

Dr. Amelie Chi Zhou

Assistant Professor

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BRIEF SUMMARY

Exploiting the rich parallel and distributed architectures to accelerate Big Data/ML/AI applications is the main theme of my research. We have been actively working on the performance optimization and privacy preservation for graph processing, serverless computing and deep learning models, using novel scheduling techniques and advanced hardware architectures.

EDUCATION

Nanyang Technological University Ph.D. in Computer Science	08/2011 - 04/2016 Singapore, Singapore
Beihang University M.S. in Electrical and Information Engineering	09/2009 - 01/2012 Beijing, China
Beihang University B.S. in Electrical and Information Engineering	09/2005 - 07/2009 Beijing, China

PROFESSIONAL EXPERIENCE

Hong Kong Baptist University Assistant Professor	08/2023 - present Hong Kong, China
Shenzhen University Associate Professor	07/2022 - 07/2023 Shenzhen, China
Shenzhen University Assistant Professor	10/2017 - 06/2022 Shenzhen, China
Inria Rennes Research Centre Postdoctoral Fellow	05/2016 - 08/2017 Rennes, France

HONORS AND AWARDS

• TPDS Award for Editorial Excellence	2024
• Shenzhen Young Scientist Award	2023
• FGCS Outstanding Editors Award	2022
• TPDS Best Paper Award For our paper “An Efficient Parallel Secure Machine Learning Framework on GPUs”.	2022
• IEEE-CS TCHPC Early Career Researchers Award The award recognizes up to three individuals worldwide who have made outstanding, influential, and potentially long-lasting contributions in the field of HPC within five years of receiving their PhD.	2021
• ACM SIGHPC China Rising Star The award recognizes the research achievements of young scholars in the field of Computer Science in China. I’m one of the three recipients of this award in the subfield of HPC.	2021
• Best Reviewers Award of CIKM The award was given to 30 out of over 1,600 reviewers of CIKM 2021.	2021

- **IEEE Outstanding Leadership Award** 2019
Recognized as Program Co-Chair of IEEE SmartData-2019.
- **Shenzhen Overseas High-Caliber Personnel** 2018
- **Inria Postdoctoral Research Fellowship** 2016
- **Spotlight Article of the issue, IEEE TCC** 2014
For our paper “Transformation-Based Monetary Cost Optimizations for Workflows in the Cloud”.
- **Best PhD Consortium Award, IEEE CloudCom** 2014
For our presentation “Simplified Resource Provisioning for Workflows in IaaS Clouds”.
- **Research Scholarship** of Nanyang Technological University 2011

RESEARCH PROJECTS

- **Huawei Gift Fund for Young Talents, PI** 2024-2026
Reducing the Communication Overhead of Graph Neural Networks with SmartNICs Hardware, HKD\$1,000,000
- **CCF-Ant Group Privacy Computing Special Research Fund, PI** 2024
Privacy-Preserving Graph Computing across Multiple Entities through Multi-Level Sampling, CNY\$300,000
- **Start-up Fund, HKBU, PI** 2023
Department of Computer Science at HKBU, HKD\$300,000
- **Shenzhen Young Scientist Fund, PI** 2023-2025
I/O Optimizations for HPC Storage System at Extreme Scale, CNY\$2,000,000
- **NSFC General Program, PI** 2022 – 2025
Efficient Systems for Large-Scale Graph Computing in Geo-Distributed Data Centers, CNY\$580,000
- **Tencent “Rhino-bird” Research Fund, PI** 2020 – 2022
Efficient and Privacy-Preserving Graph Computing in Geo-Distributed Data Centers, CNY\$100,000
- **NSFC Young Scientists Fund, PI** 2019 – 2021
Efficient and Generic Resource Management for Scientific Workflows on the Cloud, CNY\$260,000

