Curriculum Vita of **Mark P. Van Oyen**
vanoyen@umich.edu 847-372-3362

Brief Summary

Mark Van Oyen is a Professor of Industrial and Operations Engr. (IOE) at the Univ. of Michigan. His longstanding interest has been the analysis, design, prediction and dynamic control of stochastic systems to meet real-world needs and advance new methodologies.

Since 2010, he has emphasized the improvement of healthcare through operations engineering and management and medical decision making. His group has devised new solutions for many key areas of health system operations, including: Emergency Department (ED) redesign, "in-advance" appointment scheduling for clinics, surgical scheduling with coordinated with clinical visits, system-wide patient flow prediction and admissions control, clinical research unit operations to increase throughput and maintain promised maximum delays to begin each trial, coordinated care for integrated care systems, online/self-serve appointment systems, ward/unit shift design plus assignment, design of skills-based nursing teams and staffing, personalized bed unit assignment for reduction of mortality and readmissions and surgical case duration prediction, case sequencing, case start time setting, and construction of daily schedules for surgery units. His medical decision making papers target open angle glaucoma, normal tension glaucoma, ocular hypertension, age-related macular degeneration, blood pressure control, and cardiovascular disease. These applications required many advances in methodology such as real-time joint prediction and decision optimization (e.g., reinforcement learning approaches including contextual online multi-armed bandits) and online optimization. Other recent methodologies have included Markov decision processes, distributionally robust multi-stage stochastic programming, as well as robust and distributionally robust optimization.

To improve industrial operations in manufacturing and services, he has established novel methods for dynamic stochastic scheduling, flexible production, workforce flexibility, polling systems, humanitarian logistics, and supply chain flexibility.

He co-authored papers that won the 2016 MSOM Best Paper award, 2016 MSOM Service Science SIG best paper award, 2010 INFORMS W. Pierskalla Award, and two 1st and two 2nd place best paper awards from the POMS College of Healthcare Op's. Mgmt. He has served as Associate Editor for Operations Research, Management Science, Naval Research Logistics, IIE Transactions, and IIE Trans. Healthcare Syst. Engr. He was Senior Editor for Flexible Services & Manufacturing. He was a faculty member of the Northwestern Univ. Sch. of Engr. (1993-2005) and Loyola Univ. of Chicago's Sch. of Bus. Admin. (1999-2005). He won 9 NSF grants and gained grant funding from the NIH, Glaucoma Res. Found., ONR, EPRI, ALCOA, General Motors, and the VA (as a co-I of a winning proposal to establish the VISN 11 VERC).

He received his Ph.D. in Electrical Engr. Systems (Communications and Control) from the Univ. of Michigan and has worked for GE Global Research and GE Aerospace.

Personal

Education

- Ph.D. Electrical Engineering: Systems in Communications and Control (Apr. 1989 - Aug. 1992) University of Michigan, Ann Arbor, MI, *Optimal Stochastic Scheduling of Queueing Networks: Switching Costs and Partial Information,* Advisor: Demosthenis Teneketzis.
- M.S.E. Electrical Engineering: Systems (Sept. 1987 -Apr. 1989) University of Michigan, Ann Arbor, MI
- B.S.E. with a concentration in Electrical Engineering (Sept. 1982 - May 1986). Calvin College (now Calvin University), Grand Rapids, MI

Positions

- Professor of Industrial & Operations Engr., University of Michigan (Sept. 2013 – present)
- Assoc. Prof. of Industrial & Operations Engr., U. Michigan. (2005 – Aug. 2013)
- Professor of Information Systems and Operations Management (with tenure) (Mar. 2005 – Jun. 2005) Loyola Univ. of Chicago, Sch. of Business Admin., Chicago.
- Research Associate Professor: (Sep. 2002 – Jun. 2005) Industrial Engineering and Management Sciences, Northwestern University, Evanston.

- Assoc. Prof. of Information Sys. and Operations Management (Sep. 2001 – Mar. 2005, with tenure starting 2002); Loyola Univ. of Chicago, Sch. of Bus. Admin., Chicago.
- Research Assoc. Prof. of Information Sys. and Operations Management (Sep. 2000 – Aug. 2001); Loyola Univ. of Chicago, Sch. of Bus. Admin., Chicago.
- Research Assistant Professor (Sep. 1999 – Aug. 2002) Industrial Engineering and Management Sciences, Northwestern University, Evanston.
- Visiting Associate Professor in the Dept. of Information Systems and Operations Management (Aug. 1999 – Aug. 2000): Loyola University of Chicago, School of Business Admin., Chicago. (Lacking a position posted, only a visiting appointment was possible.)
- Assistant Professor (Sep. 1993 – Aug. 1999) Industrial Engineering and Management Sciences, Northwestern University, Evanston.
- Electrical Engineer (Aug. 1992 – Aug. 1993) General Electric Corporate Research and Development, Schenectady, NY (now GE Global Research).
- Grad. Student Teaching Ass't., Elect. Engr, & Comp. Sci., University of Michigan (Sep. 1988 – May 1991)
- Engineer III: Analysis section, Systems Analysis and Simulation Dept. (May 1986 – Aug. 1987) Lear Siegler Instrument and Avionic Sys. Div. (now GE Aerospace).

Honors and Awards, incl. selected awards to advisees as noted *(underlining indicates students advised, co-advised, or mentored)*
- 2022 *Finalist for Best Paper Award*: College of Healthcare Operations Management, POMS "Contextual Learning and Online Convex Optimization: Theory with Applications to Chronic Diseases," by advisee E. Keyvanshokooh and M. Zhalechian, C. Shi, M.P. Van Oyen, and P. Kazemian
- 2021 *Finalist Best Student Paper Award, MSOM (INFORMS)* 2021 INFORMS Conf. for "Contextual Learning with Online Convex Optimization: Theory and Applications to Chronic Diseases," E. Keyvanshokooh, M. Zhalechian, C. Shi, M.P. Van Oyen, and P. Kazemian
- 2021 *Finalist Best Student Paper Award,* 2021 INFORMS Health Applications Society (HAS), for "Contextual Learning with Online Convex Optimization: Theory and Applications to Chronic Diseases," E. Keyvanshokooh, M. Zhalechian, C. Shi, M.P. Van Oyen, and P. Kazemian
- 2020 *Elected President* of INFORMS Health Applications Society (HAS)
  - 2021 *Past President*
  - 2019 *Vice President*
- 2020 *2nd Place, Student Paper Award.* Decision Analysis Society (DAS - INFORMS), 2021 INFORMS Conf. for "Contextual Learning with Online Convex Optimization: Theory and Applications to Chronic Diseases," E. Keyvanshokooh, M. Zhalechian, C. Shi, M.P. Van Oyen, and P. Kazemian
- 2019 Honor: *Vinod Sahney Distinguished Lecture* on Health Systems Innovation, Northeastern University
- 2019 *Honorable mention*, *IISE Transactions* journal best applications paper in operations engineering and analytics for "Surgery Scheduling with Recovery Resources," Bam, M., B.T. Denton, and M.P. Van Oyen.
- 2016 *1st Place*, Best published paper in years (2013-2015), *Manufacturing and Service Operations Management (MSOM)* journal. Won by unanimous selection of over 30 of the journal's editors for the best paper in the MSOM journal among all published in the prior three years (2013-2015): Saghafian, S., W. Hopp, M.P. Van Oyen, J.S. Desmond, and S. Kronick, Complexity-Augmented Triage: A Tool for Improving Patient Safety and Operational Efficiency, *Manufacturing and Service Operations Management (MSOM)*, **16:3**, (2014) 329-45.
- 2016 *1st Place, Best Published Paper,* Service Special Interest Group (SIG), Manufacturing and Service Operations Management (MSOM) Society of INFORMS
- 2015 *1st Place, Best Paper Award,* College of Healthcare Operations Management of the Production and Operations Management Society (POMS), for "Dynamic Personalized Monitoring and Treatment Control of Glaucoma," P. Kazemian, J. Helm, Mariel Lavieri, Joshua Stein, Mark Van Oyen.
  - Advisee Pooyan Kazemian also earned finalist standing in the 2015 IBM service science competition; plus, an *earlier version was a Finalist* in competition for Best student paper, Decision Analysis Society (DAS) of INFORMS at 2014 INFORMS Conference
- 2015 *1st Place, INFORMS Best Poster Award* to Maya Bam, (Co-author and academic co-advisor) for "Surgery Scheduling with Recovery Resources" for two competitions:

