Hyo Kyung Lee

Assistant Professor
Department of Industrial Engineering
University of Pittsburgh
hkl14@pitt.edu

EDUCATION

Ph.D., University of Wisconsin - Madison, Madison, WI, 2019
Industrial and Systems Engineering
Advisor : Jingshan Li, Professor, Industrial and Systems Engineering

M.S., Georgia Institute of Technology, Atlanta, GA, 2013
Industrial and Systems Engineering - Operations Research

B.S., Yonsei University, Seoul, South Korea, 2012
Information and Industrial Engineering

ACADEMIC EXPERIENCE

Assistant Professor of Industrial Engineering, University of Pittsburgh, Pittsburgh, PA
August 2019 - present

Research Assistant, University of Wisconsin - Madison, Madison, WI
August 2014 - August 2019

Graduate Student Instructor, University of Wisconsin - Madison, Madison, WI
Spring 2018

INDUSTRY EXPERIENCE

Research Trainee, Mayo Clinic, Rochester, MN
June - August 2017

GRANTS & AWARDS

Hyo Kyung Lee (Co-I)   April 2020 - March 2022
National Institutes of Health NINDS Grant 1R21NS115174-01
"Innovative Method for Real-time Assessment of Intracranial Compliance"
Collaborators: Robert Clark (UPMC Children's Hospital of Pittsburgh), Gilles Clermont
(Department of Critical Care Medicine, University of Pittsburgh)

Hyo Kyung Lee (Co-I)   July 2020 - June 2022
National Institutes of Health NHLBI: BLOODSAFE Grant 1UG3HL151596-01
"Pathways for Innovation in Blood Transfusion Systems in Kenya (PITS-Kenya)"
Collaborators: Pratap Kumar (Strathmore University), Juan-Carlos Puyana (Department
of Surgery, University of Pittsburgh)

PROFESSIONAL SERVICE

Professional Society Memberships
Institute for Operations Research and Management Sciences (INFORMS)
      Health Applications Society
      Manufacturing & Service Operations Management Society
      Applied Probability Society
      Women in OR/MS (WORMS) Forum
Institute of Electrical and Electronics Engineers (IEEE)
Institute of Industrial and Systems Engineers (IISE)

Editorial Appointments
Associate Editor, IEEE CASE Conference Editorial Board, 2020, 2021
Guest Editor, International Journal of Production Research, 2021

Leadership
Student Activity Chair, IEEE CASE, 2019
Session Co-chair in Public Health and Health Policy Cluster, INFORMS Healthcare, 2019

Journal Reviews
Applied Clinical Informatics
Computers in Biology and Medicine
Flexible Service and Manufacturing
IEEE Robotics and Automation Letters
IEEE Transactions on Automation Science and Engineering
IISE Transactions
International Journal of Production Research
International Journal of Simulation and Process Modelling
Safety Science

REFEREED JOURNAL PUBLICATIONS

H.K. Lee, J. Li, P. Bain, and J. Goffinet, "Optimal intervention policies for TJR postoperative care process," *Manufacturing and Service Operations Management*, accepted.

K. Gong, **H.K. Lee**, K. Yu, X. Xie, and J. Li, "A prediction and interpretation framework of acute kidney injury in critical care," *Journal of Biomedical Informatics* vol.113, 103653, 2021.

H. Ma, **H.K.Lee**, Z. Shi, and J. Li, "Workforce allocation in motorcycle transmission assembly lines: a case study on modeling, analysis, and improvement," *IEEE Robotics and Automation Letters* vol.5, no.3, pp.4164-4171, 2020.

H.K. Lee, J. Li, A.J. Musa, P.A. Bain and K. Nelson, "Modeling and analysis of patient transitions in community hospitals: a systems approach," *IEEE Transactions on Systems, Man, and Cybernetics: Systems* vo.50, no.2, pp.686-699, 2020.

X. Zhong, S. Lee, C. Zhao, **H.K. Lee**, P.A. Bain, T. Kundinger, C. Sommers, C. Baker and J. Li, "Reducing COPD readmissions through predictive modeling and incentive-based interventions," *Health Care Management Science* vo.22, no.1, pp. 121-139, 2019.

