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PhD, Professor

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Education

- Sept. 2007–July 2012 PhD, computational mathematics, Institute of Computational Mathematics and Scientific/Engineering Computing (ICMSEC), Chinese Academy of Sciences, China, supervised by Prof. Ya-xiang Yuan, thesis: *On Derivative-free Optimization Methods*
- May 2010–Aug. 2010 Visiting student, Institute for Computer Science, University of Bayreuth, Germany, visiting Prof. Klaus Schittkowski (funded by Alexander von Humboldt Foundation)
- Sept. 2003–July 2007 BSc, computational mathematics, School of Mathematics, Jilin University, China

Positions

- Jan. 2025–present Professor, School Mathematics, Sun Yat-sen University, China
- April. 2016–Dec. 2024 Research Assistant Professor / Assistant Professor, Department of Applied Mathematics, Hong Kong Polytechnic University, Hong Kong, China
- May 2014–Mar. 2016 Postdoc, CERFACS-IRIT joint lab and IRIT-ENSEEIHT, Toulouse, France, in the group of Prof. Serge Gratton
- Sept. 2012–Aug. 2014 Postdoc, Department of Mathematics, University of Coimbra, Portugal, in the group of Prof. Luís Nunes Vicente

Research Interests

Theory, algorithms, and software of mathematical optimization, especially derivative-free (zeroth-order) methods, randomized methods, large-scale problems, and noisy problems

Selected Papers

- [1] X. Chen, Y. He, and Z. Zhang, Tight Error Bounds for the Sign-Constrained Stiefel Manifold, *SIAM J. Optim.*, 35:302–329, 2025
- [2] T. M. Ragonneau and Z. Zhang, PDFO: A Cross-Platform Package for Powell’s Derivative-Free Optimization Solvers, *Math. Program. Comput.*, 16:535–559, 2024
- [3] S. Gratton, C. W. Royer, L. N. Vicente, and Z. Zhang, Complexity and Global Rates of Trust-Region Methods Based on Probabilistic Models, *IMA J. Numer. Anal.*, 38:1579–1597, 2018
- [4] S. Gratton, C. W. Royer, L. N. Vicente, and Z. Zhang, Direct Search Based on Probabilistic Descent, *SIAM J. Optim.*, 25:1515–1541, 2015
- [5] Z. Zhang, Sobolev Seminorm of Quadratic Functions With Applications to Derivative-Free Optimization, *Math. Program.*, 146:77–96, 2014

Software

- [1] Z. Zhang, PRIMA: Reference Implementation for Powell's methods with Modernization and Amelioration, <https://www.libprima.net>
- [2] C. Huang, T. M. Ragonneau and Z. Zhang, OptiProfiler (a platform for benchmarking optimization solvers), <https://www.optprof.com>
- [3] T. M. Ragonneau and Z. Zhang, COBYQA: Constrained Optimization BY Quadratic Approximation (a package for solving general nonlinear optimization problems without using derivatives), <https://www.cobyqa.com>
- [4] T. M. Ragonneau and Z. Zhang, PDFO (a package for solving general nonlinear optimization problems without using derivatives), <https://www.pdfo.net>
- [5] Z. Zhang, NEWUOAs (a package for solving large-scale nonlinear optimization problems without using derivatives), <https://www.sprima.net>

Selected Awards and Recognitions

- 2025 Sun Yat-sen Scholar (逸仙优秀学者), awarded by Sun Yat-sen University
- 2024 ORSC Award for Applications of Operations Research (中国运筹学会“运筹应用奖”), awarded by the Operations Research Society of China
- 2023 Excellent Young Scientists Fund (Overseas), awarded by the National Natural Science Foundation of China
- 2019 Best Teacher Award, awarded by AMA, The Hong Kong Polytechnic University
- 2019 COAP Best Paper Prize, awarded by the editorial board of *Comput. Optim. Appl.*

External Grants as PI

- Jan. 2026–Dec. 2029 “Derivative-Free Algorithms and Software for Large-Scale Constrained Optimization” awarded by the National Natural Science Foundation of China (NSFC) under the General Program of NSFC (国家自然科学基金面上项目), ref. 12571335, RMB 430,000
- Oct. 2024–Sept. 2027 “Non-Convergence Analysis of Randomized Derivative-Free Optimization Methods”, awarded by the Hong Kong RGC under the General Research Fund, ref. 15308624, HKD 821,494 (terminated in Jan. 2025 due to change of institution)
- Oct. 2023–Sept. 2026 “Scalable Derivative-Free Optimization Algorithms with Low-Dimensional Subspace Techniques”, awarded by the Hong Kong RGC under the General Research Fund, ref. 15308623, HKD 827,607 (terminated in Jan. 2025 due to change of institution)
- Oct. 2021–Sept. 2024 “Reliable Derivative-Free Optimization Algorithms Under Untamed Noise”, awarded by the Hong Kong RGC under the General Research Fund, ref. 15306621, HKD 586,015
- Oct. 2020–Sept. 2023 “Derivative-Free Optimization with Space Decomposition, Coarse Space Correction, and Randomization”, awarded by the Hong Kong RGC under the General Research Fund, ref. 15305420, HKD 599,861
- Jan. 2018–Dec. 2020 “Nonlinear Optimization Based on Inaccurate Information”, awarded by the Hong Kong RGC under the Early Career Scheme, ref. 25301217, HKD 381,557
- Jan. 2017–Dec. 2018 “Space Decomposition Methods for Constrained Optimization with Engineering Applications”, awarded by the Hong Kong RGC and the Consulate General of France in Hong Kong under the PROCORE - France/Hong Kong Joint Research Scheme, HKD 36,000

Graduate Students as Chief Supervisor

- Sept. 2024–present Zao Jiang, MPhil, Sun Yat-sen University
- Sept. 2022–present Cunxin Huang, PhD, The Hong Kong Polytechnic University, funded by the Hong Kong PhD Fellowship (ref. PF18-24698, HKD 1400,800), co-supervised with Prof. Xiaojun Chen
- Sept. 2021–present Haitian Li, PhD, The Hong Kong Polytechnic University, co-supervised with Prof. Xiaojun Chen
- Sept. 2019–Aug. 2022 Tom M. Ragonneau, PhD, The Hong Kong Polytechnic University, funded by the Hong Kong PhD Fellowship (ref. PF21-56718, HKD 997,600), co-supervised with Prof. Xiaojun Chen, thesis: *Model-Based Derivative-Free Optimization Methods and Software*
- Remark The Hong Kong PhD Fellowship (HKPFS) is a highly selective fellowship awarded by the Hong Kong government, selecting only 300 awardees per year worldwide.

Professional Services

- 2025–present Editorial Board Member of *Journal of Scientific Computational*
- 2025–present Reviewer for *Mathematical Reviews* of American Mathematical Society
- 2024–present Assistant Director of the Research Center for Intelligent Operations Research, The Hong Kong Polytechnic University
- 2023–present Council Member of the “Algorithms, Software, and Applications” branch of the Operations Research Society of China
- 2018–present Junior Council Member of the “Mathematical Programming” branch of the Operations Research Society of China
- 2017–present Member of the Organizing Committee of the International Conference on Numerical Optimization and Numerical Linear Algebra (a biennial conference chaired by Prof. Yaxiang Yuan)
- 2022–2023 Member of the 2023 SIAG/OPT Early Career Prize Selection Committee
- 2019–2020 Member of the Local Organizing Committee of SIAM Conference on Optimization 2020
- 2013 Member of the Organizing Committee of The Fourth International Conference on Continuous Optimization (2013, Lisbon, Portugal)