

Curriculum Vitae for Zhen Xiao

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Research Interests

My research interests include blockchain, machine learning, cloud computing, big data, and distributed systems.

Education

- Ph.D. in Computer Science, January 2001, Cornell University.
- M.S. in Computer Science, May 1999, Cornell University.
- B.S. in Computer Science, July 1996, Peking University, P.R. China.

Awards and Honors

- **Teaching Excellence Award:** Peking University, September 2010 and September 2018.
- **Best Paper Award:** the 17th International workshop on Network and Operating Systems Support for Digital Audio & Video (NOSSDAV'07), June 2007.
- Our "Client-Side Includes" project was reported on **AT&T Today**, September 8, 2003.
- **Research Excellence Award:** AT&T Labs – Research, November 2002.
- **AT&T Innovation Forum:** AT&T Labs – Research, October 2002.

Employment

- February 2008 – now: Professor, School of Computer Science, Peking University. Working on blockchain, machine learning, and cloud computing.
- March 2006 – February 2008: Research Staff Member. IBM T.J. Watson Research Center, Hawthorne, NY. Worked on network system software.
- January 2001 – March 2006: Senior Technical Staff Member. AT&T Labs – Research, Florham Park, NJ. Worked on distributed systems research.
- August 1996 – December 2000: Research/Teaching assistant. Cornell University, Ithaca, NY. Worked on distributed computing.

Professional Activities

- **Program Committees, Vice/Track Chairs**
 1. The International Conference on Distributed Computing Systems (ICDCS): 2004, 2007(Vice Chair), 2009, 2010, 2011, 2012, 2017, 2022, and 2023.
 2. The International World Wide Web Conference (WWW): 2005, 2008, 2009, 2011, 2013, 2014 (Track Chair), 2021, and 2022.
 3. The AAAI Conference on Artificial Intelligence: 2022 and 2023.
 4. The 2016 USENIX Annual Technical Conference
 5. The International Conference on Dependable Systems and Networks (DSN): 2010 and 2011
 6. IEEE Infocom 2005

- ACM and IEEE Senior Member
- Program co-chair for Internet Protocol TV workshop, jointly held with the 15th International World Wide Web Conference (WWW'06)
- Served on various NSF panels in the U.S.

Citations

According to my profile in Google Scholar, the total number of citations for all my papers is 6811 (h-index 38) as of Feb 2023.