- o Won the Interactive Poster Competition
- o Won the Minority Issues Forum Poster Competition.
- 2013 *Student 1st Prize,* SMDM Lee Lusted award for Quantitative Methods and Theoretical Developments, Baltimore 2013, for "Comparison of Control Algorithms for Scheduling Testing Visits," <u>G.J. Schell,</u> M.S. Lavieri, <u>J.E. Helm,</u> M.P. Van Oyen, D.C. Musch, and J.D. Stein.
- 2013 *2nd Place Best Paper Award,* POMS College of Healthcare Operations Management of the Production and Operations Management Society (POMS), "Operational Planning Models with Service Pathways: Project Portfolio for Phase 1 Trials," by <u>J. Deglise-Hawkinson,</u> B.J. Roessler, and M.P. Van Oyen.
- 2013 *Honorable Mention (Finalist) for Best Student Paper Award*: *POMS* Supply Chain College, "Compensating for Dynamic Supply Disruptions with Backup Flexibility," by advisee <u>S. Saghafian</u> and M.P. Van Oyen.
- 2012 *First prize, Best Student Paper Award,* INFORMS Manufacturing and Service Operations Management (MSOM) to Ph.D. student advisee <u>Soroush Saghafian</u> for "Complexity-Based Triage: A Tool for Improving Patient Safety and Operational Efficiency," with Wallace Hopp, Mark Van Oyen, Jeffrey Desmond, and Steven Kronick.
- 2012 *First prize: Doing Good with Good OR Prize*, INFORMS Society, awarded to my PhD advisee, <u>J. Helm,</u> and G. Schell (mentored student) for the paper "Dynamic Monitoring of Chronic Disease" and related research performed jointly with Mariel Lavieri, Mark Van Oyen, and two members from the Kellogg Eye Institute, Joshua Stein, M.D. and David Musch.
- 2012 *Finalist for Best Paper Award*, College of Healthcare Operations Management of the Production and Operations Management Society (POMS), "Malaria Treatment Distribution in Developing World Health Systems and Application to Malawi," <u>Parvin, H., S. AhmadBeygi, J.E. Helm,</u> P.S. Larson, and M.P. Van Oyen.
- 2011 *Top 5 Finalist* in the *Doing Good with Good OR Prize*, INFORMS Society, awarded to <u>S. Saghafian</u> for "Complexity-Based Triage: A Tool for Improving Patient Safety and Operational Efficiency," co-authored with W.J. Hopp, M.P. Van Oyen, S. Kronick, and J. Desmond.
- 2011 *1st Place, Best Paper Award,* College of Healthcare Operations Management of the Production and Operations Management Society (POMS), "Design and Optimization Methods for Elective Hospital Admissions," <u>J.E. Helm</u> and M.P. Van Oyen.
- 2011 *2nd Place, Best Paper Award,* College of Healthcare Operations Management of the Production and Operations Management Society (POMS), "Patient Streaming as a Mechanism for Improving Responsiveness in Emergency Departments," <u>S. Saghafian,</u> W.J. Hopp, M.P. Van Oyen, J. Desmond, and S. Kronick.
- 2011 *1st Prize, William Pierskalla INFORMS Award* for best paper in healthcare management science, from the INFORMS Society in Nov. 2010 for "Patient Streaming as a Mechanism for Improving Responsiveness in Emergency Departments," <u>S. Saghafian,</u> W.J. Hopp, M.P. Van Oyen, J. Desmond, and S. Kronick.
- 2009 *Finalist, Best Paper Award,* College of Supply Chain Management, *POMS Society*. "The Value of Flexible Backup Suppliers and Disruption Risk Information: Newsvendor Analyses with Recourse," by <u>S. Saghafian</u> and M.P. Van Oyen.
- *2008 Department Award, Industrial and Operations Engineering,* College of Engineering, The University of Michigan
- (Fall 2004 – Summer 2005) Honor: Selected and served as a Loyola University Chicago *Faculty Mentor*
- 2004 *Elected Vice-chair* of Dean's Advisory (executive) Committee, Loyola School of Business Administration
- 2002 *Researcher of the Year Award*, *Loyola* University of Chicago, School of Business Administration.
- *2001 Finalist for* INFORMS Manufacturing and Service Operations Management (*MSOM) Best Student Paper Award*, paper co-authored with Ph.D. student <u>Eylem Tekin</u> and Wallace Hopp.
- 2001 *Best Paper Award*, *IIE Transactions: Operations Engineering*. <u>E. Kim</u> and M.P. Van Oyen, Finite-capacity multi-class production scheduling with setup times, *IIE Transactions*, **32:9**, (2000) 807–818.

- 1997 *Elected to INFORMS Applied Probability Council*, served (1997 – 1999)
- 1997 *ALCOA Manufacturing Systems Faculty Fellow* (3 years)
- 1991 *Graduate Fellowship*, Department of Electrical Engineering and Computer Science
- 1991 Honor: *Workshop leader,* University of Michigan teaching assistant training • (Winter 1991) • (Fall 1991) • (Winter 1992)
- 1990 *Commendation for excellence in teaching*, Department of Electrical Engineering and Computer Science
- (1987–1990) *Regents Fellowship*, University of Michigan
- 1986 *Salutatorian* (Rank 2 of 967) • H. Kok Memorial Award (1985)
- 1982 Honors in High School: Valedictorian • Harvard Book Award • American Chemistry Society Award • *1st Prize,* Economics Club of Grand Rapids Award of 1982, • *and 3rd Prize* Economics Club of Grand Rapids Award 1981.

Teaching

Courses Introduced or Revised at U-M

- **IOE 545 Stoch. Networks and Operations:** *(Taught ~10 times through 2020, completely redesigned, formerly* Queueing Networks). This course develops the stochastic processes theory along with key application models that have been very useful in research and practice for a wide variety of systems with congestion. It treats both the performance analysis and the optimization of queueing networks models and general Markov chain-based models. It also teaches modeling skills for research and practice with emphasis on manufacturing and service operations (including healthcare), information networks, and the like. Topics covered include a brief review of discrete time Markov chains, continuous time Markov chains, embedding, the reversibility of discrete and continuous time Markov chains; fundamental performance analysis and methods for queues; Jackson networks, product form networks and quasi-reversibility; closed queueing networks and mean value analysis; queueing approximations for network/operations performance analysis (including production lines with breakdowns and setups); Markov Decision Processes (MDPs) will be introduced with emphasis on the optimization of continuous time Markov chain models of controlled queueing systems. Operations content includes the modeling and approximation of production/service lines/systems including healthcare operations and the modeling and analysis of flexible/reconfigurable production operations.

