

MENGFAN XU

160 Governors Drive, Amherst, MA, 01003, USA

mengfanxu@umass.edu • Personal Website

ACADEMIC APPOINTMENT

- University of Massachusetts Amherst, United States** *Sep. 2024 - Present*
 Assistant Professor, Mechanical and Industrial Engineering
- University of Massachusetts Amherst, United States** *Apr. 2025 - Present*
 Adjunct Assistant Professor, Manning College of Information & Computer Sciences

EDUCATION

- Northwestern University, United States** *Aug. 2018 - Jul. 2024*
 Ph.D. in Industrial Engineering and Management Sciences
 Dissertation title: “Multi-armed Bandit with Several Agents and Objectives”
- University of Science and Technology of China, China** *Jun. 2018*
 B.S. in Statistics
- Yale University, United States** *Jun. 2017 - Sep. 2017*
 Summer exchange program

RESEARCH INTERESTS

Online learning, Multi-agent systems, Large language models, Sequential decision making under uncertainty, Causal inference, Supply chain management, e-Commerce

PROFESSIONAL EXPERIENCE

- Machine Learning Engineer Intern** at LinkedIn *Jun. 2023 - Sep. 2023*
- Developed natural language understanding models and large language models (LLMs) for keywords extraction based on user queries in search AI team;
 - Prompt engineering and data mining;
 - Developed a workflow and pipeline to ultimately improve users’ search experience
- Algorithm Engineer** at Didi Chuxing *2021*
- Developed two-staged algorithms that achieve over 25% improvement on baselines for pricing of multiple ride options at Didi;
 - Developed the very first algorithm with causal forest for model-based route-based pricing of Didi Discount Express and iterated multiple versions with superior performance;
 - Built data pipelines with Spark for processing billions of data and advancing feature engineering to support large-scale model training and distributional computations;
 - Built a model pipeline for online recommender systems with causal neural networks;
 - Conducted research on treatment effect estimation: proving the convergence of GCF for non-parametric DRF, delivering multiple presentations, and completing a paper accepted for oral presentation at KDD 2022

AWARDS AND HONORS

- Meritorious Reviewer at INFORMS Journal on Computing** *2025*
- Top Reviewer at machine learning conference NeurIPS (top 10%)** *2024*
- Honorable Mention at RLC workshop** *2024*

Spotlight presentation at machine learning conference NeurIPS (top 3%)	2023
Walter P. Murphy Graduate Fellowship, Northwestern University	2018 - 2019
Runner up, Guo Moruo Scholarship, USTC (the highest honor)	2018
National Scholarship, Chinese Ministry of Education (top 1%)	2017
National Scholarship, Chinese Ministry of Education (top 1%)	2016
Mobile Commerce Competition, USTC (top 1)	2016
Scholarship of Minglong Huang, USTC (top 10%)	2015
National High School Mathematics Olympiad, Chinese Mathematics Society The Second Prize in Henan Province	2013

PUBLICATIONS

M. Xu and D. Klabjan, *Open Multi-agent Multi-armed Bandit with Applications in Permissionless Blockchain*. International Conference on Artificial Intelligence and Statistics (AISTATS), Tangier, Morocco, 2026.

W. Shen, Y. Zhang, M. Huang, **M. Xu**, J. Zhang, and C. Shen, *MLorc: Momentum Low-rank Compression for Large Language Model Adaptation*. International Conference on Artificial Intelligence and Statistics (AISTATS), Tangier, Morocco, 2026.

M. Xu, L. Shan, F. Ghaffari, X. Wang, X. Liu, and M. Hajiesmaili, *Heterogeneous Multi-agent Multi-armed Bandits on Stochastic Block Models*. Proceedings of the ACM on Measurement and Analysis of Computing Systems (ACM SIGMETRICS/POMACS), Ann Arbor, Michigan, 2026.

M. Xu and D. Klabjan, *Multi-agent Multi-armed Bandit Regret Complexity and Optimality*. International Conference on Artificial Intelligence and Statistics (AISTATS), Phuket, Thailand, 2025.

J. Liu, H. Qiu, L. Yang, and **M. Xu**, *Distributed Multi-agent Bandits Over Erdős–Rényi Random Networks*. Advances in Neural Information Processing Systems (NeurIPS), Vancouver, Canada, 2025.

X. Wang and **M. Xu**, *Multi-agent Multi-armed Bandit with Fully Heavy-tailed Dynamics*. Winter Simulation Conference (WSC), Seattle, Washington, 2025.

M. Xu, *Multi-Armed Bandit With Several Agents and Objectives*. Ph.D. Dissertation, Northwestern University, 2024.

M. Xu and D. Klabjan, *Decentralized Blockchain-based Robust Multi-agent Multi-armed Bandit*. Coordination and Cooperation in Multi-Agent Reinforcement Learning (CoCoMARL; **Honorable Mention**), 2024.

