

# XIAOCHUN NIU

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## ACADEMIC POSITIONS

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Postdoctoral Researcher	<i>July 2024–Present</i>
The Fuqua School of Business, Duke University	Durham, NC
Hosted by Prof. Jiaming Xu	

## EDUCATION

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Ph.D. in Industrial Engineering and Management Sciences	<i>Sept. 2019–June 2024</i>
Northwestern University	Evanston, IL
Advised by Prof. Ermin Wei and Prof. Julia Gaudio	
B.S. in Mathematics	<i>Sept. 2015–June 2019</i>
Nanjing University	Nanjing, China
National Elite Program (Honors Program)	

## RESEARCH INTERESTS

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Operations research, applied probability, high-dimensional statistics, optimization, machine learning, artificial intelligence, data analytics, and network science.

## PUBLICATIONS AND PREPRINTS

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### Working Papers

- W1. Weijia Li, Xiaochun Niu, Yehua Wei, and Jiaming Xu. “Optimality of Random Regular Graphs for Sparse Flexibility Designs.” 2025+
- W2. Xiaochun Niu, Tselil Schramm, and Jiaming Xu. “Approximate Random Geometric Graph Matching.” 2025+

### Journal

- J1. Xiaochun Niu, Lili Su, Jiaming Xu, and Pengkun Yang. “[Learning with Shared Representations: Statistical Rates and Efficient Algorithms](#).” *Submitted*. 2025+
- Oral presentation at International Workshop on Federated Foundation Models in conjunction with NeurIPS 2024 (FL@FM-NeurIPS’24)
- J2. Julia Gaudio, Charlie Guan, Xiaochun Niu, and Ermin Wei. “[Exact Label Recovery in Euclidean Random Graphs](#).” *Major Revision, Annals of Applied Probability*. 2025+
- J3. Xiaochun Niu and Ermin Wei. “[DISH: A Distributed Hybrid Optimization Method Leveraging System Heterogeneity](#).” *IEEE Transactions on Signal Processing*, 2024.
- An extended abstract appears in Annual Allerton Conference on Communication, Control, and Computing (Allerton), 2022.
- J4. Xiaochun Niu and Ermin Wei. “[FedHybrid: A Hybrid Federated Optimization Method for Heterogeneous Clients](#).” *IEEE Transactions on Signal Processing*, 2023.

### Conference

- C1. Lihui Yi, Xiaochun Niu, and Ermin Wei. “[Incentive Analysis for Agent Participation in Federated Learning.](#)” *IEEE Conference on Decision and Control (CDC)*, 2025.
- C2. Julia Gaudio, Xiaochun Niu, and Ermin Wei. “[Exact Community Recovery in the Geometric Stochastic Block Model.](#)” *ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2024.
- **Nemhauser Prize for Best Student Paper**, 2024
- C3. Zhenyu Sun, Xiaochun Niu, and Ermin Wei. “[Understanding Generalization of Federated Learning via Stability: Heterogeneity Matters.](#)” *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2024
- C4. Xiaochun Niu and Ermin Wei. “[DISH: A Distributed Hybrid Primal-Dual Optimization Framework to Utilize System Heterogeneity.](#)” *IEEE Conference on Decision and Control (CDC)*, 2022.

## SELECTED HONORS & AWARDS

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| • Rising Stars in Computational and Data Sciences, UT Austin                    | 2024 |
| • Nemhauser Prize for Best Student Paper, Northwestern University               | 2024 |
| • SIAM Student Travel Award, SODA24   | 2024 |
| • Terminal Year Fellowship, Northwestern University                             | 2023 |
| • Arthur P. Hurter Award for Academic Excellence, Northwestern University       | 2020 |
| • Walter P. Murphy Graduate Fellowship, Northwestern University                 | 2019 |
| • Excellent Graduate Award, Nanjing University                                  | 2019 |
| • UCLA CSST Research Program Scholarship, University of California, Los Angeles | 2018 |
| • National Scholarship ( <i>Top 2%</i> ), Nanjing University                    | 2016 |

## INVITED TALKS

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### Optimality of Random Regular Graphs for Sparse Flexibility Designs

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|---------------------------------------|-----------|
| • INFORMS Annual Meeting, Atlanta, GA | Oct. 2025 |
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### Learning with Shared Representations: Statistical Rates and Efficient Algorithms

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| • INFORMS Applied Probability Society Conference, Atlanta, GA                          | June 2025  |
| • International Workshop on Federated Foundation Models (NeurIPS 2024), Vancouver      | Dec. 2024  |
| • INFORMS Annual Meeting, Seattle, WA  | Oct. 2024  |
| • Annual Allerton Conference on Communication, Control, and Computing (Allerton), UIUC | Sept. 2024 |

### Exact Community Recovery in the Geometric Stochastic Block Model

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| • IEMS-SIAM Student Seminar, Northwestern University  | May 2024   |
| • Rising Stars in Computational and Data Sciences, UT Austin  | April 2024 |
| • Institute for Data, Econometrics, Algorithms, and Learning (IDEAL) Special Program on Network and Inference, Toyota Technological Institute at Chicago (TTIC) | Jan. 2024  |
| • ACM-SIAM Symposium on Discrete Algorithms (SODA), Alexandria, VA  | Jan. 2024  |

### DISH: A Distributed Hybrid Optimization Method Leveraging System Heterogeneity

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|---------------------------------------|-----------|
| • INFORMS Annual Meeting, Phoenix, AZ | Oct. 2023 |
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- INFORMS Annual Meeting, Indianapolis, IN *Oct. 2022*
- INFORMS Optimization Society Conference, Greenville, SC *Mar. 2022*

## TEACHING EXPERIENCE

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### Northwestern University

- IEMS 435, Stochastic Simulation, Grader *Spring 2022*
- IEMS 344, Whole Brain Leadership, Teaching Assistant *Fall 2021*

## INDUSTRIAL EXPERIENCE

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### Meta Platforms

Menlo Park, CA

Software Engineer Intern, Social Impact Machine Learning Team

*June 2022–Sept. 2022*

- Improved Facebook's donation-specific newsfeed ranking algorithm by implementing new features and optimizing neural network architecture.

### The Home Depot

Atlanta, GA (remote)

Collaborative Data Project

*Sept. 2022–Mar. 2023*

- Evaluated multi-armed bandit methods on dynamic ad placement datasets with frequent arm adjustments.

## PROFESSIONAL SERVICE AND MENTORING

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- Reviewer:
  - Journals: Annals of Applied Probability, Journal of Machine Learning Research, Operations Research, IEEE Transactions on Information Theory, IEEE Transactions on Automatic Control, IEEE Transactions on Signal and Information Processing over Networks
  - Conferences: IEEE Conference on Decision and Control, Midwest Machine Learning Symposium, American Control Conference
- Session Organizer: IEEE CDC 2022 (Distributed Optimization and Learning for Networked Systems)
- Research Mentor: IDEAL Get Ready for Research Workshop 2023
- Mentor: INFORMS Mentorship Program, English Language Program, Northwestern University