- **IOE 481, Practicum in Hospital Systems:** *(Taught ~25 times through 2022, significant ongoing redesign every semester, ~240 projects with conducted to date)*. This Major Design Experience option for IOE students performs service learning for the UM Hospital. My introduction of a design framework and documentation of design processes is helping students, maintaining ABET accreditation, the hospital is now embracing the design process as well. I form teams (selecting teams for their characteristics and match to the project), incorporate a mid-project status report focused on key engineering and project management challenges, and use lectures to teach selected methods and the process of project management practice in healthcare operations. The projects are selected in collaboration with the hospital, and all are approved by the COO. A technical communication co-instructor also facilitates professional development.

- **IOE 574 Simulation Design &Analysis:** *(Taught 5 times through 2020, completely redesigned).* A course in discrete-event simulation for graduate students. The course covers system modeling, simulation design (including mechanisms for efficiency), analysis of output, and programming in general-purpose languages (such as Visual Basic for Applications in Excel or python). Proper design and analysis of discrete-event simulation experiments is emphasized. Applications are drawn primarily from manufacturing, service systems, and healthcare. Includes fundamentals as well as the more advanced concepts that allow students to model and to analyze systems using custom simulations at a deeper level than courses based on off-the-shelf simulation packages. Topics include stochastic models for simulation, statistical methodology for designing simulations and output analysis, random variable and process generation, and efficiency improvement techniques.

- **IOE 440 Operations Analysis and Management:** *(New course taught 2 times)* I created IOE 440 to extend the undergrad/masters curriculum to include service operations engineering and supply chain management. Description: Principles and models for analyzing, engineering, and managing manufacturing

and service operations as well as supply chains. Emphasis on capacity management; queueing models of operational dynamics (including cycle time, work-in-process, inventory, throughput, and variability); operational flexibility; the math and physics of lean enterprises.

- **ENG 480 Global Synthesis Project:** I worked with multiple departments to gain approval through the CoE Curriculum Committee to approve this new course as a "Major Design Experience." It met the needs of EGL students to have their Tauber Institute summer internship-based design project experience course counted as their capstone Major Design Experience.

Courses taught at *Loyola University of Chicago Quinlan School of Business*
  Undergraduate (Semester system)
- ISOM 332, *Operations Management*, **Taught 11 times**: F 99, S00 (2 sections), F00 (2 sections), F01, S02 (2 sections), F03, S04, S05
- ISOM 337, *Op's Mgmt. for Competitive Adva*ntage, **Taught 3 times**: S02, S03
- ISOM 337, *Managing Business Process Improvement*, **Created & taught 2 times**: S04, S05
  MBA (Quarter system)
- ISOM 480 *Op's Mgmt*, **Taught 11 times**: F99, W99, S00, F00, W00, W01, F01, S02, S03 (2), W04.
- ISOM 485, *Strategic Bus. Process Improvement*, **Created & taught 2 times**: F03, F04.
  Executive MBA Half courses:
- OPMG 600E, *Designing, Managing, & Improving Op's*, **Created & taught 4 times**: S01, S02, S03, S04
- OPMG 602E, *Global Supply Chain Mgmt. & Logistics*, **Created & taught 3 times**: F02, F03, F04.

Courses taught at *Northwestern Univ. Indust. Eng. and Management Sciences* (*Quarter system*)
  Undergraduate (Semester system)
- IE 302, *Probability*, **Taught 5 times**: F93, W95, W97, W98, W99.
- IE 315, *Stochastic Models and Simulation*, **Taught 4 times**: S95, F95, F96, S99
  Graduate (Semester system)
- IE 460-1, *Stochastic Models, I*, Taught W99
- IE 460-2, *Stochastic Models, II*, **Taught 5 times**: S94, S95, S96, S97, S98
- IE 468, *Stochastic Control,* **Taught 3 times**: S94, S96, W98

Ph.D. Committees chaired/co-chaired *(with links)*
1. Dean, Arlen, Ph.D. pre-candidate, began Fall 2019
2. Zhalechian, Mohammed, Ph.D. July 16, 2022 Chair. Position: postdoctoral fellow at the Harvard Kennedy School. Student research spotlight: Mohammad Zhalechian https://youtu.be/w3ESfiPBnM0 Richard F. and Eleanor A. Towner Prize for Distinguished Academic Achievement; Winner of Rackham Outstanding Graduate Student Instructor Award, 2nd Place: INFORMS Decision Analysis Society (DAS) Best Student Paper Competition; Winner of IOE Richard C. Wilson Best Student Paper Award on Service Systems, 2021; Finalist, Seth Bonder Scholarship, INFORMS Health Applications Society, 2020;Finalist, CHOM Best Paper Competition (POMS), (2021 & 2022); Finalist, INFORMS MSOM Best Student Paper Competition, 2021
3. Jones, Isaac A., Ph.D. Aug, 2021. "Operations Research & Statistical Learning Methods to Monitor the Progression of Glaucoma and Chronic Diseases" Chair, Position: Data Scientist, Meta (Facebook) Inc.
4. Esmaeil Keyvanshokooh, Ph.D. Dec15, 2020. Co-chair with Cong Shi. Position: Assistant Professor Faculty, Texas A&M. "Personalized Data-Driven Learning and Optimization: Theory and Applications to Healthcare" began Fall 2015 as Post-doc at NYU; accepted Ass't Prof. Mays School of Bus. Texas A&M. (Finalist, INFORMS Decision Analysis Society (DAS) Best Student Paper Competition, 2020, Finalist, CHOM Best Paper Competition (POMS), won IOE Bonder Fellowship 2017, IOE Wilson Best Student Paper Award 2019, Rackham Pre-Doctoral Fellowship 2019.)
5. Amirhossein Meisami, Ph.D. Apr. 2018. "Integrated Learning and Optimization Frameworks with Applications in Operations Management" Chair. (Senior Machine Learning Engineer at Adobe Research)
6. Maya Bam, Ph.D. March 2017. "*Optimizing Resource Allocation in Surgery Delivery Systems*" Co-Chair with B.T. Denton of IOE (Currently General Motors Research, previously: Performance Improvement Intern, Michigan Medicine) INFORMS Analytics Section Student Analytical Scholar, 2016; INFORMS Interactive Poster Competition, First Place, Philadelphia, PA Nov. 2015; INFORMS Minority Issues Forum Poster Competition,

First Place, Philadelphia, PA Nov. 2015; Honorable Mention of Best App. Paper in the IISE Trans Operations Engineering and Analytics 2018. YouTube: https://www.youtube.com/watch?v=VsQOKTZRYeM

7. Pooyan Kazemian, Ph.D. Apr. 2016. "*Stochastic control and optimization methods for chronic disease monitoring and control, hospital staffing, and surgery scheduling*." Chair. (Position: Ass't Prof, Weatherhead Sch. Bus. Case Western University; formerly faculty of Internal Medicine at Harvard Medical School & Mass General Hospital (MGH) Medical Practice Evaluation Center) Won 2nd Place in INFORMS 2016 George B. Dantzig Dissertation Award, Winner of INFORMS Bonder Scholarship in Applied Operations Research in Health Services, Finalist 2014 INFORMS Annual Meeting Decision Analysis Society Practice Award, Finalist 2015 Murty Prize for the Best Research Paper on Optimization, 2015-2016 Rackham Graduate School Predoctoral Fellowship; Finalist 2015 IBM Service Science Best Student Paper Award, 1st Place Best Paper, POMS CHOM, 2015)

8. Jivan Deglise-Hawkinson, August 2015. "*Queueing and optimization based methodology for the integration of clinical care and clinical research via planning and scheduling*." Chair. (Current position: American Airlines research), Winner 2021 M&SOM Society Award for Responsible Research in Operations Management,   2nd place 2013 POMS College of Healthcare Operations Management of the Production and Operations Management Society

9. Fang Dong, Ph.D., May 2013. "*Dynamic Control of Flexible Queueing Networks with Application to Shipbuilding."* Co-chair with David Singer. (Current position: Data Scientist, Nielsen)

10. Jonathan Helm, June 2012, *Stochastic and Deterministic Methods for Patient Flow Optimization in Care Service Networks,* Chair. (Current position: Associate Professor, Kelley School of Business, Indiana University), First Prize 2012 Doing Good With Good OR, First Prize 2013 Lee Lusted Award for Quantitative Methods and Theoretical Developments, 1st Place Best Paper, POMS CHOM, 2011.

