Pengyi Shi

Krannert School of Management
Purdue University
403 W State St, West Lafayette, IN 47907
Email: shi178@purdue.edu
Webpage: http://web.ics.purdue.edu/~shi178/

EDUCATION

- **Georgia Institute of Technology**, Atlanta, GA, August 2007 – December 2013
  Ph.D. in Industrial Engineering (minor in Statistics)
  Thesis title: "Stochastic modeling and decision making in two healthcare applications: inpatient flow management and pandemic response"
  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

- **Purdue University**, West Lafayette, IN
  Assistant Professor of Management, Krannert School of Management, January 2014 – Present
  Courtesy Affiliation with Regenstrief Center for Healthcare Engineering, July 2017 – Present

OPERATIONS PUBLICATIONS

[P1]. 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.

[P2]. J. G. Dai, **P. Shi** (2018). "Inpatient Overflow: An Approximate Dynamic Programming Approach." Forthcoming in *Manufacturing & Service Operations Management*.

[P3]. 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

[P4]. **P. Shi**, M. Chou, J. G. Dai, D. Ding, and J. Sim[‡1], (2016). "Models and Insights for Hospital Inpatient Operations: Time-Dependent ED Boarding Time." *Management Science*, 62(1):1-28

SUBMITTED AND WORKING PAPERS

[W1]. **P. Shi**, J. Helm, J. Deglise-Hawkinson[‡], J. Pan[‡] (2018). "Timing it Right: Balancing Inpatient Congestion versus Readmission Risk at Discharge." Under review.

  ➢ Currently implementing the prediction and optimization tool at a local hospital in Indiana.

[W2]. Z. Ma, **P. Shi**, S. Heese, J. Helm, A. Mitchell[‡] (2018). "A Queueing Framework for Evaluating Adoption of New Diagnostic Tests into Clinical Workflow." Manuscript in preparation.

[W3]. J. Dong, **P. Shi**, F. Zheng, J. Xin[‡] (2018). "Impact of Overflow Assignment on Inpatient Flow Management: An Econometric Study." Manuscript in preparation.

[W4]. A. Alaeddini, J. Helm, **P. Shi**, S. Faruqui (2017). "A Prediction Model for Patient Readmission Risks with Kernel Principle Component Analysis." Major revision at *IIE Transactions on Healthcare Systems Engineering*.

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[1] ‡ denotes industry/medical collaborator; underline denotes PhD student

MEDICAL PUBLICATIONS

- **P. Shi**, F. Dexter[‡], R. H. Epstein[‡] (2016). "Comparing Policies for Case Scheduling within One Day of Surgery by Markov Chain Models." *Anesthesia & Analgesia*[2], 122:526-538
- F. Dexter[‡], **P. Shi**, R. H. Epstein[‡] (2012). "Descriptive Study of Case Scheduling and Cancellations within One Week of the Day of Surgery." *Anesthesia & Analgesia*, 115(5):1188-1195
- **P. Shi**, P. Keskinocak, J. L. Swann, B. Y. Lee[‡] (2010). "The Impact of Mass Gatherings and Holiday Travelling on the Course of an Influenza Pandemic: A Computational Model." *BMC Public Health*[3], 10:778
- **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*[4], 138(10):1472-1481

OTHER PAPERS

- J. G. Dai, **P. Shi** (2015). "Technical Note for Discrete-Time Diffusion Approximations Motivated from Hospital Inpatient Flow Management." *arXiv:1508.05148*
- **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
  - This is a 69-page document on a comprehensive empirical study of inpatient flow management

INVITED SEMINARS

- "Timing it Right: Balancing Inpatient Congestion versus Readmission Risk at Discharge"
  - Kelley School of Business, Indiana University, Bloomington, Indiana, September 2018 (scheduled)
  - London Business School, London, UK, September, 2018 (scheduled)
  - Workshop on Recent Progress in Data, Models and Decision, CUHK, Shenzhen, July, 2018
- "Inpatient Overflow Policies: An Approximate Dynamic Programming Approach"
  - Reinforcement Learning for Processing Networks Seminar, iDDA, CUHK, Shenzhen, July, 2018
  - Sauder School of Business, University of British Columbia, March, 2017
- "Steady-state Approximation for Discrete Queue in Hospital Inpatient Flow Management"
  - Joint seminar between Industrial Engineering INFORMS student chapter and Krannert, Purdue University, December, 2016
- "A Two-time-scale Approach to Time-varying Queues for Hospital Inpatient Flow Management"
  - Systems Engineering and Engineering Management, Chinese University of Hong Kong, August 2014
  - Industrial and Systems Engineering, National University of Singapore, July 2014
  - Krannert School of Management, Purdue University, March, 2014
- "Data-driven Modeling and Decisions for Hospital Inpatient Flow Management"
  - Industrial and Systems Engineering, University of Southern California, February 2013
  - Yale School of Management, January 2013
  - Industrial and Systems Engineering, University of Wisconsin Madison, January 2013
  - Krannert School of Management, Purdue University, January 2013

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[2] 2017 Impact Factor: 4.01

