Yue Xie, PhD

Email address: xieyue1990@gmail.com • xie86@wisc.edu
Personal website: https://yue-xie.github.io/
Research interests: nonconvex, stochastic and robust optimization with applications in data science and ML

Education & Training

Wisconsin Institute for Discovery, University of Wisconsin-Madison	Madison, WI, USA
Postdoctoral Associate	**10/22/2018 – present**
Supervisor: Stephen J. Wright	
Pennsylvania State University	State College, PA, USA
PhD in Industrial Engineering	**08/25/2013 – 08/11/2018**
Dual Title Degree for Operations Research	
Thesis advisor: Uday V. Shanbhag	
Tsinghua University	Beijing, China
Pure & Applied Mathematics	**09/01/2009 – 07/11/2013**

Publications

Journal Paper Published:

- Yue Xie and Stephen J. Wright, *Complexity of proximal augmented Lagrangian for nonconvex optimization with nonlinear equality constraints*, **Journal of Scientific Computing**, 2021. https://link.springer.com/article/10.1007/s10915-021-01409-y.

- Yue Xie and Uday V. Shanbhag, *Tractable ADMM schemes for computing KKT points and local minimizers for ℓ_0-minimization problems*, **Computational Optimization and Application**, 2020. http://link.springer.com/article/10.1007/s10589-020-00227-6.

- Yue Xie and Uday V. Shanbhag, *SI-ADMM: A stochastic inexact ADMM framework for stochastic convex programs*, **IEEE Transactions on Automatic Control**, vol. 65, no. 6, pp. 2355-2370. https://doi.org/10.1109/TAC.2019.2953209.

- Yue Xie and Uday V. Shanbhag, *On robust solutions to uncertain linear complementarity problems and their variants*, **SIAM Journal on Optimization**, 26(4), pp. 2020-2159. https://doi.org/10.1137/15M1010427.

Workshop Proceeding:

- Yue Xie and Stephen J. Wright, *Complexity of projected Newton methods for bound-constrained optimization.* **Thirty-seventh International Conference on Machine Learning (ICML) workshop: Beyond first order methods in machine learning systems**, Virtual, 2020. Link to the article.

Work In Progress:

- Yue Xie and Stephen J. Wright, *Complexity of augmented Lagrangian on general inequality constrained nonconvex optimization.*

- Yue Xie and Stephen J. Wright, *Complexity of projected Newton methods on bound-constrained optimization.*

- Yue Xie and Uday V. Shanbhag, *Variable sample-size stochastic ADMM schemes.*

Conference Paper Published :

- Yue Xie and Uday V. Shanbhag, *SI-ADMM: A stochastic inexact ADMM framework for resolving structured stochastic convex programs.* **2016 Winter Simulation Conference (WSC)**, Washington, DC, 2016, pp. 714-725. https://doi.org/10.1109/WSC.2016.7822135.

- Yue Xie and Uday V. Shanbhag, *On robust solutions to uncertain monotone linear complementarity problems (LCPs) and their variants.* **53rd IEEE Annual Conference on Decision and Control (CDC)**, Los Angeles, CA, 2014, pp. 2834-2839. https://doi.org/10.1109/CDC.2014.7039824.

Teaching Experience

University of Wisconsin-Madison	Madison, WI, USA
CS/ISyE 730: Nonlinear Optimization II	**Spring 2020**
Guest Lecturer	
Pennsylvania State University	State College, PA, USA
IE 425: Stochastic Models in Operations Research	**Spring 2018**
Teaching Assistant	

Reviewer of Journals

SIAM Journal on Optimization (2), Mathmatical Programming Computation (1), IEEE Transactions on Automatic Control (2), IEEE Transactions on Signal Processing (2), Journal of the Operations Research Society of China (1), IISE Transactions (1), Optimization Letters(1), Networks and Spatial Economics (2).

Presentations

1. "On Complexity of Constrained Nonconvex Optimization", presentation delivered in the Department of Applied Mathematics and Statistics at the Johns Hopkins University, Jan 2021.

2. "Complexity of augmented Lagrangian for nonconvex optimization with nonlinear constraints", presentation delivered at Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, Virtual, Nov 2020.

3. "Complexity of projected Newton methods for bound-constrained optimization", presentation delivered at Thirty-seventh International Conference on Machine Learning (ICML) workshop: Beyond first order methods in machine learning systems, Virtual, July 2020. https://sites.google.com/view/optml-icml2020

4. "A tractable ADMM scheme for computing KKT points and local minimizers for ℓ_0-minimization problems", presentation delivered at International Conference on Continuous Optimization(ICCOPT), Berlin, Aug 2019.

5. "Stochastic ADMM frameworks for resolving structured stochastic convex programs", presentation delivered at Modeling and Optimization: Theory and Applications (MOPTA), Lehigh University, Aug 2018.

6. "Obtaining deterministic rates in stochastic ADMM schemes via a variable sample-size technique", presentation delivered at Institute for Operations Research and the Management Sciences (INFORMS) Optimization Society Conference, Denver, Mar 2018.

7. "SI-ADMM: A stochastic inexact ADMM framework for resolving structured stochastic convex programs", presentation delivered at Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, Houston, Oct 2017.

8. "On the resolution of ℓ_0-norm minimization problems via alternating Lagrangian schemes", presentation delivered at Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, Houston, Oct 2017.

9. "On the global resolution of ℓ_0-norm minimization problems via alternating Lagrangian schemes", presentation delivered at Society for Industrial and Applied Mathematics (SIAM) Conference on Optimization, Vancouver, BC, May 2017.

10. "SI-ADMM: A stochastic inexact ADMM framework for resolving structured stochastic convex programs", presentation delivered at 2016 Winter Simulation Conference (WSC), Washington, D.C., Dec 2016.

11. "On the resolution of complementarity formulations of the ℓ_0-norm minimization problem via ADMM schemes", presentation delivered at International Conference on Continuous Optimization (ICCOPT), Tokyo, Japan, Aug 2016.

12. "On an ADMM framework for the resolution of complementarity formulations of the ℓ_0-norm minimization problem: Preliminary work", presentation delivered at International Conference on Machine Learning (ICML) 2016 workshop on Optimization Methods for the Next Generation of Machine Learning, NY, June 2016.

13. "On robust solutions to uncertain linear complementarity problems and their variants", presentation delivered at Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, Philadelphia, Nov 2015.

14. "On robust solutions to uncertain linear complementarity problems and their variants", presentation delivered at 22nd International Symposium on Mathematical Programming (ISMP), Pittsburgh, July 2015.

15. "On robust solutions to uncertain linear complementarity problems and their variants", presentation delivered at Modeling and Optimization: Theory and Applications (MOPTA), Lehigh University, Aug 2014.

Honors and Awards

1. Marcus Fellowship; Department of Industrial and Manufacturing Engineering, Penn State University, 2014

2. Marcus Fellowship; Department of Industrial and Manufacturing Engineering, Penn State University, 2013

3. Meritorious Winner, Interdisciplinary Contest in Modeling (ICM), 2012

Skills

Programming: Proficiency in programming software Matlab. Experience with Minitab, R, Java, Python

Writing: Latex

Language: Proficiency in English, Native speaker in Mandarin.