11. Soroush Saghafian, Apr. 2012, "*Optimal Dynamic Control of Queueing Networks: Emergency Departments, the W Service Network, and Supply Chains under Disruptions,"* Chair. (Current position: Associate Professor, Kennedy School of Public Policy, Harvard), 2021 MSOM Young Scholar Prize, 2019 INFORMS Mehrotra Research Excellence Prize for outstanding mid-career professional, 2011Pierskalla INFORMS Award, Honorable Mention (Finalist) for Best Student Paper Award 2013 POMS Supply Chain College, First prize 2012 INFORMS Manufacturing and Service Operations Management (MSOM) Best Student Paper Award.

12. Hoda Parvin, March 2012, ``Dynamic Flexible Queueing Network Models for the Design and Control of High Performance Operational Systems," Chair, (Current position: Research Science Manager – Amazon. Formerly CNA and Adjunct, Mathematics & Statistics at Georgetown Univ.) Finalist for best paper, POMS CHOM.

13. Minsuk (John) Suh, August 2010, "Retail Pricing of Substitutable Products Under Logit Demand," Co-chair with lead advisor, Goker Aydin. (Current Position: CTO Yeongdeungpo-gu, Seoul. Formerly, Ass't Professor, Graduate School of Technology and Innovation Management, Hanyang University, Seoul, Korea)

14. Luz Adriana Caudillo Fuentes, Jan. 2010, "Three essays on Resource Allocation: Load Balancing on Highly Variable Service Time Networks, Managing Default Risk via Subsidies and Supplier Diversification, and Optimal Hotel Room Assignment," Co-chair with the lead advisor, Volodymyr Babich. (Current position: Universidad Anáhuac and Universidad Latinoamericana, Mexico City)

15. Damon Williams, Aug. 2009, "Investigations into Flexible Operational Paradigms to Mitigate Variability," Chair. (Current positions include Adjunct Professor of Industrial and Systems Engineering, works with Center for the Enhancement of Teaching and Learning, Georgia Tech, Senior Pastor of the historic Providence Missionary Baptist Church in southwest Atlanta)

16. Eylem Tekin, Dec. 2002, "Performance Opportunity for Workforce Agility," Co-chair with W. Hopp. (Current Position: Director & Lecturer, Professional Master's in Industrial Engineering, Rice Univ; Formerly tenure track faculty at UNC, Texas A&M, and U. Houston).

17. Esma Senturk Gel, Nov. 30, 1999, "Stochastic Models of Workforce Agility in Production Systems," Co-chair with W. Hopp, (Current position: Professor, Department of Supply Chain and Analytics, College of Business, University of Nebraska Lincoln)

18. Eungab Kim, Oct. 1996, "Stochastic Scheduling for Manufacturing Systems," Chair. (Current position: Full Professor, Ewha University, Seoul, Korea, Former Dean of Business Admin.)

Funded Teaching Awards:
- Adexa, Inc. gift-in-kind to Loyola University Chicago School of Business; Faruk Guder, John Nicholas, Mark Van Oyen, and James Zydiak. Gift of Enterprise Global Planning System (eGPS) supply chain planning and performance management solutions valued at $1.31 Million in software, training and support services for the Operations Management group. 2004.

- Loyola University: "Transformation of Core Operations Management Courses;" a teaching enhancement grant with John Nicholas and James Zydiak; Mar. 1, 2002 - Feb. 28, 2004. $6,000.

Research

Proposal - Most recent submission (under review):
- *National Science Foundation*, PROPOSED: "Joint Adaptive Learning and Optimization with Application to Data-Driven Healthcare Admissions," *$596,717.* May 1, 2023–Apr 30, 2026, lead PI: M.P. Van Oyen; co-PI: Cong Shi, My share: *78%.* Supports 1 Ph.D. student year-round.

Proposal in Preparation:
- *National Institutes of Health – NEI R01,* To PROPOSE: *"Novel Reinforcement Learning-Optimization for Personalized Treatment Plans and Dosing Schedules with Application to AMD,"* est. to be ~ 3,000,000. *May 1, 2023–Apr 30, 2028,* Have been working in preliminary research and as co-author for over a year on the proposal with Joshua Stein MD of Ophthalmology (Kellogg Eye Center) and Mariel Lavieri of IOE. Recently gained collaborative effort of Jason Miller, MD, an AMD specialist. Budget allocations to depend on additional costs for data, image analysis, etc.

Grants and Contracts Awarded
- *Allergan/AbbVie, "Using Kalman Filtering to Study Patients with Glaucoma in the Medisoft Database" $45,000.* 11/23/2021 to 11/23/2022. PI: Joshua Stein, Participating Investigator Mark Van Oyen. Supported 25% GSI

- *National Institutes of Health – NEI R01, "Personalized Forecasting of Disease Trajectory for Patients with Open Angle Glaucoma,"* R01EY026641 *$2,883,323.* 9/1/2016 to 8/31/2022. Co-PIs: Joshua Stein of Ophthalmology and Mariel Lavieri of Industrial and Operations Engineering. *I was a co-author of proposal with the other two authors: Stein and Lavieri.* Co-Investigators: Mark Van Oyen of Industrial and Operations Engineering, Christopher Andrews of Ophthalmology, Mae Gordon (Professor in the Department of Ophthalmology and Visual Sciences, Washington University of St. Louis), Chris Johnson (Professor in the Department of Ophthalmology and Visual Sciences, University of Iowa), Joel Schuman (Chair of the Department of Ophthalmology at New York University), Gadi Wollstein (Professor of Ophthalmology and Bioengineering, University of Pittsburgh). My share (direct+indirects): $539,109.

- *MTRAC for Life Sciences Kickstart Award* UM IR #5140 "Monitoring Patients with Glaucoma Using a Novel Personalized Forecasting Tool" $26,000 4/25/2016 to 4/25/2017 co-Investigator (J.D. Stein PI), My Share 33%.

- *National Science Foundation*, "EAGER: Advanced Capacity Allocation Methodology: Time-sensitive Appointments in Congested Service Systems," *$242,072.* Sep. 1, 2015–Aug. 31, 2018, PI M.P. Van Oyen. My share: *100%.* Supports 1 Ph.D. student year-round and 1 undergraduate in summer.

- *Glaucoma Research Foundation (GRF) Shaffer Grant*, "A Dynamic, Personalized Glaucoma Monitoring Decision Support Tool," *$40,000.* Feb 15, 2014– Feb 14, 2015, PI: Joshua D. Stein (co-I's M.P. Van Oyen and M.S. Lavieri) Entire grant devoted to supporting Pooyan Kazemian, Ph.D. student for 2.5 Terms (10 months) March - December 2014.

