Baoyu Zhou

CONTACT INFORMATION	BYENG 324	+1 (551) 228-9835
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RESEARCH INTERESTS

Large-scale Continuous Optimization, Simulation-based Optimization, Constrained Optimization under Uncertainty, Optimization Methods for Machine Learning

ACADEMIC POSITIONS

Assistant Professor — July 2024 – present
Arizona State University, Tempe, AZ
School of Computing and Augmented Intelligence

Postdoctoral Research Fellow — Aug. 2023 – Apr. 2024
University of Michigan, Ann Arbor, MI
Department of Industrial and Operations Engineering

Principal Researcher — Aug. 2022 – July 2023
University of Chicago, Chicago, IL
Booth School of Business

EDUCATION

Lehigh University
Ph.D. in Industrial & Systems Engineering — Aug. 2018 – May 2022
M.S. in Industrial & Systems Engineering — Aug. 2016 – May 2018
Shanghai Jiao Tong University
B.S.E. in Mechanical Engineering — Aug. 2012 – Aug. 2016
The Chinese University of Hong Kong
Undergraduate Exchange Student — Jan. 2015 – Apr. 2015

RESEARCH EXPERIENCE

Research Assistant — Aug. 2018 – May 2022
Lehigh University, Bethlehem, PA
Department of Industrial & Systems Engineering

Research Intern — May 2021 – Aug. 2021
Facebook, Inc., New York, NY
Facebook AI Research

Givens Associate — May 2020 – Aug. 2020
Argonne National Laboratory, Lemont, IL
Mathematics and Computer Science Division

Visiting Research Assistant — June 2017 – Aug. 2017
Northwestern University, Evanston, IL
Department of Industrial Engineering and Management Sciences

PUBLISHED JOURNAL ARTICLES

[1] A. S. Berahas, M. Xie, and **B. Zhou***. A Sequential Quadratic Programming Method with High Probability Complexity Bounds for Nonlinear Equality-Constrained Stochastic Optimization. *SIAM Journal on Optimization*, 35(1):240-269, 2025.

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*All publications with "∗" sign on my name indicates the author list is arranged in alphabetical order.

[2] F. E. Curtis, D. P. Robinson, and **B. Zhou**[*]. Sequential Quadratic Optimization for Stochastic Optimization with Deterministic Nonlinear Inequality and Equality Constraints. *SIAM Journal on Optimization*, 34(4):3592-3622, 2024.

[3] F. E. Curtis, D. P. Robinson, and **B. Zhou**[*]. A Stochastic Inexact Sequential Quadratic Optimization Algorithm for Nonlinear Equality-Constrained Optimization. *INFORMS Journal on Optimization*, 6(3-4):173-195, 2024.

[4] A. S. Berahas, J. Shi, Z. Yi, and **B. Zhou**[*]. Accelerating Stochastic Sequential Quadratic Programming for Equality Constrained Optimization using Predictive Variance Reduction. *Computational Optimization and Applications*, 86:79-116, 2023.

[5] A. S. Berahas, F. E. Curtis, and **B. Zhou**[*]. Limited-Memory BFGS with Displacement Aggregation. *Mathematical Programming*, 194(1):121-157, 2022.

[6] J. Larson, M. Menickelly, and **B. Zhou**[*]. Manifold Sampling for Optimizing Nonsmooth Nonconvex Compositions. *SIAM Journal on Optimization*, 31(4):2638-2664, 2021.

[7] A. S. Berahas, F. E. Curtis, D. P. Robinson, and **B. Zhou**[*]. Sequential Quadratic Optimization for Nonlinear Equality Constrained Stochastic Optimization. *SIAM Journal on Optimization*, 31(2):1352-1379, 2021.

[8] F. E. Curtis, D. P. Robinson, and **B. Zhou**[*]. A Self-Correcting Variable-Metric Algorithm Framework for Nonsmooth Optimization. *IMA Journal of Numerical Analysis*, 40(2):1154-1187, 2020.

PUBLISHED CONFERENCE ARTICLES

[9] J. C. N. Liang, H. Lu, and **B. Zhou**[*]. Online Ad Procurement in Non-stationary Autobidding Worlds. *Thirty-seventh Conference on Neural Information Processing Systems*, 2023.

WORKING PAPERS

[10] H. Shen, Y. Zeng, and **B. Zhou**[*]. Sequential Quadratic Optimization for Solving Expectation Equality Constrained Stochastic Optimization Problems. arXiv 2503.09490, 2025.