Selected Journal/Book Publications

The following publications can be downloaded from <http://zhenxiao.com/papers>

- Hangyu Mao, Zhengchao Zhang, Zhen Xiao, Zhibo Gong, and Yan Ni. “Learning Multi-Agent Communication with Double Attentional Deep Reinforcement Learning”, *Journal of Autonomous Agents and Multi-Agent Systems (JAAMAS)*, March 2020.
- Shiru Ren, Yunqi Zhang, Lichen Pan, and Zhen Xiao. “Phantasy: Low-Latency Virtualization-based Fault Tolerance via Asynchronous Prefetching”, *IEEE Transactions on Computers (TC)*, February 2019.
- Qi Chen, Jinyu Yao, Benchao Li, and Zhen Xiao. “PISCES: Optimizing Multi-job Application Execution in MapReduce”, *IEEE Transactions on Cloud Computing (TCC)*, March 2019.
- Shiru Ren, Le Tan, Chunqi Li, Zhen Xiao, and Weijia Song. “Leveraging Hardware-Assisted Virtualization for Deterministic Replay on Commodity Multi-Core Processors”, *IEEE Transactions on Computers (TC)*, January 2018.
- Qi Chen, Jinyu Yao, and Zhen Xiao. “LIBRA: Lightweight Data Skew Mitigation in MapReduce”, *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, September 2015.
- Weijia Song, Zhen Xiao, Qi Chen, and Haipeng Luo. “Adaptive Resource Provisioning for the Cloud Using Online Bin Packing”, *IEEE Transactions on Computers (TC)*, November 2014.
- Zhen Xiao, Qi Chen, and Haipeng Luo. “Automatic Scaling of Internet Applications for Cloud Computing Services”, *IEEE Transactions on Computers (TC)*, May 2014.
- Qi Chen, Cheng Liu, and Zhen Xiao. “Improving MapReduce Performance Using Smart Speculative Execution Strategy”, *IEEE Transactions on Computers (TC)*, April 2014.
- Zhen Xiao, Weijia Song, and Qi Chen. “Dynamic Resource Allocation using Virtual Machines for Cloud Computing Environment”, *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, June 2013.
- Jun Zhu, Zhefu Jiang, Zhen Xiao, and Xiaoming Li. “Optimizing the Performance of Virtual Machine Synchronization for Fault Tolerance”, *IEEE Transactions on Computers (TC)*, November 2011.
- Zhen Xiao. “Cloud computing and virtualization (in Chinese)”, *Communications of CCF (China Computer Federation)*, October 2009.
- Lei Guo, Songqing Chen, Zhen Xiao, Enhua Tan, Xiaoning Ding, and Xiaodong Zhang. “A Performance Study of BitTorrent-like Peer-to-Peer Systems”, *IEEE Journal on Selected Areas in Communication (JSAC), Special Issue on Peer-to-Peer Communications and Applications*, Vol 25, No. 1, January 2007.
- Yennun Huang, Yih-Farn Chen, Rittwik Jana, Hongbo Jiang, Michael Rabinovich, Amy Reibman, Bin Wei, and Zhen Xiao. “Capacity Analysis of MediaGrid: a P2P IPTV Platform for Fiber to the Node (FTTN) Networks”, *IEEE Journal on Selected Areas in Communication (JSAC), Special Issue on Peer-to-Peer Communications and Applications*, Vol 25, No. 1, January 2007.
- Christof Fetzer and Zhen Xiao. “Automatic Testing of Errors and Vulnerabilities in Software Components”, Invited book chapter in *Testing Commercial-off-the-shelf Components and Systems*, Springer-Verlag, January 2005.

- Kenneth P. Birman, Mark Hayden, Ozgur Ozkasap, Zhen Xiao, Mihai Budiu, and Yaron Minsky. “Bimodal Multicast”, *ACM Transactions on Computer Systems (TOCS)*, May 1999.