- *National Science Foundation*, "Stochastic Modeling and Optimization of Longitudinal Health Care Coordination," *$420,000.* Sep. 1, 2012–Aug. 31, 2016, PI M.P. Van Oyen. My share: *$367,350.* Supports 1 Ph.D. student year-round and 1 undergraduate in summer.

- *National Institutes of Health,* Michigan Institute for Clinical and Health Research (MICHR) Renewal, $48,788,667. June 27, 2012 – May 31, 2017. PI: Thomas P. Shanley. My share: $6,750. For "MICHR Van Oyen Evaluations Faculty" Project/Grant # F030935 - Shortcode #070567. Supports 0 students.

- *National Science Foundation,* "Forecasting and Control Methodology for Monitoring of Chronic Diseases," $280,000. May 1, 2012 – Apr. 30, 2014. PI: M. Lavieri. Co-PIs: Van Oyen and J.D. Stein (Kellogg Eye Inst.). My share: $119,412. Supports 1 Ph.D. student and 1 undergraduate in summer in total.

- *National Science Foundation*, "Hospital Systems Occupancy Prediction and Control to Increase Access, Smooth Provider Workload, and Reduce Cost," $239,708. Jun. 1, 2011 – May 31, 2014 PI: M.P. Van Oyen. Supports 1 Ph.D. student and 1 undergraduate in summer.

- *Veteran's Administration –CASE* interagency personnel agreement (IPA), "Development of Capacity Models and Analysis Tools for the National Fee-based Services Redesign Program" Oct. 1, 2009 – May 31, 2010. PI: M. Van Oyen. Interagency Personnel Agreement with VA for 16% of M. Van Oyen and 60% of post-doc S. AhmadBeygi.

- *Dept. of Veterans Affairs (VA), "*VA-CASE: VISN11 VA Center for Applied Systems Engineering" A Multi-organization Veterans Engineering Resource Center (VERC) consisting of five VA hospitals and U-M Ann Arbor, Dearborn, and Flint; Purdue; Wayne State). June 1, 2009-Aug 31, 2011; $1,500,000 (with no specific budget portion assigned to any individuals). Role: served as the CoE lead for over a year of proposal preparation and development, including preliminary work performed with Ph.D. student J. Helm and post-doc S. AhmadBeygi. No specific support of students; however, establishment of VERC has yielded research and support for various CoE faculty, the hiring of multiple IOE graduates, and an on-going stream of student projects (through 2021 at least).

- *Office of Naval Research,* "Development and Testing of a Hybrid Agent Approach for Set-Based Conceptual Ship Design through the Use of a Type-2 Fuzzy Logic Agent to Facilitate Communications and Negotiation," $317,483. June 1, 2007- May 31, 2010; PI: D.J. Singer, My share $55,000. Supports 0 students, because Singer's funding supported 1 Ph.D. student.

- *National Science Foundation*, "Collaborative Research: A Design Methodology for Operational Flexibility," $300,000. Apr. 1, 2005 - Mar. 31, 2010 co-PI's: M.P. Van Oyen and S.M.R. Iravani (Northwestern Univ.), My Share $150,000. Supported 2 Ph.D. students. Included an additional REU Award

- *National Science Foundation*, Student Support Award for Operational Flexibility. $44,292. Sept. 1, 2007 - Aug. 31, 2009. PI: M.P. Van Oyen. Supported 1 Ph.D. student.

- *Loyola University Chicago competitive Summer Research Grant, "Operational Flexibility for Design;'' $8000*. June and July of 2005. PI: M.P. Van Oyen. (Surrendered upon acceptance of NSF grant per Loyola Policy).

- *National Science Foundation*, "Collaborative Research: Robust Strategies for Cross-training Call Center Agents - Taxonomy, Models, and Analysis;" $374,878. Aug. 15, 2001-Aug. 14, 2004; co-PI's: M.P. Van Oyen and S.M.R. Iravani (of Northwestern Univ.), My Share $185,445. Supported 2 graduate students.

- *Loyola University Chicago competitive Summer Research Grant, "Quantifying Operational Flexibility,"* $8000. June and July of 2004. PI: M.P. Van Oyen. Supported faculty research effort.

- *Loyola University Chicago competitive Summer Research Grant, "Improving Call Center Performance through Advanced Operations Management,"* $8000. May 15, 2001 - May 14, 2002. PI: M.P. Van Oyen. (Surrendered upon acceptance of NSF grant no-cost extension per Loyola Policy.)

- *National Science Foundation*, "Workforce Agility: Classification and Modeling," $375,000. Jun. 1, 1998 - May 31, 2002, PI: W.J. Hopp. Co-PI: M.P. Van Oyen, My Share $185,445. Supported 2 graduate students.

- *ALCOA Science Foundation*, "Control of Queueing Systems, Markov Decision Processes, and Stochastic Scheduling," $10,000. Aug. 1, 1997 – Aug. 31, 1999. PI: M.P. Van Oyen. My Share $10,000. Supported 2 graduate students.

- *National Science Foundation,* "Stochastic Scheduling Methods for Queueing Systems," $165,000. Sept. 1, 1995 – Aug. 31, 1999; PI: M.P. Van Oyen. My Share $165,000. Supported 1 graduate student.

- *General Motors Foundation, "*Human Assistive Devices for Vehicle Assembly," $500,000. Jul. 1, 1995 - Jun. 30, 2000. PI: Abraham Haddad Co-PI: J. Edward Colgate, Lina L.E. Massone, Lucy Y. Pao, Michael A. Peshkin, and M.P. Van Oyen. My Share unspecified. Primary emphasis of grant was to provide scholarships

and support underrepresented students as well as to bring together a Council on Dynamic Systems and Control within NU. Supported multiple students.

- *Northwestern University*, "Numerical Optimization of Fundamental Queueing Systems with Overhead," $4150. Jun. 1, 1994 - May 31, 1995. PI: M.P. Van Oyen. My Share $4150.

- *Electric Power Research Institute*, "RP 3599 UCA Integrated Protection and Control WO3599-05;" $196,996. Jan. 1994 - Dec. 1994. PI: W. Premerlani. Co-PIs: R.J. Mitchell and M.P. Van Oyen. Note: I was a co-PI on the grant submission, but then left GE and the award was modified. Supported 0 students.

Publications and scholarly presentations: <u>Underlining denotes student who I advised or mentored</u>

Areas & Legend of Mnemonic Labels (Search to find related papers)

[HOps] Healthcare Operations Management and Engineering

[Log] Logistics & Humanitarian Operations

[MDM] Medical Decision Making (Personalized)

[Flex] Flexible Operations (-Labor, -Robots, -Supply Chain)

[Flex-SCM] Flexible Supply Chains and Disruption Mitigation (Resilience)

[Flex-Ship] Flexible Ship Production (Operations)

[ML] Machine Learning

[ML+Opt] Machine Learning with Joint Decision Making/Optimization

[Sim] Simulation

[MDP] Markov Decision Processes

[OPT-Prod] Optimal and Heuristic Policies for Production (Service & Mfg.), including Polling Systems

[SC] Stochastic Control

[OO] Online Optimization

[Opt] Optimization (usually integer or mixed integer)

[RO] Robust Optimization

[DRO] Distributionally Robust Optimization

[SP] Stochastic Programming

Full journal articles in refereed publications

1. **[ML] [Opt] [RO] [DRO] [Hops]** <u>Dean, A., A. Meisami, H. Lam,</u> M.P. Van Oyen, C. Stromblad, N. Kastango, Quantile Regression Forests for Individualized Surgery Scheduling, appeared online (as of 8-17-22), Healthcare Management Science (HCMS) 2022. https://doi.org/10.1007/s10729-022-09609-0

