

CONTACT INFORMATION	Department of CSE The Chinese University of Hong Kong Room 116, Ho Sin-Hang Engineering Building, Shatin, N.T., Hong Kong SAR	Tel: +86-15210827384 +852-56351994 E-mail: kwzhou@cse.cuhk.edu.hk Website: <a href="#">Homepage</a> , <a href="#">Google Scholar</a> , <a href="#">DBLP</a>
EDUCATION BACKGROUND	<b>The Chinese University of Hong Kong</b> Ph.D., Computer Science and Engineering <b>Aug 2020 - Jan 2023 (expected)</b> <ul style="list-style-type: none"> <li>Adviser: James Cheng</li> <li>Thesis: Fast and Practical First-Order Methods for Modern Machine Learning Problems</li> </ul> M.Phil., Computer Science and Engineering <b>Aug 2017 - Jun 2019</b> <ul style="list-style-type: none"> <li>Adviser: James Cheng</li> <li>Thesis: <a href="#">Accelerating Finite-Sum Convex Optimization and Highly-Smooth Convex Optimization</a> (<b>Outstanding Thesis Award</b>, 1 out of all the M.Phil. students in Faculty of Engineering graduated in 2019)</li> </ul> <b>Fudan University</b> B.S., Computer Science and Technology, <b>Sept 2013 - Jun 2017</b> <ul style="list-style-type: none"> <li>Thesis: <a href="#">Partitional Topic Model</a></li> </ul>	
EXPERIENCE	<ul style="list-style-type: none"> <li>March 2022 - Present: Research Intern at HUAWEI Noah's Ark Lab.</li> <li>July 2019 - July 2020: Research Assistant at CUHK, supervised by Prof. James Cheng.</li> </ul>	
RESEARCH INTERESTS	<i>"Optimization for Machine Learning".</i> Out-of-Distribution Generalization <span>OoD</span> , Stochastic Optimization <span>SO</span> , Adversarial Robustness <span>Adv</span> , Parallel/Distributed/Federated Optimization <span>LO</span> , Deep Learning Theory <span>DLT</span> , Computer-Aided Analysis <span>CAA</span> , Differential Privacy <span>DP</span> , AI Applications <span>AI</span> .	
PUBLICATIONS (CHRONOLOGICAL)	<ol style="list-style-type: none"> <li>[1] L. Tian, <b>K. Zhou</b>, A.M.C. So. <a href="#">On the Finite-Time Complexity and Practical Computation of Approximate Stationarity Concepts of Lipschitz Functions</a>. In <i>International Conference on Machine Learning (ICML)</i>, pages 21360-21379, 2022. <span>DLT</span> <span>SO</span></li> <li>[2] R. Gao, J. Wang, <b>K. Zhou</b>, F. Liu, B. Xie, G. Niu, B. Han, J. Cheng. <a href="#">Fast and Reliable Evaluation of Adversarial Robustness with Minimum-Margin Attack</a>. In <i>International Conference on Machine Learning (ICML)</i>, pages 7144-7163, 2022. <span>Adv</span></li> <li>[3] Y. Chen*, <b>K. Zhou*</b>, Y. Bian, B. Xie, K. Ma, Y. Zhang, H. Yang, B. Han, J. Cheng. <a href="#">Pareto Invariant Risk Minimization</a>. In <i>ICML Workshop on Principles of Distribution Shift (ICML PODS Workshop)</i>, 2022. <span>OoD</span></li> <li>[4] <b>K. Zhou</b>, L. Tian, A.M.C. So, J. Cheng. <a href="#">Practical Schemes for Finding Near-Stationary Points of Convex Finite-Sums</a>. In <i>International Conference on Artificial Intelligence and Statistics (AISTATS)</i>, pages 3684-3708, 2022. <span>SO</span> <span>CAA</span></li> <li>[5] <b>K. Zhou</b>, A.M.C. So, J. Cheng. <a href="#">Boosting First-Order Methods by Shifting Objective: New Schemes with Faster Worst-Case Rates</a>. In <i>Advances in Neural Information Processing Systems (NeurIPS)</i>, pages 15405-15416, 2020. <span>SO</span> <span>CAA</span></li> <li>[6] <b>K. Zhou</b>, Y. Jin, Q. Ding, and J. Cheng. <a href="#">Amortized Nesterov's Momentum: A Robust Momentum and Its Application to Deep Learning</a>. In <i>Conference on Uncertainty in Artificial Intelligence (UAI)</i>, pages 211-220, 2020. <span>SO</span></li> </ol>	