[11] A. S. Berahas, J. Shi, and **B. Zhou**[*]. Optimistic Noise-Aware Sequential Quadratic Programming for Equality Constrained Optimization with Rank-Deficient Jacobians. arXiv 2503.06702, 2025.

[12] J. R. Birge, H. Lu, and **B. Zhou**[*]. On the Convergence of L-shaped Algorithms for Two-Stage Stochastic Programming. arXiv 2309.01244, 2023.

[13] A. Defazio, **B. Zhou**, and L. Xiao. Grad-GradaGrad? A Non-Monotone Adaptive Stochastic Gradient Method. arXiv 2206.06900, 2022.

[14] A. S. Berahas, R. Bollapragada, and **B. Zhou**[*]. An Adaptive Sampling Sequential Quadratic Programming Method for Equality Constrained Stochastic Optimization. arXiv 2206.00712, 2022.

DISSERTATIONS

[15] **B. Zhou**. Methods for Large Scale Nonlinear Optimization and Equality Constrained Stochastic Optimization. Ph.D. Thesis, Department of Industrial & Systems Engineering, Lehigh University, Bethlehem, PA, USA, 2022.

[16] **B. Zhou**. Quadratic Optimization for Nonsmooth Optimization Algorithms: Thoery and Numerical Experiments. Master Thesis, Department of Industrial & Systems Engineering, Lehigh University, Bethlehem, PA, USA, 2018.

TECHNICAL REPORTS

[17] H. Huang, H. Feng, **B. Zhou**, E. Pan, and L. Xi. Multi-Objective Cell Formation Problem Considering Mixed-Type Data of Parts. *Technical Report* (in Chinese), 2016.

PRESENTATIONS

[1] Baoyu Zhou. Adaptive Stochastic Algorithms for Nonconvex Constrained Optimization. *International Conference on Continuous Optimization, Los Angeles, CA, USA*, July 2025.

[2] Baoyu Zhou. Inexact SQP Method for Nonlinear Constrained Stochastic Optimization. *INFORMS Annual Meeting, Seattle, WA, USA*, October 2024.

[3] Baoyu Zhou. Adaptive Stochastic Algorithms for Nonconvex Constrained Optimization. *School of Mathematical and Statistical Sciences, Arizona State University, Tempe, AZ, USA*, September 2024.

[4] Baoyu Zhou. New Understandings on L-shaped Methods for Two-Stage Stochastic Programming. *INFORMS Optimization Society Conference, Houston, TX, USA*, March 2024.

[5] Baoyu Zhou. Next Generation Algorithms for Constrained Stochastic Optimization. *School of Computing and Augmented Intelligence, Arizona State University, Tempe, AZ, USA*, January 2024.

[6] Baoyu Zhou. Next Generation Algorithms for Constrained Stochastic Optimization. *Department of Economics and Business, Colorado School of Mines, Golden, CO, USA*, January 2024.

[7] Baoyu Zhou. Next Generation Algorithms for Constrained Stochastic Optimization. *Operations Research and Industrial Engineering Program, The University of Texas at Austin, Austin, TX, USA*, January 2024.

[8] Baoyu Zhou. Next Generation Algorithms for Constrained Stochastic Optimization. *Department of Mathematics, Florida State University, Tallahassee, FL, USA*, January 2024.

[9] Baoyu Zhou. New Understandings on L-shaped Methods for Two-Stage Stochastic Programming. *INFORMS Annual Meeting, Phoenix, AZ, USA*, October 2023.

[10] Baoyu Zhou. New Understandings on L-shaped Methods for Two-Stage Stochastic Programming. *Cornell Young Researcher Workshop, Ithaca, NY, USA*, October 2023. *(poster)*

[11] Baoyu Zhou. Methods for Constrained Stochastic Optimization: Theory and Practice. *Argonne National Laboratory, Lemont, IL, USA*, September 2023.

[12] Baoyu Zhou. Inexact Bundle Methods for Two-Stage Stochastic Programming. *MOPTA Conference, Bethlehem, PA, USA*, August 2023.

[13] Baoyu Zhou. Inexact Bundle Methods for Two-Stage Stochastic Programming. *School of Mathematics, The University of Edinburgh, Edinburgh, Scotland*, July 2023.

[14] Baoyu Zhou. Inexact Bundle Methods for Two-Stage Stochastic Programming. *SIAM Conference on Optimization, Seattle, WA, USA*, June 2023.

[15] Baoyu Zhou. SQP Methods for Deterministically Constrained Stochastic Optimization. *Department of Systems and Industrial Engineering, The University of Arizona, Tucson, AZ, USA*, February 2023.