2. **[OO] [Hops] [OPT-Prod]** <u>Mohammad Zhalechian, Esmaeil Keyvanshokooh,</u> Cong Shi, Mark P. Van Oyen, Online Resource Allocation with Personalized Learning, Accepted at *Operations Research. 2022 doi.org/10.1287/opre.2022.2294*

3. **[Hops] [SP] [DRO]** <u>Keyvanshokooh, E., P. Kazemian,</u> M. Fattahy, M.P. Van Oyen, Coordinated and Priority- based Surgical Care: An Integrated Distributionally Robust Stochastic Optimization Approach, *Production and Operations Management (POM)* **31:4**, 2022, 1-11. https://doi.org/10.1111/poms.13628

4. **[MDM] [ML]** <u>M. Zhalechian,</u> M.P. Van Oyen, M.S. Lavieri, C.G. De Moraes, C.A. Girkin, M.A. Fazio, R.N. Weinreb, C. Bowd, J.M. Liebman, L.M. Zangwill. C. A. Andrews, J.D. Stein, Augmenting Kalman Filter Machine Learning Models with Data from Optical Coherence Tomography to Predict Future Visual Field Loss. *Ophthalmology Science* **2:1**, 2022, 1510-1535. DOI:https://doi.org/10.1016/j.xops.2021.100097

5. **[MDM] [ML]** Jones. I.A., M.P. Van Oyen, M.S. Lavieri, C. Andrews, and J.D. Stein, Predicting rapid progression phases in glaucoma using a soft voting ensemble classifier exploiting Kalman filtering, Healthcare Management Science (HCMS), 2021. PMID: 33983565 doi:10.1007/s10729-021-09564-2

6. **[OPT-Prod] [MDP]** Kim, E., and M.P. Van Oyen, "Joint admission, production sequencing, and production rate control for a two-class make-to-order manufacturing system" Journal of Manufacturing Systems, **59,** 2021, 413-425. https://doi.org/10.1016/j.jmsy.2021.03.010

7. **[MDM] [ML]** De Roos, L, Nitta, K., Lavieri, M. S., Van Oyen, M. P., Kazemian, P., Andrews, C. A., . . . Stein, J. D. (2020). Comparing Perimetric Loss at Different Target Intraocular Pressures for Patients with High-Tension and Normal-Tension Glaucoma. Ophthalmology. Glaucoma. doi:10.1016/j.ogla.2020.09.009

8. **[Hops] [Opt]** Bam, M., Z. Zhang, B.T. Denton, M.G. Duck, and M.P. Van Oyen, "Planning Models for Skills-sensitive Surgical Nurse Staffing: A Case Study at a Large Academic Medical Center" IISE Trans. on Healthcare Systems Engr. 2020, DOI 10.1080/24725579.2020.1805050

9. **[MDM] [ML]** Garcia, G.-G. P., C. Andrews, X. Liu, Van Oyen, M.P. Kass, M.A., Gordon, M.O., Stein, J.D., Accuracy of Kalman Filtering in Forecasting Visual Field and Intraocular Pressure Trajectory in Patients With Ocular Hypertension *JAMA Ophthalmology* **137:12**, 2019 1416-1423. https://doi.org/10.1001/jamaophthalmol.2019.4190

10. **[Hops] [Opt] [Sim]** Deglise-Hawkinson, J, David L. Kaufman, B.J. Roessler, and M.P. Van Oyen, Access Planning and Resource Coordination for Clinical Research Operations, *IISE Transactions,* **52:8**, 2020. https://doi.org/10.1080/24725854.2019.1675202 doi.org/10.1080/24725854.2019.1675202 (NIHMS1543900 – PMID)

11. **[OO] [Hops] [OPT-Prod]** Keyvanshokooh, E., C. Shi, and M.P. Van Oyen, Online advance scheduling with overtime: A primal-dual approach, *Manufacturing and Service Operations Management (MSOM)*, 2019. https://doi.org/10.1287/msom.2019.0832 (Winner of Richard C. Wilson Best Student Paper Award on Service Systems, 2019.)

12. **[MDM] [SC] [ML]** Kazemian, P., M.S. Lavieri, J.E. Helm, M.P. Van Oyen, and J.D. Stein "Dynamic Personalized Monitoring and Treatment Control of Glaucoma," *Production and Operations Management (POM)*, **28**:5, 1082-1107, 2018 https://doi.org/10.1111/poms.12975
    a. Won 2015 IOE Katta Murty Prize for the Best Research Paper on Optimization,
    b. The potential for our research methods for Glaucoma decision support was showcased as the first of four most promising technologies presented at this year's meeting of the American Academy of Ophthalmology 2015 meeting in Las Vegas, a meeting attended by over 20,000 ophthalmologists. This "Top Story" linked to L. Charters, "How EHR systems will play role in future of clinical decision-making," *Ophthalmology Times, 40:18, 32-33.* (Nov. 1, 2015).
       http://ophthalmologytimes.modernmedicine.com/ophthalmologytimes/news/how-emr-systems-play-role-future-clinical-decision-making

13. **[MDM] [ML]** Garcia, G.-G. P., K. Nitta, M. S. Lavieri, C. Andrews, X. Liu, E. Lobaza, M. P. Van Oyen, K. Sugiyama, and J. D. Stein. Using Kalman Filtering to Forecast Disease Progression for Patients with Normal Tension Glaucoma. *American Journal of Ophthalmology,* **199**, 111-119. 2019. PMID 30336130 doi: 10.1016/j.ajo.2018.10.012

14. **[Hops] [Opt]** Deglise-Hawkinson, J, J.E. Helm, T. Huschka, D. Kaufman, and M.P. Van Oyen, A Capacity Allocation Planning Model for Integrated Care and Access Management. *Production and Operations Management (POM)*, **27:12**, 2270-2290, 2018. https://doi.org/10.1111/poms.12941

15. **[Hops] [Opt]** Meisami, A., J. Deglise-Hawkinson, M. Cowen, and M.P. Van Oyen, "Optimal patient care resource allocation based on patient mortality risk and acuity," *Health Care Management Science (HCMS),* **22:2**, 318-335, 2018. https//doi.org/10.1007/s10729-018-9439-5

16. **[Log] [SP] [MDP]** Parvin, H., S. Beygi, J.E. Helm, P.S. Larson, and M.P. Van Oyen, Distribution of Medication Considering Information, Transshipment, and Clustering: Malaria in

Malawi, *Production & Operations Management* (*POM), 27:4, 597-798,* 2018, https://doi.org/10.1111/poms.12826

17. **[SC] [ML]** <u>Kazemian, P.</u>, M.S. Lavieri, <u>J.E. Helm</u>, M.P. Van Oyen, C. Andrews, and J.D. Stein, Personalized Prediction of Glaucoma Progression Under Different Target Intraocular Pressure Levels Using Filtered Forecasting Methods, *Ophthalmology,* **125:4,** 569-577, 2018 doi: 10.1016/j.ophtha.2017.10.033 PMID: 29203067

18. **[Hops] [Opt]** <u>Bam, M.</u>, B.T. Denton, and M.P. Van Oyen, "Surgery Scheduling with Recovery Resources," *IISE Transactions*, **49:10** (2017) http://dx.doi.org/10.1080/24725854.2017.1325027

19. **[Hops] [Opt]** <u>Kazemian, P.</u>, M.Y. Sir, M.P. Van Oyen, J. Lovely, D. Larson, K. Pasupathy, "Coordinating Clinic and Surgery Appointments to Meet Access Service Levels for Elective Surgery," *Jour. of Biomedical Informatics* **66**, 105-115, 2017. dx.doi.org/10.1016/j.jbi.2016.11.007 PMID: 27993748

20. **[Flex SCM]** <u>Saghafian, S.</u>, and M.P. Van Oyen "Compensating for Dynamic Supply Disruptions: Backup Flexibility Design," *Operations Research (OR), * **64:2**, 390-405, 2016. http://dx.doi.org/10.1287/opre.2016.1478 (Won 2012 IOE Richard Wilson Prize, *Finalist in 2013 POMS Supply Chain College Best Student Paper Competition*).

