Pengyi Shi

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EDUCATION

- **Georgia Institute of Technology**, Atlanta, GA, August 2007 – December 2013
  Ph.D. in Industrial Engineering (minor in Statistics)
  Advisors: Professors Jim Dai and Pinar Keskinocak
- **Peking University**, Beijing, China, September 2003 – June 2007
  B.Eng. in Applied Mathematics and Mechanics and B.A. in Economics (double major)

EMPLOYMENT AND AFFILIATIONS

- **Purdue University**, West Lafayette, IN
  Gerald Lyles Rising Star Professorship, Mitch Daniels School of Business, May 2026 – Present
  Associate Professor, Mitch Daniels School of Business, August 2021 – Present
  Assistant Professor, Mitch Daniels School of Business, January 2014 – August 2021
  Courtesy Affiliation with Regenstrief Center for Healthcare Engineering, July 2017 – Present
- **University of Chicago**, Chicago, IL
  Visiting Scholar, Booth School of Business, October 2022 – December 2022 (sabbatical leave)
- **University of Hawaii at Manoa**, Honolulu, HI
  Adjunct Faculty, School of Nursing and Dental Hygiene, June 2025 – Present (in support of hospital collaboration with The Queen's Medical Center)

OPERATIONS MANAGEMENT PUBLICATIONS

‡ denotes industry/medical collaborator; underline denotes student

*denotes first author or co-first author in papers with more than three authors

[P17]. J. Sun, J. G. Dai, **P. Shi** (2026). "Inpatient Overflow Management with Proximal Policy Optimization." *Manufacturing & Service Operations Management,* forthcoming.

[P16]. J. Dong*, **P. Shi***, F. Zheng*, J. Xin‡ (2026). "Capacity Management in Networks: A Structural Estimation Approach for Hospital Inpatient Wards." *Manufacturing & Service Operations Management*, forthcoming.

[P15]. X. Chen*, **P. Shi***, S. Pu (2026). "Data-Pooling Reinforcement Learning for Preventative Healthcare Intervention." *Management Science*, 72(9): 7870-7888.

[P14]. Y. Liu*, **P. Shi***, J. Helm, M. Van Oyen, L. Ying, J. Hucshka‡ (2024). "An Integrated Approach to Improving Itinerary Completion in Coordinated Care Networks." *Manufacturing & Service Operations Management*, 27(1):21-39.

[P13]. J. Helm*, **P. Shi***, M. Drewes‡, J. Cecil‡ (2024). "Delta Coverage: The Analytics Journey to Implement a Novel Nurse Deployment Solution." *INFORMS Journal on Applied Analytics*, 54(5):431-454.

- Finalist, INFORMS Daniel H. Wagner Prize 2023
- First place, INFORMS *Innovative Applications in Analytics Award 2024*

[P12]. J. Chen, J. Dong, **P. Shi** (2023). "Optimal Routing under Demand Surges: The Value of Future Arrival

Rates." *Operations Research* 73(1):510-542.

- Finalist, 2021 INFORMS Service Science IBM Best Student Paper Competition (to J. Chen)

[P11]. Y. Pan, **P. Shi** (2023). "Refined Mean-Field Approximation for Discrete-Time Queueing Networks with Blocking." *Naval Research Logistics,* 70(7):770-789.

- Finalist, 2021 INFORMS Undergraduate OR Prize (to Y. Pan)

[P10]. **P. Shi***, J. Helm, C. Chen, J. Lim, R. Parker, T. Tinsley‡, J. Cecil‡ (2022). "Operations (Management) Warp Speed: Rapid Deployment of Hospital Predictive/Prescriptive Analytics for the COVID-19 Pandemic." *POM* special issue on *Managing Pandemics: A POM Perspective,* 32, 1433-1452.

[P9]. J. Chen, J. Dong, **P. Shi** (2020). "A Survey on Skill-Based Routing with Applications to Service Operations Management." *Queueing Systems*, 96:53-82.

[P8]. **P. Shi***, J. Helm, S. Heese, A. Mitchell‡ (2021). "A Queueing Framework for Evaluating Adoption of New Diagnostic Tests." *Production and Operations Management,* 30 (2): 330-354.

[P7]. **P. Shi***, J. Helm, J. Deglise-Hawkinson‡, J. Pan‡ (2021). "Timing it Right: Balancing Inpatient Congestion versus Readmission Risk at Discharge." *Operations Research,* 69 (6), 1842-1865.

- First place, MSOM Responsible Research in OM Award, INFORMS MSOM, 2021
- First place, Pierskalla Best Paper Award, INFORMS HAS, 2018
- Second place, CHOM Best Paper Award, POMS, 2019
- Second place, Innovative Applications in Analytics Award, INFORMS Analytics, 2020
- Selected for Healthcare SIG Presentation, MSOM, 2019
- Selected for Showcase Presentation at CHOM Mini-Conference, POMS, 2019
- Pilot implementation of the tool at a local hospital in Indiana
- All-time (1997-2020) 11th Top Downloaded Paper on SSRN *OPER: Computational* https://papers.ssrn.com/sol3/JELJOUR_Results.cfm?form_name=journalBrowse&journal_id=1091976&SortOrder=numHits%20desc

[P6]. J. G. Dai, **P. Shi** (2021). "Recent Modeling and Analytical Advances in Hospital Inpatient Flow Management." *Production and Operations Management*, 30 (6), 1838-1862.

