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Basic Information

Year of birth 1985
Place of birth Shandong, China
Nationality Chinese

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 Professor Ya-xiang Yuan, thesis: *On Derivative-free Optimization Methods*
May 2010–Aug. 2010 Visiting student, Institute for Computer Science, University of Bayreuth, Germany, visiting Professor Klaus Schittkowski, funded by Alexander von Humboldt Foundation
Sept. 2003–July 2007 B.Sc., computational mathematics, College of Mathematics, Jilin University, China

Positions

Apr. 2016–present Research assistant professor, Department of Applied Mathematics, Hong Kong Polytechnic University, Hong Kong, China
May 2014–Mar. 2016 Postdoc, CERFACS-IRIT join lab and IRIT-ENSEEIH, Toulouse, France, in the team of Professor Serge Gratton, funded by Foundation STAE and IRT Saint Exupéry
Sept. 2012–Aug. 2014 Postdoc, Department of Mathematics, University of Coimbra, Portugal, in the group of Professor Luís Nunes Vicente, funded by FCT grant PTDC/MAT/116736/2010

Research Interests

Theory and algorithms of mathematical optimization, especially randomized algorithms, derivative-free algorithms, noisy problems, and large-scale problems

Papers

- [1] S. Gratton, C. W. Royer, L. N. Vicente, Z. Zhang, Direct search based on probabilistic feasible descent for bound and linearly constrained problems, *submitted*, 2017
- [2] X. Chen, C. T. Kelley, F. Xu, Z. Zhang, A smoothing direct search method for Monte Carlo-based constrained nonsmooth nonconvex optimization, *submitted*, 2017
- [3] S. Gratton, C. W. Royer, L. N. Vicente, Z. Zhang, Complexity and global rates of trust-region methods based on probabilistic models, to appear in *IMA J. Numer. Anal.*
- [4] M. Dodangeh, L. N. Vicente, Z. Zhang, On the optimal order of worst case complexity of direct search, *Optim. Lett.*, 10(4): 699–708, 2016
- [5] S. Gratton, C. W. Royer, L. N. Vicente, Z. Zhang, Direct search based on probabilistic descent, *SIAM J. Optim.*, 25(3): 1515–1541, 2015
- [6] Z. Zhang, Sobolev seminorm of quadratic functions with applications to derivative-free optimization, *Math. Program.*, 146(1–2): 77–96, 2014

Works in Progress

- [1] S. Gratton, L. N. Vicente, Z. Zhang, A space transformation framework for nonlinear optimization, in preparation
- [2] F. Delbos, S. Gratton, B. Pauwels, Z. Zhang, Direct search for noisy functions, in preparation
- [3] Z. Zhang, A derivative-free optimization algorithm with low-dimensional subspace techniques for large-scale problems, in preparation

External Grants

- Jan. 2018–Dec. 2020 Nonlinear Optimization Based on Inaccurate Information, PI, awarded by the Research Grants Council of Hong Kong under the Early Career Scheme
- Jan. 2017–Dec. 2018 Space Decomposition Methods for Constrained Optimization with Engineering Applications, Hong Kong PI (French PI: S. Gratton; French Co-I: A. Gazaix), jointly awarded by the Research Grants Council of Hong Kong and the Consulate General of France in Hong Kong under the PROCORE - France/Hong Kong Joint Research Scheme