Selected Conference/Workshop Publications

The following publications can be downloaded from <http://zhenxiao.com/papers>

- Lichen Pan, Jun Qian, Wei Xia, Hangyu Mao, Jun Yao, Pengze Li, and Zhen Xiao. “Optimizing Communication in Deep Reinforcement Learning with XingTian”, *Proc. of the International Middleware Conference (Middleware 2022)*, November 2022.
- Mingzhe Xing, Hangyu Mao, and Zhen Xiao. “Fast and Fine-grained Autoscaler for Streaming Jobs with Reinforcement Learning”, *Proc. of Thirty-First International Joint Conference on Artificial Intelligence (IJCAI 2022)*, July 2022.
- Pengze Li, Lichen Pan, Xinzhe Yang, Weijia Song, Zhen Xiao, and Ken Birman. “Stabilizer: Geo-Replication with User-defined Consistency”, *Proc. of IEEE International Conference on Distributed Computing Systems (ICDCS 2022)*, July 2022.
- Zhenxing Hu and Zhen Xiao. “Dino: A Block Transmission Protocol with Low Bandwidth Consumption and Propagation Latency”, *Proc. of IEEE Infocom*, May 2022.
- Mingzhe Xing, Shuqing Bian, Wayne Xin Zhao, Zhen Xiao, Xinji Luo, Cunxiang Yin, Jing Cai, and Yancheng He. “Learning Reliable User Representations from Volatile and Sparse Data to Accurately Predict Customer Lifetime Value”, *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, August 2021.
- Hangyu Mao, Zhengchao Zhang, Zhen Xiao, Zhibo Gong, and Yan Ni. “Learning Agent Communication under Limited Bandwidth by Message Pruning”, *Proc. of the Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI 2020)*, February 2020.
- Hangyu Mao, Wulong Liu, Jianye Hao, Jun Luo, Dong Li, Zhengchao Zhang, Jun Wang, and Zhen Xiao. “Neighborhood Cognition Consistent Multi-Agent Reinforcement Learning”, *Proc. of the Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI 2020)*, February 2020.
- Yang Xiao, Yuan Wang, Hangyu Mao, and Zhen Xiao. “Predicting Restaurant Consumption Level through Social Media Footprints”, *Proc. of the International Conference on Computational Linguistics (COLING 2016)*, December 2016.
- Yuan Wang, Yang Xiao, Chao Ma, and Zhen Xiao. “Improving Users’ Demographic Prediction via the Videos They Talk about”, *Proc. of the Conference on Empirical Methods in Natural Language Processing (EMNLP 2016)*, November 2016.
- Weijia Song, Theo Gkountouvas, Ken Birman, Qi Chen, and Zhen Xiao. “The Freeze-Frame File System”, *Proc. of the ACM Symposium on Cloud Computing (SoCC’16)*, October 2016.
- Shiru Ren, Le Tan, Chunqi Li, Zhen Xiao, and Weijia Song. “Samsara: Efficient Deterministic Replay in Multiprocessor Environments with Hardware Virtualization Extensions”, *Proc. of the USENIX Annual Technical Conference (ATC 2016)*, June 2016.
- Chien-Chin Huang, Qi Chen, Zhaoguo Wang, Russell Power, Jorge Ortiz, Jinyang Li, and Zhen Xiao. “Spartan: A Distributed Array Framework with Smart Tiling”, *Proc. of the USENIX Annual Technical Conference (ATC 2015)*, July 2015.
- Yang Xiao, Wayne Xin Zhao, Kun Wang, and Zhen Xiao. “Knowledge Sharing via Social Login: Exploiting Microblogging Service for Warming up Social Question Answering Web sites”, *Proc. of the International Conference on Computational Linguistics (COLING 2014)*, August 2014.
- Qi Chen, Yisheng Liao, Christopher Mitchell, Jinyang Li, and Zhen Xiao. “Building Scalable Multimedia Search Engine Using Infiniband”, *Proc. of the USENIX Workshop on Hot Topics in Cloud Computing (HotCloud)*, June 2014.