[P5]. A. Alaeddini, J. Helm, **P. Shi**, S. Faruqui (2019). "An Integrated Framework for Reducing Hospital Readmissions using Risk Trajectories Characterization and Discharge Timing Optimization." *IIE Transactions on Healthcare Systems Engineering*, 9(2):172-185.

[P4]. J. G. Dai, **P. Shi** (2019). "Inpatient Overflow: An Approximate Dynamic Programming Approach." *Manufacturing & Service Operations Management*, 21(4):894-911.

[P3]. J. Feng, **P. Shi** (2018). "Steady-state Diffusion Approximations for Discrete-time Queue in Hospital Inpatient Flow Management." *Naval Research Logistics*, 65(1):26-65.

- Top 20 most read paper in Naval Research Logistics (2017-2018)

[P2]. J. G. Dai, **P. Shi** (2017). "A Two-time-scale Approach to Time-varying Queues in Hospital Inpatient Flow Management." *Operations Research*, 65(2):514-536.

[P1]. **P. Shi***, M. Chou, J. G. Dai, D. Ding, and J. Sim‡, (2016). "Models and Insights for Hospital Inpatient Operations: Time-Dependent ED Boarding Time." *Management Science*, 62(1):1-28.

- https://review.chicagobooth.edu/magazine/spring-2016/four-ways-to-make-hospitals-more-efficient

OPERATIONS MANAGEMENT PAPERS UNDER REVIEW AND REVISION

‡ denotes industry/medical collaborator; underline denotes student

*denotes first author or co-first author in papers with more than three authors

[R7]. W. Liu, T. Li, M. Lu, **P. Shi** (2025). "Dynamic Redeployment of Nurses Across Hospitals: A Sample Robust Optimization Approach." Major revision in *Manufacturing & Service Operations Management.*

Link to draft: https://arxiv.org/abs/2509.07387.

[R6]. Z. Zhang, **P. Shi**, A. Ward (2025). "Admission Decisions under Imperfect Classification: An Application in Criminal Justice." Under revision in *Management Science* (first-round decision: reject and resubmit). Link to draft: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5214197.

- Selected for Service SIG Presentation, MSOM, 2025

[R5]. J. Sun, X. Chen, **P. Shi**. (2026). "PPO for Nurse Re-assignment in Inpatient Units." In submission to *Stochastic Systems*.

[R4]. X. Gao, **P. Shi**, N. Kong (2025). "Stopping the Revolving Door: MDP-Based Decision Support for Community Corrections Placement." Major revision in *Operations Research*.

- First place, Outstanding Innovation in Service Systems Engineering Award, IISE, 2023
- First place, 2023 INFORMS Service Science IBM Best Student Paper Competition (to X. Gao)
- First place, 2023 INFORMS Decision Analysis Society Student Paper Competition (to X. Gao)

[R3]. X. Gao, **P. Shi** (2026). "Dynamic Routing under Delayed Individual Information and Long-term Impact." In submission to *Management Science.*

[R2]. Tri Vo, X. Gao, **P. Shi** (2026). "Bridging Prediction and Decision in Jail Diversion: The Power of Interpretability." In submission to *European Journal of Operational Research*.

[R1]. J. Dong*, **P. Shi***, F. Zheng*, J. Xin‡ (2024). "Off-service Placement in Inpatient Ward Network: Resource Pooling versus Service Slowdown." Preparing resubmission.

- Second place, CHOM Best Paper Award, POMS, 2020
- Selected for Healthcare SIG Presentation, MSOM, 2019

PEER-REVIEWED CONFERENCE PUBLICATIONS AND WORKING PAPERS

‡ denotes industry/medical collaborator; underline denotes student

*denotes first author or co-first author in papers with more than three authors

[C17]. L. Liu, K. Schechtman, **P. Shi**, A. Zhou**.** Fairness through Capacity Awareness in Discharge Decisions. Under review at AAAI 2027.

[C16]. C. Zhang, **P. Shi**, A. W. Ward, "The Dynamic and Endogenous Behavior of Re-Offense Risk: A Simulation Study of Treatment Allocation in Incarceration Diversion Programs." Under revision.

[C15]. U. Bali, X. Chen, B. Li, M. Li, **P. Shi**, "Are LLM-Generated Hypotheses Trustworthy? An Empirical Study on Clinical Prediction." Under review at 2026 NeurIPS GenAI for Health Workshop.

[C14]. S. Wang, K. Chen, **P. Shi**, "Optimizing Nurse Deployment in Healthcare: A Prescriptive Machine Learning Approach." Under revision.

- Finalist, 2025 INFORMS Undergraduate Operations Research Prize (to S. Wang and K. Chen)

[C13]. B. Li, **P. Shi**, A. W. Ward (2026). "Enhancing Predictive Model Learning via Domain-Knowledge Augmented Latent Feature Mining." *AISI 2026, the Special Track on AI for Social Impact at AAAI 2026* (acceptance rate: 24.1%).

[C12]. Z. Zhang, **P. Shi**, A. W. Ward (2025). "Ensuring Fairness in Priority-Based Admissions with Uncertain Scores." *NeurIPS 2025 Workshop MLxOR* (spotlight presentation rate: 20%).