Selected Conference Presentations

- June 30, 2017 Conference on Approximation and Optimization: Algorithms, Complexity, and Applications (Athens, Greece), A space transformation framework for nonlinear optimization, invited talk
- May 24, 2017 SIAM Conference on Optimization 2017 (Vancouver, Canada), A space transformation framework for nonlinear optimization, mini-symposium talk
- Aug. 9, 2016 The Fifth International Conference on Continuous Optimization (Tokyo, Japan), A space transformation framework for nonlinear optimization, invited-session talk
- Aug. 12, 2015 The Eighth International Congress on Industrial and Applied Mathematics (Beijing, China), A subspace decomposition framework for nonlinear optimization, mini-symposium talk
- July 13, 2015 The 22nd International Symposium on Mathematical Programming (Pittsburgh, U.S.), A subspace decomposition framework for nonlinear optimization, invited-session talk
- June 14, 2015 CORS/INFORMS 2015 Joint International Meeting (Montréal, Canada), A subspace decomposition framework for nonlinear optimization, invited-session talk
- July 28, 2014 Optimization 2014 (Guimarães, Portugal), A subspace decomposition framework for nonlinear optimization: Global convergence and global rates, invited-session talk
- July 17, 2014 The 20th Conference of the International Federation of Operational Research Societies (Barcelona, Spain), Direct search based on probabilistic descent, invited-session talk
- May 22, 2014 SIAM Conference on Optimization 2014 (San Diego, U.S.), Direct search based on probabilistic descent, mini-symposium talk
- July 29, 2013 The Fourth International Conference on Continuous Optimization (Lisbon, Portugal), A derivative-free optimization algorithm with low-dimensional subspace techniques for large-scale problems, invited-session talk

Selected Awards

- 2012 Pacemaker Award to Outstanding Students, awarded by Chinese Academy of Sciences
- 2007 Outstanding Graduate Award, awarded by Jilin University
- 2004 National Scholarship, awarded by the Ministry of Education of China

Teaching

- 2017 Hong Kong Polytechnic University, Hong Kong, China, “Basic Mathematics II — Calculus and Linear Algebra” (AMA1120), 26 hours, 145 students
- 2016/2017 Hong Kong Polytechnic University, Hong Kong, China, “Mathematics II” (AMA2112), 36 hours, 121/127 students
- 2015 ENSEEIHT, France, “Concentration of Probability in Numerical Optimization”, 10 hours, 15 students
- 2015 ENSEEIHT, France, “TP d’Equations Différentielles Ordinaires” (practical session of the course “Equations Différentielles Ordinaires” by J. Gergaud), 16 hours, 21 students

Refereeing

- 2012–present Mathematical Programming, SIAM Journal on Optimization, Mathematics of Operations Research, SIAM Journal on Numerical Analysis, Optimization Methods and Software, Computational Optimization and Applications, Journal of Global Optimization, Journal of Scientific Computing, Optimization and Engineering, Science China Mathematics, Acta Mathematica Sinica, Journal of Computational Mathematics, Applied Mathematics and Computation, International Journal of Computer Mathematics

Professional Services

- 2015–present Maintainer (with N. I. M. Gould) of Professor M. J. D. Powell’s optimization software: TOLMIN, COBYLA, UOBYQA, NEWUOA, BOBYQA, and LINCOA
- 2017 Member of the Organizing Committee of The 11th International Conference on Numerical Optimization and Numerical Linear Algebra (Aug. 8–11, 2017, Yinchuan, China)
- 2017 Co-chair (with X. Liu) of the invited workshop on “Big Data Analysis with Applications” at The Third International Conference on Engineering and Computational Mathematics (May 31–June 2, 2017, Hong Kong, China)
- 2016 Co-chair (with F. Rinaldi) of the cluster on “Derivative-free and Simulation-based Optimization” at The Fifth International Conference on Continuous Optimization (Aug. 6–11, 2016, Tokyo, Japan)
- 2013 Member of the Organizing Committee of The Fourth International Conference on Continuous Optimization (July 27–Aug. 1, 2013, Lisbon, Portugal)

Memberships

- 2017–present China Society for Industrial and Applied Mathematics (CSIAM)
- 2016–present Operations Research Society of China (ORSC)
- 2016–present Mathematical Optimization Society (MOS)
- 2011–present Society for Industrial and Applied Mathematics (SIAM) and SIAM Activity Group on Optimization (SIAG/OPT)

Computer Skills

Linux; Fortran, C, MATLAB

Language Skills

Native Chinese, fluent English, intermediate French (B1–B2), elementary German (A1)