

Zhize Li

School of Computing and Information Systems
Singapore Management University (SMU)
80 Stamford Road
Singapore 178902

Email: zhizeli@smu.edu.sg
Office Phone: (+65) 68280923



Education

PhD, Tsinghua University, China, 2019
Bachelor of Engineering, Xidian University, China, 2014

Academic Appointments

Assistant Professor of Computer Science, Singapore Management University (SMU), Singapore, Nov 2023 – Present
Research Scientist, Carnegie Mellon University (CMU), United States, Mar 2022 - Oct 2023
Research Scientist, King Abdullah University of Science and Technology (KAUST), Saudi Arabia, Sep 2020 - Mar 2022
Postdoctoral Research Fellow, King Abdullah University of Science and Technology (KAUST), Saudi Arabia, Sep 2019 - Sep 2020

Awards and Honors

Rising Star in AI, King Abdullah University of Science and Technology, 2022
Tsinghua Outstanding Doctoral Dissertation Award, Tsinghua University, 2019
National Scholarship (highest), Ministry of Education of the People's Republic of China, 2012

RESEARCH

Research Interests

Large-scale/Distributed/Decentralized Optimization
Private/Efficient/Resilient Federated Learning
Reinforcement/Bayesian/Online learning

Publications

Journal Articles [Refereed]

Faster Rates for Compressed Federated Learning with Client-Variance Reduction, by Haoyu Zhao, Konstantin Burlachenko, Zhize Li, Peter Richtarik. (2023). *SIAM Journal on Mathematics of Data Science*.

Simple and Optimal Stochastic Gradient Methods for Nonsmooth Nonconvex Optimization, by Zhize Li, Jian Li. (2022). *Journal of Machine Learning Research*.

DESTRESS: Computation-Optimal and Communication-Efficient Decentralized Nonconvex Finite-Sum Optimization, by Boyue Li, Zhize Li, Yuejie Chi. (2022). *SIAM Journal on Mathematics of Data Science*.

Optimal In-Place Suffix Sorting, by Zhize Li, Jian Li, Hongwei Huo. (2022). *Information and Computation*.

Stochastic Gradient Hamiltonian Monte Carlo with Variance Reduction for Bayesian Inference, by Zhize Li, Tianyi Zhang, Shuyu Cheng, Jun Zhu, Jian Li. (2019). *Machine Learning*.

Conference Proceedings

(* denotes authors in alphabetical order)

SoteriaFL: A Unified Framework for Private Federated Learning with Communication Compression, by Zhize Li, Haoyu Zhao, Boyue Li, Yuejie Chi. (2022). *Proceedings of the 36th Conference on Neural Information Processing Systems (NeurIPS 2022)*.

BEER: Fast $O(1/T)$ Rate for Decentralized Nonconvex Optimization with Communication Compression, by Haoyu Zhao, Boyue Li, Zhize Li, Peter Richtarik, Yuejie Chi. (2022). *Proceedings of the 36th Conference on Neural Information Processing Systems (NeurIPS 2022)*.

Coresets for Vertical Federated Learning: Regularized Linear Regression and K-Means Clustering, by Lingxiao Huang*, Zhize Li*, Jialin Sun*, Haoyu Zhao*. (2022). *Proceedings of the 36th Conference on Neural Information Processing Systems (NeurIPS 2022)*.

3PC: Three Point Compressors for Communication-Efficient Distributed Training and a Better Theory for Lazy Aggregation, by Peter Richtarik, Igor Sokolov, Ilyas Fatkhullin, Elnur Gasanov, Zhize Li, Eduard Gorbunov. (2022). *Proceedings of the 39th International Conference on Machine Learning (ICML 2022)*.

CANITA: Faster Rates for Distributed Convex Optimization with Communication Compression, by Zhize Li, Peter Richtarik. (2021). *Proceedings of the 35th Conference on Neural Information Processing Systems (NeurIPS 2021)*.

PAGE: A Simple and Optimal Probabilistic Gradient Estimator for Nonconvex Optimization, by Zhize Li, Hongyan Bao, Xiangliang Zhang, Peter Richtarik. (2021). *Proceedings of the 38th International Conference on Machine Learning (ICML 2021)*.

MARINA: Faster Non-Convex Distributed Learning with Compression, by Eduard Gorbunov, Konstantin Burlachenko, Zhize Li, Peter Richtarik. *Proceedings of the 38th International Conference on Machine Learning (ICML 2021)*.

Acceleration for Compressed Gradient Descent in Distributed and Federated Optimization, by Zhize Li, Dmitry Kovalev, Xun Qian, Peter Richtarik. (2020). *Proceedings of the 37th International Conference on Machine Learning (ICML 2020)*.

A Fast Anderson-Chebyshev Acceleration for Nonlinear Optimization, by Zhize Li, Jian Li. (2020). *Proceedings of the*

23rd International Conference on Artificial Intelligence and Statistics (AISTATS 2020).

SSRGD: Simple Stochastic Recursive Gradient Descent for Escaping Saddle Points, by Zhize Li. (2019). *Proceedings of the 33rd Conference on Neural Information Processing Systems (NeurIPS 2019).*

A Unified Variance-Reduced Accelerated Gradient Method for Convex Optimization, by Guanghui Lan*, Zhize Li*, Yi Zhou*. (2019). *Proceedings of the 33rd Conference on Neural Information Processing Systems (NeurIPS 2019).*

Stabilized SVRG: Simple Variance Reduction for Nonconvex Optimization, by Rong Ge*, Zhize Li*, Weiyao Wang*, Xiang Wang*. (2019). *Proceedings of the 32nd Conference on Learning Theory (COLT 2019).*

Learning Two-layer Neural Networks with Symmetric Inputs, by Rong Ge*, Rohith Kuditipudi*, Zhize Li*, Xiang Wang*. (2019). *Proceedings of the 7th International Conference on Learning Representations (ICLR 2019).*

Gradient Boosting With Piece-Wise Linear Regression Trees, by Yu Shi, Jian Li, Zhize Li. (2019). *Proceedings of the 28th International Joint Conference on Artificial Intelligence (IJCAI 2019).*

A Simple Proximal Stochastic Gradient Method for Nonsmooth Nonconvex Optimization, by Zhize Li, Jian Li. (2018). *Proceedings of the 32nd Conference on Neural Information Processing Systems (NeurIPS 2018).*

A Two-Stage Mechanism for Ordinal Peer Assessment, by Zhize Li, Le Zhang, Zhixuan Fang, Jian Li. (2018). *Proceedings of the 11th International Symposium on Algorithmic Game Theory (SAGT 2018).*

Optimal In-Place Suffix Sorting, by Zhize Li, Jian Li, Hongwei Huo. (2018). *Proceedings of the 25th International Symposium on String Processing and Information Retrieval (SPIRE 2018).*

On Top-k Selection in Multi-Armed Bandits and Hidden Bipartite Graphs, by Wei Cao, Jian Li, Yufei Tao, Zhize Li. (2015). *Proceedings of the 29th Conference on Neural Information Processing Systems (NIPS 2015).*