PUBLICATIONS

**Corresponding author. Full publication list: DBLP, Google Scholar*

Refereed Journal Articles

- [THPC] Gang Liu, Zeting Wang, **Amelie Chi Zhou***, Rui Mao. *Adaptive Key Partitioning in Distributed Stream Processing*. CCF Trans. High Performance Computing, 1-15, 2024.
- [TPDS] **Amelie Chi Zhou**, Jianming Lao, Zhoubin Ke, Yi Wang and Rui Mao. *FarSpot: Optimizing Monetary Cost for HPC Applications in the Cloud Spot Market*. IEEE Trans. Parallel Distributed Syst. 33(11): 2955-2967, 2022.
- [TPDS] **Amelie Chi Zhou**, Weilin Xue, Yao Xiao, Bingsheng He, Shadi Ibrahim and Reynold Cheng. *Taming System Dynamics on Resource Optimization for Data Processing Workflows: A Probabilistic Approach*. IEEE Trans. Parallel Distributed Syst. 33(1): 231-248, 2022.
- [FGCS] Yao Xiao, **Amelie Chi Zhou***, Xuan Yang, Bingsheng He. *Privacy-preserving workflow scheduling in geo-distributed data centers*. Future Gener. Comput. Syst. 130: 46-58, 2022.
- [TPDS] Feng Zhang, Zheng Chen, Chenyang Zhang, **Amelie Chi Zhou**, Jidong Zhai, Xiaoyong Du. *An Efficient Parallel Secure Machine Learning Framework on GPUs*. IEEE Trans. Parallel Distributed Syst. 32(9): 2262-2276, 2021. (Best Paper Award)
- [TPDS] **Amelie Chi Zhou**, Bingkun Shen, Yao Xiao, Shadi Ibrahim, Bingsheng He. *Cost-Aware Partitioning for Efficient Large Graph Processing in Geo-Distributed Datacenters*. IEEE Trans. Parallel Distrib. Syst. 31(7): 1707-1723, 2020.

- [TPDS] **Amelie Chi Zhou**, Yao Xiao, Yifan Gong, Bingsheng He, Jidong Zhai, Rui Mao. *Privacy Regulation Aware Process Mapping in Geo-Distributed Cloud Data Centers*. IEEE Trans. Parallel Distrib. Syst. 30(8): 1872-1888, 2019.
- [FGCS] Orcun Yildiz, **Amelie Chi Zhou**, Shadi Ibrahim. *Improving the Effectiveness of Burst Buffers for Big Data Processing in HPC Systems with Eley*. Future Gener. Comput. Syst. 86: 308-318, 2018.
- [TPDS] **Amelie Chi Zhou**, Bingsheng He, Xuntao Cheng, Chiew Tong Lau. *A Declarative Optimization Engine for Resource Provisioning of Scientific Workflows in Geo-Distributed Clouds*. IEEE Trans. Parallel Distrib. Syst. 28(3): 647-661, 2017.
- [TCC] **Amelie Chi Zhou**, Bingsheng He, Cheng Liu. *Monetary Cost Optimizations for Hosting Workflow-as-a-Service in IaaS Clouds*. IEEE Trans. Cloud Comput. 4(1): 34-48, 2016.
- [TPDS] Bingsheng He, Jeffrey Xu Yu, **Amelie Chi Zhou**. *Improving Update-Intensive Workloads on Flash Disks through Exploiting Multi-Chip Parallelism*. IEEE Trans. Parallel Distrib. Syst. 26(1): 152-162, 2015.
- [TCC] **Amelie Chi Zhou**, Bingsheng He. *Transformation-Based Monetary Cost Optimizations for Workflows in the Cloud*. IEEE Trans. Cloud Comput. 2(1): 85-98, 2014. (Spotlight article of the issue, invited presentation at IEEE CloudCom 2014)

Refereed Conference Papers

- [DAC] Sitian Chen, Haobin Tan, **Amelie Chi Zhou***, Yusen Li and Pavan Balaji. *UpDLRM: Accelerating Personalized Recommendation using Real-World PIM Architecture*. Design Automation Conference, 2024.
- [IPDPS] **Amelie Chi Zhou**, Rongzheng Huang, Zhoubin Ke, Yusen Li, Yi Wang, Rui Mao. *Tackling Cold Start in Serverless Computing with Multi-Level Container Reuse*. IEEE International Parallel & Distributed Processing Symposium, 2024.
- [ICPP] Zichen Tang, Junlin Huang, Rudan Yan, Yuxin Wang, Zhenheng Tang, Shaohuai Shi, **Amelie Chi Zhou**, Xiaowen Chu. *Bandwidth-Aware and Overlap-Weighted Compression for Communication-Efficient Federated Learning*. International Conference on Parallel Processing, 2024.
- [IWQoS] Yao Xiao, **Amelie Chi Zhou***, Sitian Chen, Shuhao Zhang, Yi Wang, Rui Mao, Xuan Yang. *Low-Latency Video Conferencing via Optimized Packet Routing and Reordering*. IEEE/ACM International Symposium on Quality of Service, 2024.
- [ICS] **Amelie Chi Zhou**, Zhoubin Ke, Jianming Lao. *DyVer: Dynamic Version Handling for Array Databases*. International Conference on Supercomputing, 2023.
- [SoCC] **Amelie Chi Zhou**, Ruibo Qiu, Thomas Lambert, Tristan Allard, Shadi Ibrahim, Amr El Abbadi. *Geo-Pregel: An End-to-End System for Privacy-Preserving Graph Processing in Geo-Distributed Data Centers*. ACM Symposium on Cloud Computing, 2022.
- [ICDE] **Amelie Chi Zhou**, Juanyun Luo, Ruibo Qiu, Haobin Tan, Bingsheng He, Rui Mao. *Adaptive Partitioning for Large-Scale Graph Analytics in Geo-Distributed Data Centers*. IEEE International Conference on Data Engineering, 2022.
- [ICPP] Zheng Chen, Feng Zhang, **Amelie Chi Zhou**, Jidong Zhai, Chenyang Zhang, Xiaoyong Du. *ParSecureML: An Efficient Parallel Secure Machine Learning Framework on GPUs*. International Conference on Parallel Processing, 2020.
- [DATE] Jing Chen, Yi Wang, **Amelie Chi Zhou**, Rui Mao, Tao Li. *PATCH: Process-Variation-Resilient Space Allocation for Open-Channel SSD with 3D Flash*. Design, Automation and Test in Europe Conference, 2019.
- [DATE] Shangyu Wu, Yi Wang, **Amelie Chi Zhou**, Rui Mao, Zili Shao, Tao Li. *Towards Cross-Platform Inference on Edge Devices with Emerging Neuromorphic Architecture*. Design, Automation and Test in Europe Conference, 2019.
- [ICPP] **Amelie Chi Zhou**, Yao Xiao, Bingsheng He, Shadi Ibrahim, Reynold Cheng. *Incorporating Probabilistic Optimizations for Resource Provisioning of Data Processing Workflows*. The 48th International Conference on Parallel Processing, 2019.

