Seattle, WA*
- Fault Tolerant Matrix Decomposition on Heterogeneous Systems with GPUs** 12/2018  
*ACM/IEEE Supercomputing conference* *Dallas, TX*
- High Performance Computing at Extreme Scale: Resilience, Energy Efficiency, and Performance** 04/2018  
*Southern Illinois University* *Carbondale, IL*
- GreenLA: Green Linear Algebra Software for GPU-Accelerated Heterogeneous Computing** 11/2016  
*ACM/IEEE Supercomputing conference* *Salt Lake City, UT*
- Online Algorithm-Based Fault Tolerance for Cholesky Decomposition on Heterogeneous Systems with GPUs** 05/2016  
*Proceedings of the 30th IEEE International Parallel & Distributed Processing Symposium* *Chicago, IL*

## SOFTWARE PRODUCTS

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- MGARD-X: Multigrid-based Adaptive Scientific Data Reduction for Exascale Scientific Computing**
- Link: [github.com/CODARCode/MGARD](https://github.com/CODARCode/MGARD)
- Tartan: benchmark suite for evaluating modern GPU interconnect**
- Link: [github.com/uuudown/Tartan](https://github.com/uuudown/Tartan)
- BEE: containerized scientific in situ workflow management system for HPC applications**
- Link: [github.com/lanl/BEE](https://github.com/lanl/BEE)