H.K. Lee, A.J. Musa, P.A. Bain, K. Nelson, C. Baker and J. Li, "A queueing network model for analysis of patient transitions within hospitals," *IEEE Transactions on Automation Science and Engineering* vol.16, no.1, pp.6-20, 2019.

H.K. Lee, R. Jin, P. Bain, J. Goffinet and J. Li, "An analytical framework for TJR readmission prediction and cost-effective intervention," *IEEE Journal of Biomedical and Health Informatics* vol.23, no.4, pp.1760-1772, 2019.

H.K. Lee, F. Ju, R. Osarogiagbon, N. Farris, X. Yu, F. Rugless, S. Jiang and J. Li, "A system-theoretic method for modeling, analysis, and improvement of lung cancer diagnosis-to-surgery process," *IEEE Transactions on Automation Science and Engineering* vol.15, no.2, pp.531-544, 2018.

H.K. Lee, X. Zhong, J. Li, A.J. Musa and P.A. Bain, "Joint visit in primary care clinics: modeling, analysis, and an application study," *IISE Transactions on Healthcare Systems Engineering* vol.8, no.2, pp.93-109, 2018.

H.K. Lee, Y. Dong, B. Pickering, O. Gajic and J. Li, "Bottleneck analysis to improve multidisciplinary rounding process in intensive care units at Mayo clinic," *IEEE Robotics and Automation Letters* vol.3, no.3, pp.2678-2685, 2018.

X. Zhong, **H.K. Lee**, M.Williams, S. Kraft, J. Sleeth, R. Welnick, L. Hoschild and J. Li, "Workload balancing: staffing ratio analysis for primary care redesign," *Flexible Services and Manufacturing Journal* vol.30, no.1-2, pp.6-29, 2018.

M.P. Smeltzer, et al, **H.K. Lee**, et al, "Pragmatic trial of a multidisciplinary lung cancer care model in a community healthcare setting: study design, implementation evaluation, and baseline clinical results," *Translational Lung Cancer Research* vol.7, no.1, pp.88-102, 2018.

F. Ju, **H.K. Lee**, X. Yu, N. Faris, F. Rugless, S. Jiang, J. Li and R. Osarogiagbon, "Reducing bottlenecks to improve the efficiency of the lung cancer care delivery process: a process engineering modeling approach to patient-centered care," *Journal of Medical Systems* vol.42, no.1, 2018.

X. Zhong, **H.K. Lee** and J. Li, "From production systems to health care delivery systems: a retrospective look on similarities, difficulties and opportunities," *International Journal of Production Research* vol.55, no.14, pp.4212-4227, 2017.

F. Ju, **H.K. Lee**, R. Osarogiagbon, X. Yu, N. Faris and J. Li, "Computer modeling of lung cancer diagnosis-to-treatment process," *Translational Lung Cancer Research* vol.4, no.4, pp.404-414, 2015.

REFEREED CONFERENCE PROCEEDINGS

H.K. Lee, R. Jin, Y. Feng, P.A. Bain, J. Goffinet, C. Baker and J. Li, "Modeling and analysis of postoperative intervention process for total joint replacement patients using simulations," *Proceedings of IEEE International Conference on Automation Science and Engineering* pp.568-573, Xi'An, China, 2017.

S. Lee, X. Zhong, **H.K. Lee**, C. Zhao, P.A. Bain, T. Kundinger, C. Sommers, C. Baker and J. Li, "Incentive-based optimal intervention policy to reduce hospital readmissions for COPD patients," *Proceedings of IEEE International Conference on Automation Science and Engineering* pp.562-567, Xi'An, China, 2017.

H.K Lee, J. Li, A.J. Musa and P.A. Bain, "A markov chain model to evaluate patient transitions in small community hospitals," *Proceedings of IEEE International Conference*

on Automation Science and Engineering pp.675-680, Fort Worth, TX, 2016.

H.K. Lee, X. Zhong, J. Li, A.J. Musa and P.A. Bain, "An iterative method for analysis of joint visit model at Dean east clinic," *Proceedings of IEEE International Conference on Systems, Man, and Cybernetics* pp.1203-1208, Budapest, Hungry, 2016.