- Jun Zhu, Zhefu Jiang, and Zhen Xiao. “Twinkle: A Fast Resource Provisioning Mechanism for Internet Services”, *Proc. of IEEE Infocom*, April 2011.
- Zhi Yang, Yafei Dai, and Zhen Xiao. “Exploring the Cost-Availability Tradeoff in P2P Storage Systems”, *Proc. of the International Conference on Parallel Processing (ICPP 2009)*, September 2009.
- Lei Guo, Enhua Tan, Songqing Chen, Zhen Xiao, and Xiaodong Zhang. “The Stretched Exponential Distribution of Internet Media Access Patterns”, *Proc. of the ACM Symposium on Principles of Distributed Computing (PODC 2008)*, August 2008.
- Zhen Xiao and Fan Ye. “New Insights on Internet Streaming and IPTV”, *Proc. of the ACM International Conference on Image and Video Retrieval (CIVR 2008)*, July 2008.
- Guanhua Yan, Zhen Xiao, and Stephan Eidenbenz. “Catching Instant Messaging Worms with Change-Point Detection Techniques”, *Proc. of the USENIX Workshop on Large-Scale Exploits and Emergent Threats (LEET '08)*, April 2008.
- Zhen Xiao, Lei Guo, and John Tracey. “Understanding Instant Messaging Traffic Characteristics”, *Proc. of the 27th International Conference on Distributed Computing Systems (ICDCS'07)*, June 2007.
- Yih-Farn Chen, Yennun Huang, Rittwik Jana, Hongbo Jiang, Michael Rabinovich, Bin Wei, and Zhen Xiao. “When is P2P technology beneficial to IPTV services?” *Proc. of the 17th International workshop on Network and Operating Systems Support for Digital Audio & Video (NOSSDAV'07)*, June 2007. **Best Paper Award**
- Lei Guo, Enhua Tan, Songqing Chen, Zhen Xiao, and Xiaodong Zhang. “Does Internet Media Traffic Really Follow Zipf-like Distribution?” *Proc. of ACM SIGMETRICS (Extended Abstract)*, June 2007.
- Lei Guo, Enhua Tan, Songqing Chen, Zhen Xiao, Oliver Spatscheck, and Xiaodong Zhang. “Delving into Internet Streaming Media Delivery: A Quality and Resource Utilization Perspective”, *Proc. of ACM SIGCOMM Internet Measurement Conference (IMC'06)*, October 2006.
- Lei Guo, Songqing Chen, Zhen Xiao, Enhua Tan, Xiaoning Ding, and Xiaodong Zhang. “Measurements, Analysis, and Modeling of BitTorrent-like Systems”, *Proc. of ACM SIGCOMM Internet Measurement Conference (IMC'05)*, October 2005.
- Lei Guo, Songqing Chen, Zhen Xiao, and Xiaodong Zhang. “DISC: Dynamic Interleaved Segment Caching for Interactive Streaming”, *Proc. of the 25th International Conference on Distributed Computing Systems (ICDCS'05)*, June 2005.
- Lei Guo, Songqing Chen, Zhen Xiao, and Xiaodong Zhang. “Analysis of Multimedia Workloads with Implications for Internet Streaming”, *Proc. of the 14th International World Wide Web Conference (WWW'05)*, May 2005.
- Leeann Bent, Michael Rabinovich, Geoffrey M. Voelker, and Zhen Xiao. “Characterization of a Large Web Site Population with Implications for Content Delivery”, *Proc. of the 13th International World Wide Web Conference (WWW'04)*, May 2004. **Best Student Paper Award**
- Michael Rabinovich, Zhen Xiao, and Amit Aggarwal. “Computing on the Edge: A Platform for Replicating Internet Applications”, *Proc. of the Eighth International Workshop on Web Content Caching and Distribution (WCW'03)*, September 2003.
- Christof Fetzer and Zhen Xiao. “HEALERS: A Toolkit for Enhancing the Robustness and Security of Existing Applications”, *Proc. of the International Conference on Dependable Systems and Networks (Practical Experience and Demonstrations) (DSN'03)*, June 2003.
- Jennifer Rexford, Jia Wang, Zhen Xiao, and Yin Zhang. “BGP Routing Stability of Popular Destinations”, *Proc. of ACM SIGCOMM Internet Measurement Workshop (Extended Abstract) (IMW'02)*, November 2002.
- Christof Fetzer and Zhen Xiao. “A Flexible Generator Architecture for Improving Software Dependability”, *Proc. of the 13th International Symposium on Software Reliability Engineering (ISSRE'02)*, November 2002.

- Pradnya Karbhari, Michael Rabinovich, Zhen Xiao, and Fred Douglis. “ACDN: A Content Delivery Network for Applications”, *Proc. of ACM SIGMOD (Project Demo)*, June 2002.
- Christof Fetzer and Zhen Xiao. “An Automated Approach to Increasing the Robustness of C Libraries”, *Proc. of the International Conference on Dependable Systems and Networks (DSN'02)*, June 2002.
- Zhen Xiao, Kenneth P. Birman, and Robbert van Renesse. “Optimizing Buffer Management for Reliable Multicast”, *Proc. of the International Conference on Dependable Systems and Networks (DSN'02)*, June 2002.
- Christof Fetzer and Zhen Xiao. “Detecting Heap Smashing Attacks Through Fault Containment Wrappers”, *Proc. of the 20th IEEE Symposium on Reliable Distributed Systems (SRDS'01)*, October 2001.
- Zhen Xiao and Kenneth P. Birman. “A Randomized Error Recovery Algorithm for Reliable Multicast”, *Proc. of IEEE Infocom*, April 2001.
- Zhen Xiao and Kenneth P. Birman. “Providing Efficient, Robust Error Recovery Through Randomization”, *Proc. of the International Workshop on Applied Reliable Group Communication (Jointly held with the 21st International Conference on Distributed Computing Systems (ICDCS'01))*, April 2001.