- [SIGMOD] Shuhao Zhang, Jiong He, **Amelie Chi Zhou**, Bingsheng He. *BriskStream: Scaling Data Stream Processing on Shared-Memory Multicore Architectures*. ACM Special Interest Group on Management of Data Conference, 2019.
- [ICPP] **Amelie Chi Zhou**, Tien-Dat Phan, Shadi Ibrahim, Bingsheng He. *Energy-Efficient Speculative Execution using Advanced Reservation for Heterogeneous Clusters*. The 47th International Conference on Parallel Processing, 2018.
- [Cluster] Orcun Yildiz, **Amelie Chi Zhou**, Shadi Ibrahim. *Eley: On the Effectiveness of Burst Buffers for Big Data Processing in HPC systems*. IEEE International Conference on Cluster Computing, 2017.
- [ICDCS] **Amelie Chi Zhou**, Shadi Ibrahim, Bingsheng He. *On Achieving Efficient Data Transfer for Graph Processing in Geo-Distributed Datacenters*. The 37th IEEE International Conference on Distributed Computing Systems, 2017.
- [ICDE] Shuhao Zhang, Bingsheng He, Daniel Dahlmeier, **Amelie Chi Zhou**, Thomas Heinze. *Revisiting the Design of Data Stream Processing Systems on Multi-Core Processors*. The 33rd IEEE International Conference on Data Engineering, 2017.
- [SC] **Amelie Chi Zhou**, Yifan Gong, Bingsheng He, Jidong Zhai. *Efficient process mapping in geo-distributed cloud data centers*. International Conference for High Performance Computing, Networking, Storage and Analysis, 2017.
- [HPDC] **Amelie Chi Zhou**, Bingsheng He, Xuntao Cheng, Chiew Tong Lau. *A Declarative Optimization Engine for Resource Provisioning of Scientific Workflows in IaaS Clouds*. The 24th International Symposium on High-Performance Parallel and Distributed Computing, 2015.
- [SC] Yifan Gong, Bingsheng He, **Amelie Chi Zhou**. *Monetary cost optimizations for MPI-based HPC applications on Amazon clouds: checkpoints and replicated execution*. The 2015 International Conference for High Performance Computing, Networking, Storage and Analysis, 2015.
- [CloudCom] **Amelie Chi Zhou**, Bingsheng He. *Simplified Resource Provisioning for Workflows in IaaS Clouds*. The 6th IEEE International Conference on Cloud Computing Technology and Science, 2014. (**Best PhD Consortium**)

PROFESSIONAL SERVICE ACTIVITIES

Journal Editorship

- *Associate Editor* of IEEE Transactions on Parallel and Distributed Computing
- *Editor* of Future Generation Computer Systems
- *Associate Editor* of Journal of Parallel and Distributed Computing
- *Guest Editor* of Concurrency and Computation: Practice and Experience

