

# Yue Xie, PhD

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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

Postdoctoral Associate

Supervisor: Stephen J. Wright

MADISON, WI, USA

10/22/2018 – present

Pennsylvania State University

PhD in Industrial Engineering

Dual Title Degree for Operations Research

Thesis advisor: Uday V. Shanbhag

STATE COLLEGE, PA, USA

08/25/2013 – 08/11/2018

Tsinghua University

Pure & Applied Mathematics

BEIJING, CHINA

09/01/2009 – 07/11/2013

## Publications

Journal Paper Published:

- Yue Xie and Uday V. Shanbhag, *Tractable ADMM schemes for computing KKT points and local minimizers for  $\ell_0$ -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>.

Journal Paper Under Review

- Yue Xie and Stephen J. Wright, *Complexity of proximal augmented Lagrangian for nonconvex optimization with nonlinear equality constraints*, submitted to **Journal of Scientific Computing**, under review of 2nd round.  
<https://arxiv.org/abs/1908.00131>.

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>.

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](#).

## Teaching Experience

University of Wisconsin-Madison  
**CS/ISyE 730: Nonlinear Optimization II**  
Guest Lecturer

MADISON, WI, USA  
**Spring 2020**

Pennsylvania State University  
**IE 425: Stochastic Models in Operations Research**  
Teaching Assistant

STATE COLLEGE, PA, USA  
**Spring 2018**

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## Reviewer of Journals

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

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## Presentations

1. "Complexity of augmented Lagrangian for nonconvex optimization with nonlinear constraints", presentation will be delivered at Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, Virtual, Nov 2020.
  2. "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>
  3. "A tractable ADMM scheme for computing KKT points and local minimizers for  $\ell_0$ -minimization problems", presentation delivered at International Conference on Continuous Optimization (ICCOPT), Berlin, Aug 2019.
  4. "Stochastic ADMM frameworks for resolving structured stochastic convex programs", presentation delivered at Modeling and Optimization: Theory and Applications (MOPTA), Lehigh University, Aug 2018.
  5. "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.
  6. "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.
  7. "On the resolution of  $\ell_0$ -norm minimization problems via alternating Lagrangian schemes", presentation delivered at Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, Houston, Oct 2017.
  8. "On the global resolution of  $\ell_0$ -norm minimization problems via alternating Lagrangian schemes", presentation delivered at Society for Industrial and Applied Mathematics (SIAM) Conference on Optimization, Vancouver, BC, May 2017.
  9. "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.
  10. "On the resolution of complementarity formulations of the  $\ell_0$ -norm minimization problem via ADMM schemes", presentation delivered at International Conference on Continuous Optimization (ICCOPT), Tokyo, Japan, Aug 2016.
  11. "On an ADMM framework for the resolution of complementarity formulations of the  $\ell_0$ -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.
  12. "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.
  13. "On robust solutions to uncertain linear complementarity problems and their variants", presentation delivered at 22nd International Symposium on Mathematical Programming (ISMP), Pittsburgh, July 2015.
  14. "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.
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## 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

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## Skills

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

**Writing:** Latex

**Language:** Proficiency in English, Native speaker in Mandarin.

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