[16] Baoyu Zhou. SQP Methods for Inequality Constrained Stochastic Optimization. *INFORMS Annual Meeting, Indianapolis, IN, USA*, October 2022.

[17] Baoyu Zhou. SQP Methods for Deterministically Constrained Stochastic Optimization. *FutureBAProf Workshop, The University of Iowa, Iowa City, IA, USA*, August 2022.

[18] Baoyu Zhou. SQP Methods for Inequality Constrained Stochastic Optimization. *International Conference on Continuous Optimization, Bethlehem, PA, USA*, July 2022.

[19] Baoyu Zhou. Fast, Efficient and Practical Algorithms for Nonlinear Optimization. *Department of Industrial, Manufacturing and Systems Engineering, Texas Tech University, Lubbock, TX, USA*, December 2021.

[20] Baoyu Zhou. An Inexact Sequential Quadratic Method For Nonlinear Equality Constrained Stochastic Optimization. *INFORMS Annual Meeting, Anaheim, CA, USA*, October 2021.

[21] Baoyu Zhou. Manifold Sampling for Optimizing Nonsmooth Nonconvex Compositions. *MOPTA Conference, Bethlehem, PA, USA*, August 2021.

[22] Baoyu Zhou. SQP for Nonlinear Equality Constrained Stochastic Optimization. *MOPTA Conference, Bethlehem, PA, USA*, August 2021.

[23] Baoyu Zhou. SQP Methods for Equality Constrained Stochastic Optimization. *SIAM Conference on Optimization, Spokane, WA, USA*, July 2021.

[24] Baoyu Zhou. Manifold Sampling for Optimizing Nonsmooth Nonconvex Compositions. *SIAM Conference on Computational Science and Engineering, Fort Worth, TX, USA*, March 2021.

[25] Baoyu Zhou. Manifold Sampling for Optimizing Nonconvex Piecewise-Smooth Compositions. *INFORMS Annual Meeting, National Harbor, MD, USA*, November 2020.

[26] Baoyu Zhou. Limited-Memory BFGS with Displacement Aggregation. *INFORMS Annual Meeting, Seattle, WA, USA*, October 2019.

[27] Baoyu Zhou. Limited-Memory BFGS with Displacement Aggregation. *MOPTA Conference, Bethlehem, PA, USA*, August 2019.

TEACHING EXPERIENCE		
Instructor		
Arizona State University, Tempe, AZ		
IEE 620: Optimization I		Fall 2025
IEE 470: Stochastic Operations Research		Spring 2025
Teaching Evaluation: 4.41/5.00		
Guest Lecturer		
University of Michigan, Ann Arbor, MI		
IOE 691: Advanced Computational Optimization		Winter 2024
Bootcamp Organizer & **Instructor**		Aug. 2021
Lehigh University, Bethlehem, PA		
Teaching Assistant Mentor		Sept. 2014 – Aug. 2016
Shanghai Jiao Tong University, Shanghai, China		
Undergraduate Teaching Assistant		
Shanghai Jiao Tong University, Shanghai, China		
VV156: Honors Calculus II		Fall 2013, Spring 2014, Fall 2015
VM240: Intro to Dynamics and Vibrations		Summer 2015

PROFESSIONAL EXPERIENCE		
Cost Engineer Intern		Mar. 2016 – May 2016
Fiat Chrysler Automobiles, Shanghai, China		
Technical Assistant Intern		Aug. 2015 – Sept. 2015
Shenyang Blower Works Group Corporation, Shenyang, China		

HONORS & AWARDS	
Elizabeth V. Stout Dissertation Award, Lehigh University	2022
SIAM Student Travel Award	2021
Van Hoesen Family Best Publication Award, Lehigh ISE Department	2021
P.C. Rossin Doctoral Fellow, Lehigh University	2021
Ph.D. Student of the Year, Lehigh ISE Department	2021
Lehigh University Fellowship	2018 – 2019
Outstanding Freshman Scholarship, Shanghai Jiao Tong University	2012 – 2016

Outstanding Academic Scholarship, Shanghai Jiao Tong University 2015

MENTORSHIP EXPERIENCE	

Ph.D. Student Advisees
- Yunfan Zeng (Arizona State University) — 2025 – present
- Luwei Bai (Arizona State University) — 2025 – present
- Yang Zeng (Arizona State University) — 2024 – present

Other Ph.D. Students
- Jinwen Yang (University of Chicago) — 2023 – present
  Advisor: Haihao (Sean) Lu
- Jiahao Shi (University of Michigan) — 2021 – 2025
  Advisor: Albert S. Berahas
  First Position: Applied Scientist at Amazon