Conference/Workshop Organizers and Chairs

- *BoF Chair* of IEEE/ACM International Conference for High Performance Computing, Networking, Storage, and Analysis (*SC 2024*)
- *Track Co-Chair* of IEEE International Conference on Cluster Computing (*CLUSTER 2024*)
- *Track Co-Chair* of IEEE International Parallel & Distributed Processing Symposium (*IPDPS 2024*)
- *General Chair* of 8th International Parallel Data Systems Workshop (*PDSW@SC2023*)
- *Program Co-Chair* of 15th International Workshop on Parallel Programming Models and Systems Software for High-End Computing (*P2S2@ICPP2022,ICPP2023*)
- *Track Vice-Chair* of IEEE/ACM International Conference for High Performance Computing, Networking, Storage, and Analysis (*SC 2022*)
- *Student Program Co-Chair* of International Conference on Parallel Processing (*ICPP 2022*)
- *Publicity Co-Chair* of IEEE International Symposium on Computer Architecture and High Performance Computing (*SBAC-PAD 2022*)
- *Program Co-Chair* of 6th&7th International Parallel Data Systems Workshop (*PDSW@SC2021,SC2022*)
- *Panel Vice-Chair* of IEEE/ACM International Conference for High Performance Computing, Networking, Storage, and Analysis (*SC 2021*)

- *Track Co-Chair* of 27th IEEE International Conference on High Performance Computing, Data, and Analytics (*HiPC 2020*)
- *Posters and Demo Co-Chair* of International Conference on Distributed Computing Systems (*ICDCS 2020*)
- *Program Co-Chair* of IEEE International Conference on Smart Data (*SmartData-2019*)
- *Track Co-Chair* of IEEE BigData Congress 2018
- *Local Co-Chair* of International Conference on Cloud Computing Technology and Science (*CloudCom 2014*)

Membership in Technical Program Committees

- IEEE/ACM International Conference for High Performance Computing, Networking, Storage, and Analysis (*SC*): 2018 (Posters), 2019 (Panels), 2020 (Papers), 2023 (BoF, Posters, Reproducibility), 2024 (Papers).
- IEEE International Conference on Cluster Computing (*Cluster*): 2020, 2021, 2022, 2023.
- International Conference on Information and Knowledge Management (*CIKM*): 2019, 2020, 2021, 2022 (senior PC), 2023 (senior PC), 2024 (senior PC).
- International Conference on Parallel Processing (*ICPP*): 2022, 2023, 2024.
- ACM International Conference on Supercomputing (*ICS*): 2024.
- USENIX Conference on File and Storage Technologies (*FAST*): 2022.
- IEEE International Parallel & Distributed Processing Symposium (*IPDPS*): 2022 (Best paper selection).
- IEEE International Conference on Distributed Computing Systems (*ICDCS*): 2021, 2022.
- ACM Workshop on Hot Topics in Storage and File Systems (*HotStorage*): 2022.
- ACM International Symposium on High-Performance Parallel and Distributed Computing (*HPDC*): 2018 (Posters), 2021 (Papers).
- IEEE International Conference on High Performance Computing, Data, and Analytics (*HiPC*): 2021.
- International Symposium on Cluster, Cloud and Internet Computing (*CCGrid*): 2017, 2019, 2020, 2021.
- IEEE International Conference on Big Data (*BigData*): 2018, 2019, 2020, 2021.
- International Conf. on High Performance Computing in Asia Pacific Region (*HPCAasia*): 2019, 2020, 2021.
- Supercomputing Frontiers Asia (*SCFA*): 2020.
- Supercomputing Asia (*SCA*): 2018, 2020.
- IFIP International Conference on Network and Parallel Computing (*NPC*): 2018, 2019.
- IEEE International Conference on Data Science and Systems (*DSS*): 2019.
- IEEE International Congress on Big Data (*BigData Congress*): 2019.
- The International Conference on Progress in Informatics and Computing (*PIC*): 2018.
- The IEEE International Conference on Parallel and Distributed Systems (*ICPADS*): 2017, 2018.

Invited Reviewer for Journals

- IEEE Transactions on Parallel and Distributed Systems (*TPDS*)
- IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (*TCAD*)
- IEEE Transactions on Cloud Computing (*TCC*)
- IEEE Transactions on Big Data (*TBD*)
- IEEE Transactions on Knowledge and Data Engineering (*TKDE*)
- IEEE Transactions on Network Science and Engineering (*TNSE*)
- ACM Transactions on Internet Technology (*TOIT*)
- ACM Transactions on Autonomous and Adaptive Systems (*TAAS*)
- ACM Computing Surveys (*CSUR*)
- Elsevier Journal of Parallel and Distributed Computing (*JPDC*)
- Future Generation Computer Systems (*FGCS*)
- Springer Journal of Supercomputing (*SUPE*)
- International Journal of High Performance Computing and Networking (*IJHPCN*)
- Concurrency and Computation: Practice and Experience (*CCPE*)