[C11]. B. Li, **P. Shi** (2025). "Faithful Latent Feature Mining with Large Language Models." *Workshop on Large Language Models and Generative AI for Health at AAAI 2025.*

[C10]. W. Liu, M. Lu, **P. Shi** (2024). "Patient Assignment and Prioritization for Multi-Stage Care with Reentrance." *Proceedings of the 2024 Winter Simulation Conference.*

[C9]. T. Li, C. Wu, **P. Shi**, X. Wang (2023). "Cumulative Difference Learning VAE for Time-Series with Temporally Correlated Inflow-Outflow." *Thirty-Eighth AAAI Conference* (acceptance rate: 24%).

[C8]. B. Li, A. Castellanos, **P. Shi**, A. W. Ward (2023). "Combining Machine Learning and Queueing Theory

for Data-driven Incarceration-Diversion Program Management." *Thirty-Sixth Annual Conference on Innovative Applications of Artificial Intelligence (IAAI-24)* (acceptance rate: 31%).

[C7]. T. Jang, H. Gao, **P. Shi**, X. Wang (2023). "Learning Fair Representation via Posterior Regularization." *AISTATS 2024* (acceptance rate: 27%).

[C6]. Z. Zhang, **P. Shi,** A. W. Ward (2022). "Routing for Fairness and Efficiency in a Queueing Model with Reentry and Continuous Customer Classes." *Proceedings of the 2022 American Control Conference (ACC)*.

[C5]. T. Jang, **P. Shi,** X. Wang (2022). "Group-Aware Threshold Adaptation for Fair Classification." *Thirty-Sixth AAAI Conference* (acceptance rate: 15%).

[C4]. X. Liu, B. Li, **P. Shi**, L. Ying (2021). "An Efficient Pessimistic-Optimistic Algorithm for Constrained Linear Bandits." *NeurIPS 2021* (acceptance rate: 26%).

[C3]. X. Chen, **P. Shi**, X. Wang (2021). "Data Pooling for Reinforcement Learning with Applications to Healthcare Intervention." *ICML RL4RL Workshop*, *Spotlight Talk* (acceptance rate 13%).

[C2]. Y. Pan, Z. Xu, et al., **P. Shi**, H. Pan‡, K. Yang‡, S. Wu‡ (2021). "A High-fidelity, Machine-learning Enhanced Queueing Network Simulation Model for Hospital Ultrasound Operations." *Proceedings of the 2021 Winter Simulation Conference.*

[C1]. I. Attari, P. Crain, **P. Shi,** J. Helm, N. Adams‡ (2021). "A Simulation Analysis of Analytics-driven Community-based Re-integration Programs." *Proceedings of the 2021 Winter Simulation Conference.*

MEDICAL PUBLICATIONS AND WORKING PAPERS

ǂ denotes industry/medical collaborator; underline denotes student

*denotes first author or co-first author in papers with more than three authors

[M10]. K. Azama, **P. Shi** (2026). "An Artificial Intelligence-Enabled Conceptual Model Integrating the Areas of Worklife and Systems Engineering Principles to Reduce Nurse Burnout." Under review in *Journal of Advanced Nursing*.

[M9]. M. Deng*, F. Li, L. Adeoye-Olatunde, N. Kong, **P. Shi** (2025). "Towards an Understanding of Community-Engaged Efforts in Addressing the Youth Substance Use in the Democratic Republic of Congo." *BMC Public Health*[1]. https://doi.org/10.1186/s12889-025-25809-z.

[M8]. X. Gao*, S. Alam*, **P. Shi***, F. Dexter, N. Kong (2023). "Interpretable Machine Learning Models to Predict Hospital Patient Readmissions." *BMC Med Inform. and Decision Making*[2], Jun 5; 23(1):104.

[M7]. F. Dexterǂ, R. H. Epsteinǂ, **P. Shi** (2021). "Proportions of Outpatients Discharged the Same or the Following Day are Sufficient Data to Guide the Assessment of the Cases." *Cureus* 13 (3).

[M6]. F. Dexterǂ, R. H. Epsteinǂ, **P. Shi** (2020). "Forecasting the Probability That Patient Will Remain in the Hospital Overnight Versus Have a Length of Stay of 2 or More Days." *Cureus* 12(10): e10847.

[M5]. **P. Shi***, J. Yan*, P. Keskinocak, A. L Shaneǂ, J. L Swann (2020). "The Impact of Opening Dedicated Clinics on Disease Transmission during an Influenza Pandemic." *PLoS ONE*, 15(8): e0236455.

[M4]. **P. Shi***, F. Dexterǂ, R. H. Epsteinǂ (2016). "Comparing Policies for Case Scheduling within One Day of Surgery by Markov Chain Models." *Anesthesia & Analgesia*[3], 122:526-538.

[M3]. F. Dexterǂ, **P. Shi**, R. H. Epsteinǂ (2012). "Descriptive Study of Case Scheduling and Cancellations within One Week of the Day of Surgery." *Anesthesia & Analgesia*, 115(5):1188-1195.

[M2]. **P. Shi***, P. Keskinocak, J. L. Swann, B. Y. Leeǂ (2010). "The Impact of Mass Gatherings and Holiday

[1] 2024 5-year Impact Factor Impact Factor: 4.2

[2] 2022 5-year Impact Factor Impact Factor: 3.9

[3] 2019 Impact Factor: 4.31

Travelling on the Course of an Influenza Pandemic: A Computational Model." *BMC Public Health*, 10:778.

[M1]. **P. Shi***, P. Keskinocak, J. L. Swann, B. Y. Lee‡ (2010). "Modeling Seasonality and Viral Mutation to Predict the Course of an Influenza Pandemic," *Epidemiology and Infection*, 138(10):1472-1481.