Other Undergraduate Students
- Zihong Yi (University of Michigan) — 2021 – 2022
  Advisor: Albert S. Berahas
  First Position: Ph.D. student at Carnegie Mellon University

ACADEMIC SERVICE

Professional Affiliations
- Society for Industrial and Applied Mathematics (SIAM) — 2021 – present
- Institute for Operations Research and Management Sciences (INFORMS) — 2018 – present

Professional Community Service
- Reviewer, INFORMS DEI Best Student Paper Award — 2024
- Vice President, Lehigh University INFORMS Student Chapter — 2020 – 2021

Organized Conference Sessions
- ICCOPT Conference
- *Methods for Large-Scale Nonlinear Optimization I-V*, Los Angeles, CA, USA, July 2025.
- *Advances in Nonlinear Optimization*, Bethlehem, PA, USA, July 2022.
- *Large-Scale, Nonlinear, and Stochastic Optimization IV*, Bethlehem, PA, USA, July 2022.
- INFORMS Annual Meeting
- *Advances in Nonlinear, Stochastic, and Constrained Optimization*, Seattle, WA, USA, October 2024.
- *Recent Advances in Nonlinear and Stochastic Optimization*, Indianapolis, IN, USA, October 2022.
- *Nonlinear and Stochastic Optimization*, Indianapolis, IN, USA, October 2022.
- *Advances in Nonlinear and Stochastic Optimization (I–II)*, Anaheim, CA, USA, October 2021.
- *Optimization in Quantum Computing and vice versa I*, Anaheim, CA, USA, October 2021.
- INFORMS Optimization Society Conference
- *Methods for Large-Scale Nonlinear and Stochastic Optimization (I-III)*, Houston, TX, USA, March 2024.
- MOPTA Conference

- *Nonlinear and Stochastic Optimization Algorithms*, Bethlehem, PA, USA, August 2021.
- *Algorithms for Derivative-Free Optimization*, Bethlehem, PA, USA, August 2021.
- SIAM Conference on Optimization
- *Recent Advances in Large-Scale Nonlinear Optimization I-II (Sessions I-IV)*, Seattle, WA, USA, May 2023.

Journals Reviewed for (# of articles reviewed)

- Computational Optimization and Applications (6)
- EURO Journal on Computational Optimization (1)
- IEEE Control Systems Letters (1)
- IEEE Transactions on Automatic Control (1)
- IEEE Transactions on Network Science and Engineering (1)
- IEEE Transactions on Neural Networks and Learning Systems (4)
- IEEE Transactions on Pattern Analysis and Machine Intelligence (1)
- IMA Journal of Numerical Analysis (1)
- INFORMS Journal on Data Science (1)
- Journal of Global Optimization (1)
- Journal of Machine Learning Research (1)
- Journal of Optimization Theory and Applications (1)
- Journal of Scientific Computing (3)
- Machine Learning (1)
- Management Science (2)
- Mathematical Methods of Operations Research (1)
- Mathematical Programming (5)
- Mathematical Programming Computation (1)
- Mathematics and Computers in Simulation (1)
- Mathematics of Computation (1)
- Optimization Methods and Software (3)
- SIAM Journal on Mathematics of Data Science (1)
- SIAM Journal on Matrix Analysis and Applications (1)
- SIAM Journal on Optimization (5)
- Signal Processing (1)

Conferences Reviewed for (# of articles reviewed)
   Serving as Area Chair
- Constrained Optimization for Machine Learning (COML) Workshop, NeurIPS 2025
   Serving as Program Committee
- When Machine Learning meets Dynamical Systems: Theory and Applications (MLmDS) Workshop, AAAI 2023 (1)
- Optimization for Machine Learning (OPT) Workshop, NeurIPS 2022 (3)
- New Frontiers in Federated Learning (NFFL) Workshop, NeurIPS 2021 (3)
- Optimization for Machine Learning (OPT) Workshop, NeurIPS 2021 (3)
- Optimization for Machine Learning (OPT) Workshop, NeurIPS 2020 (4)

COURSES   Convex Analysis; Planning & Scheduling in Manufacturing & Services; Optimization Models & Applications; Nonlinear Optimization; Random Processes & Applications; Intro to Math Optimization; Real Analysis I; Discrete Optimization; Computational Methods in Optimization; Dynamic Programming; Applied Operations Research; Optimization Methods in Machine Leaning; Mining of Large Datasets; Quantum Computing for Optimization