21. **[Flex-Ship] [MDP]** <u>F. Dong, J. Deglise-Hawkinson,</u> M. P. Van Oyen, and D. J. Singer, Dynamic Control of a Closed Two-stage Queueing Network for Outfitting Process in Shipbuilding *Computers & Operations Research* **72**, 1-11, 2016. dx.doi.org/10.1016/j.cor.2015.05. 002

22. **[MDM] [ML] [Opt]** <u>Helm, J.E.</u>, M. Lavieri, D.C. Musch, J.D. Stein and M.P. Van Oyen, Dynamic forecasting and control algorithms of glaucoma progression for clinician decision support, *Operations Research*. **63:5**, 979-999, 2015. dx.doi.org/10.1287/opre.2015.1405

23. **[HOps] [MDP] [Sim]** <u>Helm, J.E.</u>, and M.P. Van Oyen, Design and Optimization Methods for Elective Hospital Admissions, *Operations Research*, **62:6**, (2015) 1265-1282. doi.org/10.1287/opre.2014.1317 (Won 1st prize POMS CHOM Best Paper; 2011 IOE Katta Murty Prize for the Best Research Paper on Optimization) http://dx.doi.org/10.1287/opre.2014.1317

24. **[MDM] [ML] [Opt]** <u>Schell, J.G.</u>, M.S. Lavieri, <u>J.E. Helm</u>, X. Liu, D.C. Musch, M.P. Van Oyen, and J.D. Stein, Using Filtered Forecasting Techniques to Determine Personalized Monitoring Schedules for Patients with Open-Angle Glaucoma, *Ophthalmology*,**121:8**, (2014) 1539-46. PMID: 24704136 DOI: 10.1016/j.ophtha.2014.02.021

25. **[HOps] [MDP] [Sim]** <u>Saghafian, S.</u>, W. Hopp, M.P. Van Oyen, J.S. Desmond, and S. Kronick, Complexity-Augmented Triage: A Tool for Improving Patient Safety and Operational Efficiency, *Manufacturing and Service Operations Management (MSOM)*, **16:3**, (2014) 329-45. DOI 10.1287/msom.2014.0487 (best paper in MSOM journal among all published in the prior three years (2013-2015); won First prize 2012 INFORMS MSOM student paper competition, won Univ. of Michigan College of Engineering 2011 Outstanding Ph.D. Research Award to advisee S. Saghafian, unanimously selected by the editors of the *MSOM* journal chosen as one of five representing the best work in *MSOM*, distributed to Deans and Department Heads to promote the journal).

26. **[Flex-Ship]** <u>Dong, F.</u>, M.P. Van Oyen, and D.J. Singer, Dynamic Control of a Flexible `N' Production Shop with Application to Shipbuilding, *International Journal of Production Research*. **52:4**, (2014) 967-984. DOI:10.1080/00207543.2013.827803

27. **[HOps] [Opt]** <u>Kazemian, P.</u>, Y. Dong, T.R. Rohleder, <u>J.E. Helm</u>, and M.P. Van Oyen, An IP-based Handoff-sensitive Shift Design Approach for Scheduling Critical Care Trainees, *Health Care Management Science (HCMS)*, **17:1,** (2014) 1-14. DOI: 10.1007/s10729-013-9237-z PMID: 23624640

28. **[MDP]** <u>Kim, E.</u>, S. Saghafian, and M.P. Van Oyen, Joint Control of Production and Disposal Activities in a Hybrid Manufacturing-Remanufacturing System, *European Journal of Operational Research (EJOR),* **231**. (2013) 337-348. DOI 10.1016/j.ejor.2013.05.052

29. **[Flex-Ship]** F. Dong, J. Deglise-Hawkinson, M. P. Van Oyen, and D. J. Singer, "Analytical Approach to a Two-Stage Queueing Network for the Planning of Outfitting Processes in Shipbuilding," *Journal of Ship Production and Design* **29:3**, (2013) 136-41. https://doi.org/10.1016/j.cor.2015.05.002

30. **[HOps] [MDP] [Sim]** Saghafian, S., W. Hopp, M.P. Van Oyen, J.S. Desmond (M.D.), and S.L. Kronick (M.D.), Patient Streaming as a Mechanism for Improving Responsiveness in Emergency Departments, *Operations Research* **60:5**, (2012) 1080-97. https://doi.org/10.1287/opre.1120.1096 (Won INFORMS Pierskalla Award, Best Paper)

31. **[Flex SCM] [MDP]** Iravani, S.M.R., B. Kolfal, and M.P. Van Oyen, Process Flexibility and Inventory Flexibility via Product Substitution, *Flexible Services and Manufacturing* (formerly the *Int'l. Journal of Flexible Manufacturing Systems*), **26: 3**, (2014), 320-343, DOI 10.1007/s10696-01209142-7

32. **[Flex]** Parvin, H., M.P. Van Oyen, D. Pandelis, D. Williams, and J. Lee, Fixed Task Zone Chaining: Worker Coordination and Zone Design for Inexpensive Cross-Training in Serial CONWIP Lines, *IIE Transactions*, **44:10,** (2012) 894-914. DOI 10.1080/0740817X.2012.668264

33. **[Flex-SCM] [SP]** Saghafian, S. and M.P. Van Oyen, The Value of Flexible Backup Suppliers and Disruption Risk Information: Newsvendor Analyses with Recourse, *IIE Transactions*, **44:10,** (2012) 834-867. https://doi.org/10.1080/0740817X.2012.654846

34. **[Flex]** Pandelis, D., and M.P. Van Oyen, Sample path optimal policies for serial lines with flexible workers, *Journal of Applied Probability (JAP),* **49:2**, (2012) 582-589. DOI: https://doi.org/10.1239/jap/1339878806

35. **[Flex]** Saghafian, S., M.P. Van Oyen, and B. Kolfal, The `W' Network and the Dynamic Control of Unreliable Flexible Servers, *IIE Transactions*, **43**, (2011) 893-907. https://doi.org/10.1080/0740817X.2011.575678 Winner of the 2010 IOE Department Katta Murty Prize for best paper on Optimization.