[3] 2016 Impact Factor: 2.27

[4] 2016 Impact Factor: 2.08

PRESENTATIONS

- "Impact of Overflow Assignment on Inpatient Flow Management: An Econometric Study"
  - INFORMS Annual Meeting, Phoenix, AZ, November 2018 (scheduled)
- "Balancing Inpatient Congestion versus Readmission Risk at Discharge"
  - INFORMS Annual Meeting, Phoenix, AZ, November 2018 (scheduled)
  - MSOM Annual Meeting, Dallas, TX, July 2018
  - INFORMS Annual Meeting, Houston, TX, November 2017
- "A Queueing Framework for Evaluating Adoption of New Diagnostic Tests into Clinical Workflow with Application to Pulmonary Embolism in ED"
  - INFORMS Annual Meeting, Houston, TX, November 2017 (presented by student Zhongjie Ma)
- "Inpatient Overflow: An Approximate Dynamic Programming Approach"
  - MSOM Annual Meeting, Dallas, TX, July 2018
  - INFORMS Annual Meeting, Houston, TX, November 2017
  - INFORMS Applied Probability Society Conference, Evanston, IL, June 2017
  - POMS Annual Conference, Seattle, WA, May 2017
  - INFORMS Annual Meeting, Nashville, TN, November 2016
- "Steady-state Approximation for Discrete Queue in Hospital Inpatient Flow Management"
  - INFORMS Applied Probability Society Conference, Evanston, IL, June 2017
  - POMS Annual Conference, Orlando, FL, May 2016
  - INFORMS Annual Meeting, Philadelphia, PA, November 2015
- "Overflow Policies for ED Patients Awaiting Inpatient Beds"
  - POMS Annual Conference, Washington D.C., May 2015
  - INFORMS Annual Meeting, San Francisco, CA, November 2014
  - HealthOPT Workshop, Chicago, IL, September 2014
  - INFORMS Annual Meeting, Minneapolis, MN, October 2013
- "A Two-time-scale Approach to Time-varying Queues for Hospital Inpatient Flow Management"
  - POMS International Conference, Singapore, July 2014
  - MSOM Annual Conference, Seattle, WA, June 2014
  - POMS Annual Conference, Atlanta, GA, May 2014
  - INFORMS Healthcare Conference, Chicago, IL, June 26, 2013
  - POMS Annual Conference, Dever, CO, May 3, 2013
  - INFORMS Annual Meeting, Phoenix, AZ, October 15, 2012
- "Inpatient Flow Management in a Singaporean Hospital," Applied Probability Seminar, School of Industrial and Systems Engineering, Georgia Institute of Technology, February 10, 2012
- "The Impact of Mass Gatherings and Holiday Travelling on the Course of an Influenza Pandemic"
  - INFORMS Annual Meeting, Austin, TX, November 7, 2010
  - Annual Conference of Society of Medical Decision Making, Toronto, Canada, October 25, 2010 (20% acceptance rate for oral presentation)
- "Modeling Seasonality and Viral Mutation to Predict the Course of an Influenza Pandemic," INFORMS Annual Meeting, San Diego, CA, October 11, 2009

TEACHING EXPERIENCE

- Instructor for undergraduate and MBA core courses at Krannert School of Management
  - MGMT 660 *Introduction to Operations Management* (MBA core), Spring 2017-2018
    - Instructor rating in Spring 2018: 4.8, 5.0, 4.9 (out of 5.0)

- o MGMT 361 *Operations Management* (undergrad core), Spring 2014, Fall 2014, Spring 2015-2017
  - Instructor rating in Spring 2017: 4.8 (out of 5.0)
- o MGMT 690 *Doctoral Topics OM*, Fall 2014
- Teaching assistant for undergraduate courses at Georgia Tech
  - o ISyE 3232 *Stochastic Manufacturing Systems*, Summer 2008
  - o ISyE 4803 *Advanced Stochastic Systems*, Spring 2008 and Fall 2009
- Guest lecture for undergraduate and graduate courses at Georgia Tech
  - o HS 6000 *Introduction to Healthcare Delivery*, April 2011
  - o BME 1300 *Problems in Biomedical Engineering*, November 2009
  - o ISYE 4803 *Humanitarian Applications of OR/MS*, September 2009

AWARDS AND HONORS

- Krannert Young Faculty Scholar Award, Krannert School of Management, Purdue University, 2018
- Doug and Maria DeVos Faculty Support Award in Global Supply Chain Management, Krannert School of Management, Purdue University, 2014
- PRF international travel grant, Purdue University, 2014 and 2016
- Master Outstanding and Distinguished Teachers, Krannert School of Management, Purdue University, Spring 2017-2018
- Undergraduate Outstanding and Distinguished Teachers, Krannert School of Management, Purdue University, Spring 2015, Spring 2016, Spring 2017
- 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
- Dean's List for Excellent Study Grade, Peking University, 2003-2005

EDITORIAL EXPERIENCE

- Reviewer for *Management Science, Operations Research, Manufacturing & Service Operations Management, Production and Operations Management, Stochastic Systems, IIE Transactions, Interfaces, Flexible Services and Manufacturing*

SERVICE

- Track chair
  - o INFORMS Annual Conference, MSOM/Healthcare SIG track (2016)
  - o POMS Annual Conference, Healthcare Operations Management track (2015)
- Session chair
  - o INFORMS Annual Conference (2014, 2015, 2017,2018)
  - o POMS Annual Conference (2014- 2017)
  - o POMS International Conference (2014)
  - o INFORMS APS Conference (2017)
  - o INFORMS Healthcare Conference (2013)
- Judges
  - o INFORMS Pierskalla Best Paper Competition (2016-2017)

- o MSOM Best Student Paper Competition (2016-2018)
  - o INFORMS Healthcare Conference Best Student Paper Competition (2015, 2017)
  - o POMS College of Healthcare Operations Management Best Paper Competition (2014-2016)
- Councilor for Healthcare Application Society at INFORMS, 2014-2016
- Ad hoc reviewer, NSF CMMI panel, 2015
- Chair, Committee for Graduate Club, Krannert School of Management, September 2017 – present
- Online MBA Steering Committee, Krannert School of Management, May 2018 – present
- Data/Analytics Research/Teaching Committee, Krannert School of Management, August 2018 – present