M. Xu and D. Klabjan, *Decentralized Randomly Distributed Multi-agent Multi-armed Bandit with Heterogeneous Rewards*. Advances in Neural Information Processing Systems (**NeurIPS Spotlight**), New Orleans, Louisiana, 2023.

M. Xu and D. Klabjan, *Pareto Regret Analyses in Multi-objective Multi-armed Bandit*. International Conference on Machine Learning (ICML), Honolulu, Hawaii, 2023.

S. Wan, C. Zheng, Z. Sun, **M. Xu**, X. Yang, H. Zhu, and J. Guo, *GCF: Generalized Causal Forest for Heterogeneous Treatment Effect Estimation in Online Marketplace*. KDD Workshop on Decision Intelligence and Analytics for Online Marketplaces, Washington D.C., 2022.

PRESENTATIONS

- Oral Presentation** at **ACM SIGMETRICS**, Ann Arbor, MI *June. 2026*
Heterogeneous Multi-agent Multi-armed Bandits on Stochastic Block Models
- Oral Presentation** at **IISE**, Arlington, TX *May. 2026*
Multi-agent Bandits Over Erdős-Rényi and Heavy-tailed Random Networks
- Oral Presentation** at **UIUC**, Champaign, IL *Apr. 2026*
Multi-agent and Multi-objective Learning in Complex Systems
- Oral Presentation** at **Northwestern University**, Evanston, IL *Mar. 2026*
Alumni Seminar
- Oral Presentation** at **Mount Holyoke College**, Mount Holyoke, MA *Feb. 2026*
Multi-agent Bandits Over Erdős-Rényi and Heavy-tailed Random Networks
- Oral Presentation** at **DoorDash**, Seattle, WA *Dec. 2025*
Multi-agent Bandits Over Erdős-Rényi and Heavy-tailed Random Networks
- Oral Presentation** at **WSC**, Seattle, WA *Dec. 2025*
Multi-agent Multi-armed Bandit with Fully Heavy-tailed Dynamics
- Poster Presentation** at **NeurIPS**, San Diego, CA *Dec. 2025*
Distributed Multi-agent Bandits Over Erdos-Rényi Random Networks
- Oral Presentation** at **Inform**s, Atlanta, GA *Oct. 2025*
Multi-agent Bandits Over Erdős-Rényi and Heavy-tailed Random Networks
- Oral Presentation** at **Math Symposium in Association of Women in Math**, Amherst, MA
Apr. 2025
Optimality and Complexity in Decentralized Multi-agent Multi-armed Bandits
- Poster Presentation** at **Workshop in IMSI**, Chicago, IL *Mar. 2025*
Multi-agent Multi-armed Bandit with Fully Heavy-tailed Dynamics
- Oral Presentation** at **CS Theory Seminar**, Amherst, MA *Feb. 2025*
Optimality and Complexity in Decentralized Multi-agent Multi-armed Bandits
- Oral Presentation** at **Inform**s 2024, Seattle, WA *Oct. 2024*
Decentralized Blockchain-based Robust Multi-agent Multi-armed Bandit
- Oral Presentation** at **Northwestern University**, Virtual *Sep. 2024*
Alumni Seminar
- Poster Presentation** at **RLC 2024**, Amherst, MA *Aug. 2024*
Decentralized Blockchain-based Robust Multi-agent Multi-armed Bandit
- Spotlight Presentation** at **NeurIPS 2023**, New Orleans, LA *Dec. 2023*
Decentralized Randomly Distributed Multi-agent Multi-armed Bandit with Heterogeneous Rewards
- Oral Presentation** at **Inform**s 2023, Phoenix, AZ *Oct. 2023*
Multi-agent and Multi-objective Multi-armed Bandit
- Oral Presentation** at **LinkedIn**, Sunnyvale, California *Sep. 2023*
On natural language understanding and large language models for LinkedIn search recommendation
- Poster Presentation** at **ICML 2023**, Honolulu, Hawaii *Jul. 2023*
Pareto Regret Analyses in Multi-objective Multi-armed Bandits
- Oral Presentation** at **LinkedIn**, Virtual *Oct. 2022*
GCF: Generalized Causal Forest for Heterogeneous Treatment Effect Estimation in Online Marketplace

Oral Presentation at KDD 2022, Washington DC

Aug. 2022

GCF: Generalized Causal Forest for Heterogeneous Treatment Effect Estimation in Online Marketplace

Oral Presentation at Northwestern, Evanston, IL

Jun. 2019

Fully Sequential Ranking And Selection Procedures With PAC Guarantee, by Y. Zhong, L.J. Hong