WORK-IN-PROGRESS

‡ denotes industry/medical collaborator; underline denotes student

[WP1]. C. Zhou, L. Li, **P. Shi**. LLM-guided hypothesis testing in sequential decision-making. (Analysis stage)

[WP2]. K. Wang, O. Zhou, **P. Shi**. Using Large Language Models to Evaluate the Impact of Scheduling on Nurse Retention. (Writing stage)

[WP3]. X. Liu, B. Li, **P. Shi**, L. Ying. Online Routing in Service Operations with Stochastic Anytime Constraints: A Pessimistic-Optimistic Approach. (Writing stage)

[WP4]. X.J. Gao, S. Miao, **P. Shi**. Improving inventory management for pharmacy chains: An A/B testing approach. (Data collection stage)

[WP5]. J. Chen, **P. Shi**, A. Ward. A Mean-field Framework of Fairness Dynamics. (Analysis stage)

[WP6]. S. Wang, K. Chen, **P. Shi**. Prescriptive Machine Learning Approach for Multi-stage Stochastic Programming with Application in Nurse Deployment. (Writing stage)

[WP7]. Y. Pan, P. Qian, **P. Shi.** Equilibrium Analysis for Nurse Infectious Model. (Analysis stage)

OTHER PUBLICATIONS

[O1]. H. Bastani, **P. Shi** (2020). "Proceed with Care: Integrating Predictive Analytics with Patient Decision-Making." Invited book chapter for *Modeling for Health: Making Changes*.

[O2]. J. G. Dai, **P. Shi** (2015). "Technical Note for Discrete-Time Diffusion Approximations Motivated from Hospital Inpatient Flow Management." *arXiv:1508.05148*

[O3]. **P. Shi***, J. G. Dai, D. Ding, J. Ang, M. Chou, X. Jin‡ and J. Sim‡ (2014). "Patient Flow from Emergency Department to Inpatient Wards: Empirical Observations from a Singaporean Hospital." http://dx.doi.org/10.2139/ssrn.2517050 (a 69-page document on a comprehensive empirical study of inpatient flow management)

COMMUNITY ENGAGEMENT AND GRANTS

- "Delta Coverage": A Novel Analytics-based Nurse Deployment Program
  - Co-led the academic team for statewide resource nurse deployment innovation
  - Implementation started in October 2021 and piloted May-June 2023 in IU Health System
    - Pilot shows 17% reduction in understaffing and annual savings of $400K (approximately $6M annual savings system-wide when extrapolated)
  - Awarded with *2021 Krannert Ross-Lynn Postdoctoral Fellowship Grant (PI)*
  - Selected into *NSF's Innovation Corps (I-Corps) National Team* Winter 2025 Cohort
  - News release:
    - https://www.ibj.com/articles/nursing-shortage-to-continue-purdue-professor-says
    - https://wibc.com/498666/nursing-shortage-raises-patient-ratios-quality-concerns/
    - https://business.purdue.edu/news/features/2023/shi-research-dc.php
    - https://connect.informs.org/discussion/battling-the-nursing-shortage-crisis-team-representing-purdue-university-and-indiana-university-in-partnership-with-indiana-university-health-wins-the-2024-innovative-applications-in-analytics-award
    - https://www.insideindianabusiness.com/articles/nursing-shortage-to-continue-purdue-prof-says

- AI for Workforce Resilience: A Multi-Site Initiative to Reduce Nurse Workload and Burnout
  - Leading a large-scale, multi-site collaboration across IU Health, The Queen's Medical Center, and UT Southwestern as the Principal Investigator (PI)
  - Developing and piloting an agentic AI framework that proactively coordinates staffing and workflow adjustments to reduce cognitive load and administrative burden on frontline nurses
  - Deep community engagement to address workforce burnout and retention challenges by embedding nurse preferences, case manager workload, and fairness constraints into operational decisions
  - Two NIH-supported proposals submitted (one as PI, the other as co-PI)
- From Relationship Memory to Relationship Intelligence: Data-driven Analytics for Community- and Home-based Care
  - Developing AI-enabled predictive and prescriptive tools to convert scattered information into actions to improve staffing and client-caregiver matching in home care
  - Piloting in two multi-office Indiana-based home care agencies; vacant visit rate reduced by over 20%
  - Awarded with *2025 Engagement Scholarship Research/Creative Activities Grant (PI)*
- Surge Planning for COVID-19 Response
  - Awarded with Purdue alumni gift donation ($7,000)
  - Led the Purdue workload prediction team on implementation in Spring 2020
    - Planning tools were dispatched to five service regions of IU Health in April 2020, covering 18 hospitals and serving more than one million Indiana residents
    - Findings were disseminated to Indiana Pandemic Information Collaborative, State Working Groups on COVID-19 response, Indiana Hospital Association
  - News release:
    - https://www.purdue.edu/newsroom/releases/2020/Q2/krannert-and-kelley-business-schools-collaborating-to-help-iu-health-manage-surge-of-covid-19-patients.html
    - https://www.idsnews.com/article/2020/04/kelley-krannert-partner-to-predict-hospital-ventilator-demand-surges
    - https://team.myiuhealth.org/news/2020/06/scs-planning-for-a-potential-second-wave-kb
    - https://www.purdueexponent.org/city_state/article_323518b4-aa94-11ea-af87-336709c43d50.html
- Increasing Awareness of Algorithmic Fairness for Ethical Decisions
  - Awarded with *2023 Blake Family Fund for Ethics, Leadership, and Governance funds (PI)*
  - Awarded with *2023 Engagement Scholarship Research/Creative Activities Grant (PI)*
- A Community Approach for Racial Justice: Decision Analytics using Optimization and ML
  - Awarded with *2021 Engagement Scholarship Research/Creative Activities Grant (PI)*
  - Led a team to implement community intervention tools to reduce recidivism and substance relapses in Tippecanoe County Community Corrections
  - Cost-effectiveness analysis on staffing used in townhall meeting for budget justification
- Data-driven Analytics for Youth Substance Abuse in DRC
  - Awarded with *2022-2023 Purdue Shah Family Global Innovation Lab Seed Grant Awards (PI)*
  - Collaboration with World Concern and local leadership to develop and implement a digital platform for data collection, visualization, and decision support to expand community-support programs for reducing substance abuse among youth in the Democratic Republic of the Congo (DRC)
  - News release: https://www.purdue.edu/provost/about/newsletter/jun2022/story-seven.php
- High Fidelity Modeling and Two-Time-Scale Analysis for Hospital Inpatient Flow Management
  - Jointly conceptualized and written with Professor Jim Dai