X. Zhong, **H.K. Lee**, M.Williams, S. Kraft, J. Sleeth, R. Welnick, L. Hoschild and J. Li, "Primary care redesign: staffing ratio analysis," *Proceedings of the International Conference on Health Care Systems Engineering*, Lyon, France, 2015.

INVITED PRESENTATIONS

"Hidden markov models for modeling early recovery for physical function following TJR"
INFORMS Online Conference, November 2020

"ICU medication administration pattern and its association with AKI"
INFORMS Online Conference, November 2020

"Optimal intervention policies for TJR postoperative care process"
IISE Online Conference and Expo, November 2020

"An acute kidney injury prediction model in critical care"
IEEE CASE Online Conference, August 2020.

"Optimal intervention policies for TJR postoperative care process"
INFORMS Conference, Seattle, WA, October 2019

"Operational decision making across patient care cycle:from capacity planning to care management"
The University of Texas at Austin, Operations Research and Industrial Engineering, January 2019

"Operational decision making across patient care cycle:from capacity planning to care management"
University of Pittsburgh, Industrial Engineering, January 2019

"Operational decision making across patient care cycle:from capacity planning to care management"
Purdue University, Industrial Engineering, December 2018

"Operational decision making across patient care cycle:from capacity planning to care management"
Mississippi State University, Industrial and Systems Engineering, December 2018

"Operational decision making across patient care cycle:from capacity planning to care management"
Oklahoma State University, Industrial Engineering and Management, December 2018

"Analysis of patient flow within hospitals: a queueing network approach"
INFORMS Conference, Phoenix, AZ, November 2018

"Bottleneck analysis to improve multidisciplinary rounding process in ICUs at Mayo clinic"
IEEE CASE, Munich, Germany, August 2018.

"Analysis of patient flow within hospitals: a queueing network approach"
IISE Annual Conference and Expo, Orlando, FL, May 2018.

"Modeling and analysis of postoperative intervention process for TJR patients"

INFORMS Conference, Houston, TX, October 2017.
IEEE CASE, Xi'an, China, August 2017.

"Optimizing patient-centered care interventions: applications on COPD and TJR readmissions"
Fifth I-PrACTISE Conference, Madison, WI, April 2017.

"System modeling for patient transitions within hospital"
INFORMS Conference, Nashville, TN, November 2016.

"A markov chain model to evaluate patient transitions in small community hospitals"
IEEE CASE, Fort Worth, TX, August 2016.

"Reducing performance variability in lung cancer diagnosis procedure"
IISE Annual Conference and Expo, Anaheim, CA, May 2016.

"Enhanced care team redesign: implementation of joint visits"
Fourth I-PrACTISE Conference, Madison, WI, April 2016.

"Improving timeliness in lung cancer diagnosis process"
INFORMS Conference, Philadelphia, PA, November 2015.

TEACHING

University of Pittsburgh
IE 2072: Probability
   Fall 2019
IE 1185/2184: Stochastic Modeling and Data Analytics in Healthcare Operations
   Spring 2020, Spring 2021
IE 2084: Stochastic Processes
   Fall 2020

University of Wisconsin - Madison
ISyE 415: Introduction to Manufacturing Systems
   Spring 2016 - Graduate Teaching Assistant
ISyE 615: Production Systems Control
   Spring 2018 - Instructor
ISyE 601: Stochastic Models in Healthcare Delivery Systems
   Fall 2018 - Graduate Teaching Assistant

STUDENT RESEARCH ADVISING AND COMMITTEE MEMBERSHIP

Doctoral Committee Membership
Hanie Eskandari, **chair**   (expected 2024)
Shadi Sanoubar   (expected 2021)
Brian McLaverty   (expected 2022)

Master Research Advising
Maotong Sun
Jessica Starck

Undergraduate Research Advising
Yuchen Zhong

OTHER AWARDS & HONORS

IEEE RAS Travel Award, 2018
IISE Doctoral Colloquium, 2018
Grainger Wisconsin Distinguished Graduate Fellowship, 2016-2017
Rea C. and David H. Gustafson Scholarship, 2016, 2017
Industrial and Systems Engineering Graduate Student Travel Award, 2015
National Science and Engineering Undergraduate Scholarship, 2009-2012
High Honors Scholarship, Honors Scholarship, 2008, 2009, 2011