TEACHING EXPERIENCE

Instructor at UMass Amherst

- MIE 373: Introduction to Simulation (Spring 2025, 2026)
- MIE 621: Descriptive Analytics (Fall 2024, 2025, 2026)

Teaching Assistant at Northwestern University

- MLDS-400: Everything starts with data (Fall 2023)
- IEMS-404/MLDS-401: Predictive analytics (Fall 2023)

Teaching Assistant at University of Science and Technology of China

- Real analysis (Spring 2017)
- Functions of complex variables (Fall 2016)

STUDENTS

Phd students:

Kenneth Chen (M.S. at University of Chicago), Starting Sep. 2026

Jingqi Fan (co-advised with Prof. Hajiesmaili at CICS, B.S. at Northeastern), Starting Sep. 2026

Zirui Liu (co-advised with Prof. Ma at CICS, M.S. at University of California Irvine)

Bingnan Huo (M.S. at Brown University)

Undergraduate students:

Jingyuan Liu, Oct. 2024 - Present (at Nanjing University)

- incoming graduate student at UC Berkeley

John Wang, Sept. 2025 - Present (at UMass Amherst)

- now graduate student at UMass

Jose Cruz, Dec. 2024 - July 2025 (at UMass Amherst)

- now graduate student at UMass

Jingshuai Zhang, Sep. 2024 - July 2025 (at University of Minnesota - Twin Cities)

- now graduate student at UPenn

Jessica Lanin, Spring 2023 (at Northwestern)

Alejandra Bustamante, Spring 2023 (at Northwestern)

Tom Muma Ratemo, Spring 2023 (at Northwestern)

Tyler Shannon, Spring 2023 (at Northwestern)

Konyin Rilwan Okubadejo, Spring 2023 (at Northwestern)

PROFESSIONAL ACTIVITIES

Track Co-chair/organizer:

- IISE Annual Meeting & Conference, 2026

Session Chair:

- Informs Annual Meeting

Program Committee:

- Reviewer - AISTATS, NeurIPS, ICML, ICLR, ACML
- PC - International Workshop on Large Language Model Supply Chain Analysis (LLMSC 2025)

Journal Reviewer:

- Informs Journal on Computing
- TMLR
- OMEGA
- IISE
- IEEE TON

PhD Committee:

- Bingnan Huo, PhD student, Industrial Engineering at UMass Amherst
- Zirui Liu, PhD student, CICS at UMass Amherst
- Kelvin Ekun R., PhD student, Industrial Engineering at UMass Amherst
- Sonza Singh, PhD student, Industrial Engineering at UMass Amherst
- JaEon Cho, PhD student, Biomedical Engineering at UMass Amherst
- Amirmahdi Mirfakhar, PhD student, CICS at UMass Amherst
- Fatemeh Ghaffari, PhD student, CICS at UMass Amherst

Master Committee:

- Stephen Onyeukwu, PhD student, Industrial Engineering at UMass Amherst

Faculty Advisor:

- Undergraduate Club at UMass Amherst for Institute of Industrial and Systems Engineers (IISE), 2024-2025, 2025-2026
- Client Project Challenge (CPC) at Northwestern University, Spring 2024

Judge:

- Research Symposium, College of Engineering at UMass Amherst, 2025

Panelist:

- Data Science Night, Northwestern University, October 2024
- Academia Job Search, Northwestern University, April 2024

SKILLS

Programming: Python, R, SQL, Scala, C; Linux, Spark, Hadoop, Kubernetes, Pytorch, GCC

Selected taken courses: Statistical learning, Probability theory, Algorithms, Convex optimization, Dynamic optimization, Stochastic analysis, Mathematical statistics, Real analysis, Functional analysis, Complex analysis, Algebra, Bayesian statistics

REFERENCES

Diego Klabjan
Professor of Industrial Engineering and Management Sciences
Director of Master of Science in Machine Learning and Data Science Program
Director of Center for Deep Learning
Department of Industrial Engineering and Management Sciences
McCormick School of Engineering
Northwestern University

Barry Nelson

Walter P. Murphy Professor Emeritus of Industrial Engineering and Management Sciences
Department of Industrial Engineering and Management Sciences
McCormick School of Engineering
Northwestern University

Achal Bassamboo

Charles E. Morrison Professor of Decision Sciences
Professor of Operations, Chair of Operations Department
Co-Director of MMM Program
Kellogg School of Management
Northwestern University

Zhaoran Wang

Associate Professor of Industrial Engineering and Management Sciences
Associate Professor of Computer Science (by courtesy)
Department of Industrial Engineering and Management Sciences
McCormick School of Engineering
Northwestern University