

Gao Yuan

10/19/1996

Saarbrücken
Germany

✉ yrick523@gmail.com

Education

- 10/21–present **Ph.D.**, *Saarland University*, (since 06/23: CISPA Helmholtz Center for Information Security)
Machine Learning and Optimization group; Supervisor: [Dr. Sebastian Stich](#)
- 09/19–09/21 **Master**, *ETH Zurich, Computer Science*
Thesis: Toward Practical Laplacian Linear Equation Solvers; Advisor: [Dr. Rasmus Kyng](#)
- 09/15–06/19 **Bachelor**, *The University of Hong Kong, BEng(CompSc), Mathematics minor*
cGPA: 3.93/4.3, Ranked among top 3. Graduated with first class honor
Thesis: Diffusion Process with Mediator on Hypergraph; Advisor: [Dr. Hubert Chan](#)
- 09/17–12/17 **Visiting Student**, *The University of Edinburgh, Informatics*
GPA: 91.17/100

Experience

- 10/21–05/23 **Research Assistant**, *Max Planck Institute for Informatics*
Algorithms and Complexity Department
- 06/20–08/20 **Software Engineering Intern**, *Alipay*, Shen Zhen, China
Codelnsight team
- 06/18–08/18 **Research Intern**, *URFP 18/19*, HKU
With [Dr. Hubert Chan](#); On the spectral theory of hypergraph

Teaching

- Teaching Assistant **Lectures on Modern Optimization Methods** (CISPA and UdS 2025); **Optimization for Machine Learning** (CISPA and UdS 2024); **Optimization** (MPI-INF and UdS 2022); **Optimization for Data Science** (ETH Zurich 2021)

Manuscripts

* in front of paper title indicates alphabetical order of authors. * after author names indicates equal contribution.

- 1 **Atlas: Adaptive Stepsizes from First Principles**
Konstantin Mishchenko, Yuan Gao, Sebastian Stich, 2026
- 2 **The Dual Averaging Power-Prox Method with Application to Heavy-Tail Incremental Gradient**
Yuan Gao, Jeremy Rack, Sebastian Stich, submitted to Annual Conference on Neural Information Processing Systems (NeurIPS 26), 2026

- 3 **Composite Optimization with Error Feedback: the Dual Averaging Approach**
Yuan Gao, Anton Rodomanov, Jeremy Rack, Sebastian Stich, [International Conference on Learning Representations \(ICLR 26\)](#), 2025
- 4 **Accelerated Distributed Optimization with Compression and Error Feedback**
Yuan Gao, Anton Rodomanov, Jeremy Rack, Sebastian Stich, [International Conference on Artificial Intelligence and Statistics \(AISTATS 26\)](#), 2025
- 5 **Distributed Asynchronous Optimization with Bias Correction**
Yuan Gao, Yuki Takezawa, Sebastian Stich, [Transactions on Machine Learning Research \(TMLR\)](#), 2024
- 6 **Towards Faster Decentralized Stochastic Optimization with Communication Compression**
Rustem Islamov*, Yuan Gao*, Sebastian Stich, [International Conference on Learning Representations \(ICLR 25\)](#), 2024
- 7 **Non-convex Stochastic Composite Optimization with Polyak Momentum**
Yuan Gao, Anton Rodomanov, Sebastian Stich, [International Conference on Machine Learning \(ICML 24\)](#), 2024
- 8 **EControl: Fast Distributed Optimization with Compression and Error Control**
Yuan Gao*, Rustem Islamov*, Sebastian Stich, [International Conference on Learning Representations \(ICLR 24\)](#), 2023
- 9 ***AC(k): Robust Solution of Laplacian Equations by Randomized Approximate Cholesky Factorization**
Yuan Gao, Rasmus Kyng, Daniel Spielman, [SIAM Journal on Scientific Computing \(SISC\)](#); [arXiv](#), 2023
- 10 ***Physarum Inspired Dynamics to Solve Semi-Definite Programs**
Yuan Gao, Hamidreza Kamkari, Andreas Karrenbauer, Kurt Mehlhorn, Mohamadamin Sharifi, [arXiv](#), (2022)
- 11 ***A new combinatorial property of geometric unique sink orientations**
Yuan Gao, Bernd Gärtner, and Jourdain Lamperski, [arXiv](#), (2020)

Professional Service

Reviewer *JOTA, ICLR '25, NeurIPS '25 (Top Reviewer) '24, ICML '26 (Gold Reviewer) '25 '24, ESA '22*

Awards and Honors

Scholarships URFP 18/19 Research Internship Awards
HKU Class Giving Scholarship 2017

Honors HKU FACULTY OF ENGINEERING DEAN'S HONORS LIST 15/16, 16/17, 17/18