- Funded by NSF CMMI-1335724, 2013-2017

INVITED SEMINARS

- "Dynamic Routing under Delayed Individual Information and Long-term Impact"
  - 2026: University of Rochester, University of Wisconsin, Stanford (scheduled)
- "Reducing Recidivism with Community-based Programs"
  - 2026: UC Berkeley
  - 2025: York University
  - 2024: UIUC, Wharton, CU Boulder
  - 2023: Penn State, University of Wisconsin Madison, University of Miami, DePaul University, University of Illinois Chicago, University of Cincinnati, Rutgers, University of Connecticut
- "A New Era of Care Delivery: Machine Learning Enhanced Hospital Workload Prediction and Resource Allocation"
  - 2023: University of Toronto, Loyola University, Queen's University
  - 2022: Virginia Tech (virtual), Singapore Management School (virtual), University of California Irvine
  - 2021: University College London (virtual), Krannert Research Colloquium
- "Data Pooling for Personalized Health Intervention"
  - 2022: University of Michigan, University of Alberta, Technical University of Munich – Heilbronn, Northwestern Kellogg, CUNY Baruch, Boston University
  - 2022 (virtual seminar): McGill University, Hong Kong University of Science and Technology
  - 2021 (virtual seminar): University of Macau, University of Toronto
- "Capacity Allocation to Improve Itinerary Completion in Healthcare Networks"
  - 2021 (virtual seminar): University of Chicago
  - 2020 (virtual seminar): University of Hong Kong, University of Chinese Academy of Sciences
  - 2020 (cancelled due to COVID-19): McGill University, University of Toronto
- "Tackling the Curse of Dimensionality: ADP in Patient Flow Management"
  - 2020: Purdue (Department of Statistics)
- "Timing it Right: Balancing Inpatient Congestion versus Readmission Risk at Discharge"
  - 2020 (cancelled due to COVID-19): North Carolina State, University of North Carolina
  - 2019: Georgia Institute of Technology, Johns Hopkins University
  - 2018: University of Hong Kong, Hong Kong University of Science and Technology, Indiana University-Bloomington, London Business School, CUHK-Shenzhen
- "Inpatient Overflow Policies: An Approximate Dynamic Programming Approach"
  - 2018: Shanghai Jiao Tong University, CUHK-Shenzhen, University of British Columbia
- "Steady-state Approximation for Discrete Queue in Hospital Inpatient Flow Management"
  - 2016: Purdue University (INFORMS Student Chapter)
- "A Two-time-scale Approach to Time-varying Queues for Hospital Inpatient Flow Management"
  - 2014: Chinese University of Hong Kong, National University of Singapore
- "Data-driven Modeling and Decisions for Hospital Inpatient Flow Management"
  - 2013: University of Southern California, Yale School of Management, University of Wisconsin Madison, Purdue (Krannert)

INVITED PANEL AND WORKSHOP DISCUSSION

- "AI in Home Care Operations: Working Smarter"
  - Keynote speaker, Home Care Innovation Forum 2026, Palm Springs

- "Bridging AI and OM: Enhancing Decision-Making Through Machine Learning"
  - Tutorial speaker, AIMOR @ Banff 2025
  - Keynote speaker, IEOM World Congress 2025, University of Windsor
- "Data-driven Analytics for Societal Benefits and Fairness"
  - Swarthmore College Engaged Scholar Symposium 2024
  - University of Miami Healthcare Analytics Workshop 2024
  - TTiC Summer 24 Workshop on Data-Driven Decision Processes: From Theory to Practice
- Panel Discussion, INFORMS 2025 Advice for Early Career HAS Members
- Panel Discussant, INFORMS 2023 Panel on Implementing OR/MS Research
- Panel Facilitator, POM 2023 Academia-Industry Collaborations in Healthcare Research
- Panel Discussant, INFORMS 2022 New Faculty Colloquium – Building a Research Program and Publishing
- "Reducing Substance Use Disorders-related Recidivism with Community-based Programs"
  - 2022 Canadian Healthcare Optimization Workshop (part of 2022 CORS/INFORMS International)
- Panel Discussant, POMS 2022 Emerging Scholars Program – Research Strategies
- "Timing it Right: Balancing Inpatient Congestion versus Readmission Risk at Discharge"
  - 2018 Workshop on Service and Healthcare Operations, Shenzhen

