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Ph.D., Professor

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Education

Sept. 2007–July 2012	Ph.D., 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	B.Sc., 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 join 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 Publications

[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, http://www.libprima.net

[2] T. M. Ragonneau and Z. Zhang, COBYQA: Constrained Optimization BY Quadratic Approximation (a package for solving general nonlinear optimization problems without using derivatives), http://www.cobyqa.com

[3] T. M. Ragonneau and Z. Zhang, PDFO (a package for solving general nonlinear optimization problems without using derivatives), http://www.pdfo.net

[4] Z. Zhang, NEWUOAs (a package for solving large-scale nonlinear optimization problems without using derivatives), http://www.sprima.net

Selected Awards

2024   Award for Applications of Operations Research, awarded by the Operations Research Society 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

Oct. 2024–Sept. 2027   "Non-Convergence Analysis of Randomized Derivative-Free Optimization Methods" awarded by the Hong Kong RGC under the General Research Fund (HKD $821,494)

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 (HKD $827,607)

Jan. 2022–Dec. 2024   "Reliable Derivative-Free Optimization Algorithms Under Untamed Noise", awarded by the Hong Kong RGC under the General Research Fund (HKD $586,015)

Jan. 2021–Dec. 2023   "Derivative-Free Optimization with Space Decomposition, Coarse Space Correction, and Randomization", awarded by the Hong Kong RGC under the General Research Fund (HKD $599,861)

Jan. 2018–Dec. 2020   "Nonlinear Optimization Based on Inaccurate Information", awarded by the Hong Kong RGC under the Early Career Scheme (HKD $381,557)

Jan. 2017–Dec. 2018   "Space Decomposition Methods for Constrained Optimization with Engineering Applications", jointly 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)

Ph.D. Students as Chief Supervisor

Aug. 2022–present   C. Huang, funded by the Hong Kong Ph.D. Fellowship (HKD $1400,800), co-supervised by Prof. X. Chen

Sept. 2021–present   H. Li, co-supervised by Prof. X. Chen

Sept. 2019–Aug. 2022   T. M. Ragonneau, funded by the Hong Kong Ph.D. Fellowship (HKD $997,600), co-supervised by Prof. X. Chen, thesis: *Model-Based Derivative-Free Optimization Methods and Software*

Professional Services

2025–present	Reviewer of *Mathematical Reviews*
2024–present	Assistant Director of the Research Center for Intelligent Operations Research, The Hong Kong Polytechnic University
2017–present	Member of the Organizing Committee of the International Conference on Numerical Optimization and Numerical Linear Algebra (a biennial conference organized by Prof. Ya-xiang 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)