- [7] Q. Ding, **K. Zhou**, and J. Cheng. Tight Convergence Rate of Gradient Descent for Eigenvalue Computation. In *International Joint Conference on Artificial Intelligence (IJCAI)*, pages 3276–3282, 2020. OPT
- [8] X. Dai, X. Yan, **K. Zhou**, Y. Wang, H. Yang, and J. Cheng. Convolutional Embedding for Edit Distance. In *International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR)*, pages 599–608, 2020. AI
- [9] **K. Zhou**, Q. Ding, F. Shang, J. Cheng, D. Li, and Z. Luo. Direct Acceleration of SAGA using Sampled Negative Momentum. In *International Conference on Artificial Intelligence and Statistics (AISTATS)*, pages 1602–1610, 2019. SO
- [10] **K. Zhou**, F. Shang, and J. Cheng. A Simple Stochastic Variance Reduced Algorithm with Fast Convergence Rates. In *International Conference on Machine Learning (ICML)*, pages 5980–5989, 2018. SO LO
- [11] F. Shang, Y. Liu, **K. Zhou**, J. Cheng, K. K. W. Ng, and Y. Yoshida. Guaranteed Sufficient Decrease for Stochastic Variance Reduced Gradient Optimization. In *International Conference on Artificial Intelligence and Statistics (AISTATS)*, pages 1027–1036, 2018. SO
- [12] F. Shang, **K. Zhou**, H. Liu, J. Cheng, I. Tsang, L. Zhang, D. Tao, and J. Licheng. VR-SGD: A Simple Stochastic Variance Reduction Method for Machine Learning. *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 2018. SO
- [13] F. Shang, L. Jiao, **K. Zhou**, J. Cheng, Y. Ren, and Y. Jin. ASVRG: Accelerated Proximal SVRG. In *Asian Conference on Machine Learning (ACML)*, pages 815–830, 2018. SO
- UNDER REVIEW [14] C. Jin, **K. Zhou**, B. Han, J. Cheng, and M.C. Yang. Efficient Private SCO for Heavy-Tailed Data via Clipping, 2022. DP
- [15] R. Gao\*, F. Liu\*, **K. Zhou**, G. Niu, B. Han, and J. Cheng. Local Reweighting for Adversarial Training, 2021. Adv
- [16] **K. Zhou**, A.M.C. So, and J. Cheng. Accelerating Perturbed Stochastic Iterates in Asynchronous Lock-Free Optimization, 2021. LO
- [17] B. Xie, C. Jin, **K. Zhou**, J. Cheng, W. Meng. An Adaptive Incremental Gradient Method With Support for Non-Euclidean Norms, 2022. SO
- [18] X. Dai, X. Yan, **K. Zhou**, H. Yang, K. K. W. Ng, J. Cheng, and Y. Fan. Hyper-Sphere Quantization: Communication-Efficient SGD for Federated Learning, 2020. LO
- REVIEWING
- **Conference:** ICML 2021/22, NeurIPS 2021/22, AISTATS 2022, ICLR 2021/22
  - **Journal:** Mathematical Programming, Optimization Methods and Software, Transactions on Machine Learning Research
- LANGUAGE TESTS • **TOEFL:** Reading: 29 / Listening: 30 / Speaking: 23 / Writing: 24, Total: 106
- MATH BACKGROUND Numerical Optimization, Advanced Algorithms, Information Theory, Optimization Methods for High-Dimensional Statistics, Matrix Analysis and Computations, Foundations of Optimization, Probability Theory and Mathematical Statistics, Advanced Topics in Game Theory, Algebra Structure and Mathematical Logic, Set Theory and Graph Theory

AWARDS

- NeurIPS 2020 “Travel” Award, 2020
- Outstanding Thesis Award of Faculty of Engineering of CUHK, 2019
- ICML 2018 Travel Award, 2018
- Third-class scholarship for outstanding undergraduate in Fudan University, 2014
- First prize in National Olympiad in Informatics in Provinces (Zhejiang), 2012
- Second prize in National Olympiad in Informatics in Provinces (Zhejiang), 2011

PROGRAMMING  
SKILLS

Python, C++, C, Java, HTML/CSS/JavaScript