CONFERENCE PRESENTATIONS

- "AI in Home Care Operations: Working Smarter"
  - Indiana Association for Home & Hospice Care 2026 Annual Conference, Indianapolis IN
  - Senior1Care 2026 Home Care Retreat, Indianapolis IN
- "Prescriptive Machine Learning for Multi-Period Dynamic Nurse Deployment"
  - INFORMS APS 2025, Atlanta GA
- "Admission Decisions under Imperfect Classification"
  - MSOM 2026, Boston MA
  - INFORMS APS 2025, Atlanta GA
  - Purdue Operations Conference, 2025
- "Latent Feature Mining via LLMs: An Application in Incarceration Diversion Program"
  - INFORMS 2024
- "Delta Coverage: Analytics Solution for Nurse Deployment"
  - POMS CHOM Mini Conference 2024
  - POMS 2023, INFORMS 2023, Purdue President's Council Back-to-Class Forum 2023
- "Machine Learning Enhanced Hospital Workload Prediction and Resource Allocation"
  - POMS 2022, 2023, MSOM 2022, APS 2023
- "Routing for Fairness and Efficiency in Criminal Justice System"
  - POMS 2022, 2023, INFORMS 2023
- "Data Pooling for Personalized Health Intervention"
  - INFORMS Healthcare 2021; INFORMS 2021; POMS 2021, 2022
- "Proximal Policy Optimization for Routing in Inpatient Overflow Management."
  - INFORMS 2021, APS 2023
- "Capacity Allocation to Improve Itinerary Completion in Healthcare Networks"
  - INFORMS 2020; POMS 2021; MSOM 2021; INFORMS Healthcare 2021
- "Impact of Overflow on Inpatient Flow: An Econometric Study"
  - POMS 2019; INFORMS 2020

- "Balancing Inpatient Congestion versus Readmission Risk at Discharge"
  - IAAA Finalist Presentation, INFORMS Analytics 2020
  - POMS CHOM Showcase Presentation, 2019
  - INFORMS 2017, 2018, 2020; MSOM 2018; MSOM SIG 2019; APS 2019; POMS 2019
- "A Queueing Framework for Adoption of New Diagnostic Tests into Clinical Workflow"
  - MSOM 2019; INFORMS 2019
- "Inpatient Overflow: An Approximate Dynamic Programming Approach"
  - MSOM 2018; INFORMS 2019, 2017, 2016; INFORMS APS Conference, 2017; POMS 2017
- "Steady-state Approximation for Discrete Queue in Hospital Inpatient Flow Management"
  - INFORMS APS Conference 2017; POMS 2016; INFORMS 2015
- "Overflow Policies for ED Patients Awaiting Inpatient Beds"
  - POMS 2015; INFORMS 2014, 2013
  - HealthOPT Workshop, Chicago, IL, September 2014
- "A Two-time-scale Approach to Time-varying Queues for Hospital Inpatient Flow Management"
  - POMS International, 2014; MSOM 2014; POMS 2014, 2013; INFORMS 2012
- "Inpatient Flow Management in a Singaporean Hospital"
  - Applied Probability Seminar, Georgia Institute of Technology, February 2012
- "The Impact of Mass Gatherings and Holiday Travelling on the Course of an Influenza Pandemic"
  - INFORMS 2010; SMDM 2010 (20% acceptance rate for oral presentation)
- "Modeling Seasonality and Viral Mutation in the Course of an Influenza Pandemic"
  - INFORMS 2009

TEACHING EXPERIENCE

- Instructor for undergraduate and MBA courses at Purdue
  - MGMT 361 *Operations Management* (online), Fall 2020
    - Developed a fully online version in Summer 2020
    - Revamped class materials, recorded videos, and designed online exercises and games
  - MGMT 660 *Introduction to Operations Management* (MBA/MS core), 2017-2026
  - MGMT 361 *Operations Management* (undergrad core), 2014, Spring 2015-2017, Spring 2025-2026
  - MGMT 390/590 *Healthcare Operations*, 2019-2026
    - Project-based experiential learning and independent study
  - MGMT 690 *Doctoral Topics OM*, Spring 2019, Fall 2014
- Guest lecture for external graduate courses
  - 6.7920 *Reinforcement Learning: Foundations and Methods*, MIT, Fall 2024
  - INSY 672 *Healthcare Analytics*, McGill University, Spring 2022
  - OIDD 941 *Bandits, RL & Transfer Learning*, Wharton, Spring 2021
- Teaching assistant for undergraduate courses at Georgia Tech
  - ISyE 3232 *Stochastic Manufacturing Systems*, Summer 2008
  - ISyE 4803 *Advanced Stochastic Systems*, Spring 2008 and Fall 2009
- Guest lecture for undergraduate and graduate courses at Georgia Tech
  - HS 6000 *Introduction to Healthcare Delivery*, April 2011
  - BME 1300 *Problems in Biomedical Engineering*, November 2009
  - ISYE 4803 *Humanitarian Applications of OR/MS*, September 2009

STUDENT MENTORING

- Postdoc Fellow
  - Wei Liu, Purdue University, 2022-2024; co-advisor
    - Initial placement: School of Management, University of Science and Technology of China
  - Chuwen Zhang, University of Chicago, 2025-2026; co-advisor
- PhD Students
  - Zhongjie Ma, Purdue University, 2016-2018; thesis committee
    - Graduated in December 2018; initial placement: Facebook
  - Yiqiu Liu, Arizona State University, March 2019-May 2020; primary advisor for paper [P14]
    - Graduated in May 2020; current placement: South China University of Technology
  - Xiaoquan Gao, Purdue University, 2020-2024; primary advisor for paper [R3], [R4], [M8]
    - Graduated in December 2024; initial placement: Singapore Management University
  - Tianchun Li, Purdue University, 2021-2024; primary advisor for paper [C9], [R7]
  - Griffin Carter, Purdue University, 2024-present; co-advisor with Dengfeng Sun
  - Zhiqiang Zhang, University of Chicago, 2021-present; co-advisor for paper [C6], [C12], [R6]
  - Jingjing Sun, CUHK-Shenzhen, 2021-2026; co-advisor for paper [R5], [P17]
  - Jiekun Feng, Cornell University, 2016-2017; primary advisor for paper [P3]
  - Jinsheng Chen, Columbia University, 2019-2022; co-advisor for paper [P12], [P9], [WP5]
- Undergraduate Students
  - Sabriya Alam and Parker Crain, Purdue University, 2019-2021; advisor for DURI project "Personalized Data Analytics to Combat Hospital Readmissions and Opioid Epidemics"
  - Zhiyao Xu and Asa Cutler, Purdue University, 2020; advisor for research project "Data Analytics for Inpatient Flow Management"
    - Second place, Purdue Undergraduate Research Conference (Krannert Track), 2020
  - Shikun Liu and Tianchun Li, Purdue University, 2020-2021; advisor for research project "Variational Auto-Encoding to Learn Doubly Stochastic Process"
  - Ben Wang and Shuwen Kan, Purdue University, 2020-2021; advisor for DURI project "Workload Prediction for COVID-19 Response"
  - Yihan Pan, Zhenghang Xu, Xuanming Zhang, Jinjin Sun, CUHK Shenzhen, 2019-2021; advisor for "Outpatient Flow Optimization and Revisit Scheduling for Luohu Hospital"
  - Tianchun Li, Indira Brown, Yuvraj Mundhra, Eric Wu, Purdue University, 2021-2022; advisor for DURI project "Data Analytics for Hospital Operations and Opioid Epidemic"
  - Griffn Carter, Bingxuan Li, Purdue University, 2022-present; advisor for DURI project "Digital Platform Design for Resource-limited Countries"
  - Alexia Rodrigues, Alex Liu, Purdue University, 2022-2023; advisor for DURI project "Geographical and Racial Disparities in Opioid Overdose and Crime in Indiana"
  - Michael Cheng, Minrui Lu, Purdue University, 2024; advisor for DURI project "Generative AI and LLM in Healthcare Operations"
  - Yash Ashtekar, Utkarsh Bali, Purdue University, 2024-2025; advisor for DURI project "LLM for Interpretability in Healthcare Operations"
  - Chase Hamdan, Purdue University, 2025; advisor for DURI project "LLM for Healthcare Supply Chain Management"
  - Sandilya Kambhampati, Purdue University, 2025-2026; advisor for DURI project "LLM for Sentiment Analysis in Healthcare Systems"
  - Bhavya Lakhina, Purdue University, 2024-2026; advisor for OUR project

"Healthcare Facility Location Problem in the Democratic Republic of Congo"
  - Utkarsh Bali, Xuanyu Chen, Purdue University, 2026-present; advisor for DURI project "Clinical Hypothesis Generation using Generative AI"

AWARDS AND HONORS

- Finalist, TechPoint Mira Awards Emerging Tech Leader, 2026
- IEOM Outstanding Professor Award in Healthcare Engineering, 2025
- Engagement Scholarship Research/Creative Activities Grants (PI, awarded $5,000), 2025
- NSF Innovation Corps National Team Award (PI, awarded $50,000), 2025
- First place, INFORMS Innovative Applications in Analytics Award, 2024
- Finalist, INFORMS Daniel H. Wagner Prize, 2023
- Finalist, INFORMS Sanjay and Panna Mehrotra Research Excellence Award, 2023
- First place, IISE Outstanding Innovation in Service Systems Engineering Award, 2023
- Blake Family Fund for Ethics, Leadership, and Governance Fund (PI, awarded $34,000), 2023-2024
- Engagement Scholarship Research/Creative Activities Grants (PI, awarded $5,000), 2023
- 2022 INFORMS Chicago Chapter Impactful O.R./Analytics Prize
- Shah Family Global Innovation Lab Seed Grant Awards (PI, awarded $38,000), 2022-2023
- Krannert STAR Supplement Research Fund, Purdue University (PI, awarded $7,400), 2022
- Selected into the first cohort of Societal Impact Fellows, Purdue University, 2021
- Engagement Scholarship Research/Creative Activities Grants (PI, awarded $5,000), 2021
- Krannert Ross-Lynn Postdoctoral Fellowship Competition Award (PI, awarded $57,537), 2021
- First place, MSOM Responsible Research in OM, INFORMS MSOM, 2021
- Purdue Alumni Gift Donation for COVID19 Research Development (awarded $7,000), 2020
- Second place, CHOM Best Paper Award, POMS, 2020
- Second place, Innovative Applications in Analytics Award, INFORMS Analytics Conference, 2020
- Second place, CHOM Best Paper Award, POMS, 2019
- First place, Pierskalla Best Paper Award, INFORMS HAS, 2018
- Young Faculty Scholar Award, Krannert School of Management (awarded $10,000), 2018
- Doug and Maria DeVos Faculty Support Award (awarded $10,000), Purdue University, 2014
- Master's Outstanding and Distinguished Teachers, Krannert, Purdue University, 2017-2025
- Undergraduate Outstanding and Distinguished Teachers, Krannert, Purdue University, 2015-2017, 2025
- INFORMS Future Academician Doctoral Colloquium, Phoenix, AZ, 2012
- George Fellowship, Health System Institute, Georgia Tech, 2010-2011
- John Morris Fellowship, Department of Industrial and Systems Engineering, Georgia Tech, 2007-2009
- Chun-Tsung Scholar, sponsored by Nobel Laureate Tsung-Dao Lee, Peking University, 2005-2006
- Canon Grants for Elite Students, Peking University, 2005-2006
- China Economic Research Fellowship, Peking University, 2005-2006

EDITORIAL EXPERIENCE

- Department Editor:
  - *Health Care Management Science:* 2026 – present
- Associate Editor:
  - *Operations Research:* 2021 – present
  - *Manufacturing & Service Operations Management*: 2024 – present; (guest AE, 2022 – 2023)
  - *Production and Operations Management:* 2024 – present

- *Health Care Management Science:* 2020 – 2026
- *Service Science:* 2019 – 2023
- *Naval Research Logistics*: 2022, guest AE for special issue "*Developing Pandemic Preparedness Using Artificial Intelligence, Data Analytics, and Operations Research*"
- *Decision Sciences:* 2020 – 2021

- Reviewer for *Management Science, Operations Research, Manufacturing & Service Operations Management, Production and Operations Management, Stochastic Systems, Service Science, IIE Transactions, Naval Research Logistics, Health Care Management Science, European Journal of Operational Research, Interfaces, Performance Evaluation, Flexible Services and Manufacturing*
- Ad hoc reviewer, NSF CMMI panel, 2015 & 2023
- Program Committee, AAAI-AISI 2025
- Reviewer, ICLR 2025, ICML 2025, NeurIPS 2025
- Ad hoc reviewer, Canada New Frontiers in Research Fund, 2020

SERVICE

- Conference Organizing Committee
  - INFORMS Healthcare Conference (2021)
  - POMS College of Healthcare Operations Management Mini Conference (2020-2022)
- Track Chair / Co-chair
  - POMS Annual Conference, Healthcare Operations Management track (2015, 2019, 2027)
  - INFORMS Annual Conference, Healthcare Application Society cluster (2025)
  - INFORMS Healthcare Conference, Applied Probability cluster (2023)
  - INFORMS Annual Conference, Applied Probability track (2021)
  - INFORMS Annual Conference, MSOM/Healthcare SIG track (2016)
- President, Healthcare Application Society, INFORMS, 2026–present
- Vice President, Healthcare Application Society at INFORMS, 2025
- Co-chair, MSOM 2022 Healthcare Special Interest Group Conference
- Secretary for College of Healthcare Operations Management, POMS, 2019-2022
- Councilor for Applied Probability Society at INFORMS, 2021-2022
- Communications & Outreach Coordinator, Healthcare Application Society at INFORMS, 2021-2022
- Councilor for Healthcare Application Society at INFORMS, 2014-2016
- Session Chair
  - HAS Flash Job Talk Session (2021-2022)
  - INFORMS Annual Conference (2014, 2015, 2017-2026)
  - POMS Annual Conference (2014-2017, 2019-2023)
  - INFORMS APS Conference (2017, 2019, 2023, 2025)
  - INFORMS Healthcare Conference (2013, 2021, 2023)
- Competition Chair
  - INFORMS Pierskalla Best Paper Competition (2019)
- Judge
  - INFORMS George B. Dantzig Dissertation Award (2024)
  - INFORMS JFIG Paper Competition (2023-2025)
  - MSOM Responsible Research in OM Award Competition (2022)
  - INFORMS George Nicholson Student Paper Competition (2022-2023)
  - INFORMS Applied Probability Society Best Student Paper Competition (2021-2022)

  - INFORMS Undergraduate Operations Research Prize (2020-2021)
  - INFORMS Seth Bonder Scholarship (2020-2021)
  - INFORMS Pierskalla Best Paper Competition (2016-2017, 2021, 2024)
  - MSOM Best Student Paper Competition (2016-2026)
  - INFORMS Healthcare Conference Best Student Paper Competition (2015, 2017, 2021, 2023, 2026)
  - POMS College of Healthcare Operations Management Best Paper Competition (2014-2016, 2021-2022, 2024)
- Member, Undergraduate Program Committee, SC&OM Department, 2025–present
- Member, Search Committee for One Health Cluster Hire, SC&OM Department, 2025-2026
- Member, Search Committee for Clinical Faculty Opening, SC&OM, 2024-2025, 2025-2026
- New Building Feasibility Committee, Daniels School of Business, 2023-2024
- Co-organizer, Research Colloquium on Substance Use Disorder Treatment, Krannert School of Management, April 2022
- Judge for Annual KDSA Research Symposium, Krannert School of Management, November 2021
- Online MBA Steering Committee, Krannert School of Management, 2018-2019
- Chair, Committee for Graduate Club, Krannert School of Management, September 2017 – 2018
- Data/Analytics Research/Teaching Committee, Krannert School of Management, August 2018 – May 2020