36. **[Flex] [Flex-SCM]** Iravani, S.M.R., B. Kolfal, and M.P. Van Oyen, Capability Flexibility: A decision support methodology for production and service systems with flexible resources. *IIE Transactions* **43:5**, (2011) 363-382. https://doi.org/10.1080/0740817X.2010.541177

37. **[Hops] [MDP] [Sim]** Helm, J., S. AhmadBeygi, and M.P. Van Oyen, Design and Analysis of Hospital Admission Control for Operational Effectiveness, *Production and Operations Management (POMS)*, **20:3**, (2011) 359-374. https://doi.org/10.1111/j.1937-5956.2011.01231.x

38. **[Flex-Ship]** Dong, F., H. Parvin, M.P. Van Oyen, and D.J. Singer, Innovative Ship Block Assembly Production Control Utilizing a Flexible Curved Block Job Shop, *Journal of Ship Production*, **25:4**, (2009) 1-8. DOI: 10.5957/jsp.2009.25.4.206

39. **[Flex]** Tekin, E., W.J. Hopp, and M.P. Van Oyen, Pooling strategies for service center agent cross-training, *IIE Transactions*, **41:6**, (2009) 546-561. https://doi.org/10.1080/07408170802512586

40. **[Flex]** Gel, E.G.S., W. J. Hopp, and M.P. Van Oyen, Hierarchical cross-training in work-in-process-constrained systems, *IIE Transactions*, **39:2**, (2007) 125-143. DOI:10.1080/07408170600729184

41. **[Flex]** Iravani, S.M.R., B. Kolfal, and M.P. Van Oyen, Call center labor cross-training: It's a small world after all, *Management Science*, Special Issue on Complex Systems **53:7**, (2007) 1102-1112. DOI: 10.1287/mnsc.1060.0621

42. **[Flex]** Sennott, L., M.P. Van Oyen, and S.M.R. Iravani, Optimal dynamic assignment of a flexible worker on an open production line with specialists, *European Journal of Operational Research (EJOR)*, **170:2**, (2006) 541-566. https://doi.org/10.1016/j.ejor.2004.06.030

43. **[Flex] [Flex-SCM]** Iravani, S.M.R., M.P. Van Oyen, and K.T. Sims, Structural flexibility: A new perspective on the design of manufacturing and service operations, *Management Science*, **51:2**, (2005)

151-166. https://doi.org/10.1287/mnsc.1040.0333

44. **[Flex]** Hopp, W.J., E. Tekin, and M.P. Van Oyen, Benefits of skill chaining in serial production lines with cross-trained workers, *Management Science*, **50:1**, (2004) 83-98.

    https://doi.org/10.1287/mnsc.1030.0166

45. **[Flex] [Sim]** Hopp, W.J. and M.P. Van Oyen, Agile workforce evaluation: A framework for cross-training and coordination, *IIE Transactions*, **36:10**, (2004) 919-940. https://doi.org/10.1080/07408170490487759

46. **[Flex] [MDP]** Gel, E.G.S., W. J. Hopp, and M.P. Van Oyen, Factors affecting opportunity of worksharing as a dynamic line balancing mechanism, *IIE Transactions*, **34:10**, (2002) 847-863. https://doi.org/10.1080/07408170208928917

47. **[Flex]** Van Oyen, M.P., E.G.S. Gel, and W.J. Hopp, Performance opportunity for workforce agility in collaborative and non-collaborative work systems, *IIE Transactions*, **33:9**, (2001) 761-777. https://doi.org/10.1080/07408170108936871

48. **[OPT-Prod] [MDP]** Kim, E. and M.P. Van Oyen, Finite-capacity multi-class production scheduling with setup times, *IIE Transactions*, **32:9**, (2000) 807-818. https://doi.org/10.1080/07408170008967440

49. **[OPT-Prod]** Van Oyen, M.P. and J. Pichitlamken, Properties of optimal weighted flowtime policies with a makespan constraint and set-up times, *Manufacturing and Service Operations Management (M&SOM),* **2:1**, (2000) 84-99. DOI 10.1287/msom.2.1.84.23264

50. **[MDP]** Kim, E., M.P. Van Oyen, and M. Rieders, General dynamic programming algorithms applied to polling systems, *Communications in Statistics: Stochastic Models,* **14:5**, (1998) 1197-1221. https://doi.org/10.1080/15326349808807520

51. **[OPT-Prod] [MDP]** Kim, E. and M.P. Van Oyen, Dynamic scheduling to minimize lost sales subject to set-up costs, *Queueing Systems: QUESTA*, **29**, (1998) 193-229. https://doi.org/10.1023/A:1019136231100

52. **[OPT-Prod] [MDP]** Kim, E. and M.P. Van Oyen, Beyond the cμ rule: Dynamic scheduling of a two-class loss queue, *Mathematical Methods of Operations Research (MMOR)* (formerly Zeitschrift fur Operations Research), **48:1**, (1998) 17-36. https://doi.org/10.1007/PL00003992

53. **[OPT-Prod]** Van Oyen, M.P., I. Duenyas, and C.-Y. Tsai, Stochastic sequencing with job families, set-up times, and due dates, *Int'l. Journal of Systems Science,* **30:2** (1998) 175-181. https://doi.org/10.1080/002077299292524

54. **[OPT-Prod]** Van Oyen, M.P., Monotonicity of optimal performance measures for polling systems, *Probability in the Engineering and Informational Sciences (PEIS),* **11:2**, (1997) 219-228. https://doi.org/10.1017/S0269964800004770

55. **[OPT-Prod] [MDP]** Van Oyen, M.P. and D. Teneketzis, Optimal batch service of a polling system under partial information, *ZOR-Mathematical Methods of Operations Research* (formerly Zeitschrift fur Operations Research), **44:3**, (1996) 401-419. https://doi.org/10.1007/BF01193939

56. **[OPT-Prod]** Duenyas, I. and M.P. Van Oyen, Heuristic scheduling of parallel heterogeneous queues with set-ups, *Management Science*, **42:6**, (1996) 814-829. https://doi.org/10.1287/mnsc.42.6.814

57. **[OPT-Prod]** Duenyas, I. and M.P. Van Oyen, Stochastic scheduling of parallel queues with set-up costs, *Queueing Systems (QUESTA),* **19**, (1995) 421-444. https://doi.org/10.1007/BF01151932

58. **[OPT-Prod]** Van Oyen, M.P. and D. Teneketzis, Optimal stochastic scheduling of forest networks with switching penalties, *Advances in Applied Probability*, **26**, (1994) 474-497. doi:10.2307/1427447

59. **[OPT-Prod]** Van Oyen, M.P., D.G. Pandelis, and D. Teneketzis, Optimality of index policies for stochastic scheduling with switching penalties, *Journal of Applied Probability*, **29**, (1992) 957-966. doi:10.2307/3214727

60. **[OPT-Prod]** Van Oyen, M.P. and D. Teneketzis, Optimal scheduling of a finite capacity shuttle under delayed information, *Probability in the Engineering and Informational Sciences (PEIS)*, **6,** (1992) 29-61. https://doi.org/10.1017/S026996480000231X

Shorter Communications, Letters, Notes, or Briefs in Refereed Publications

61. **[HOps]** Saghafian, S., W.J. Hopp, and M.P. Van Oyen, Complexity-Based triage: A Tool for Improving patient safety and operational efficiency: An extended abstract, *Manufacturing and Service Operations Management (M&SOM),* **15:1**, (2013) 160.

62. **[Flex]** Hopp, W.J., S.M.R. Iravani, and M.P. Van Oyen, Introduction to the Special Issue on Workforce Agility, *IIE Transactions*, **36:10**, (2004) 915-917.

63. **[Flex]** Tekin, E., W.J. Hopp, and M.P. Van Oyen, Benefits of skill chaining in production lines with cross-trained workers: An extended abstract, *Manufacturing and Service Operations Management (M&SOM),* **4:1**, (2002) 17-20.

Submitted Journal Papers

64. **[HOps]** **[ML+Opt]** Dean, A., M. Zhalechian, M.P. Van Oyen Dynamic Care Unit Placements under Unknown Demand with Learning, submitted 2022

65. **[HOps]** **[RO]**Keyvanshokooh, E., M. Fattahi, MP. Van Oyen, K.A. Freedberg, P. Kazemian (2020), Data-driven adaptive robust optimization for resource sharing during a pandemic: Application to COVID-19, Under Revision. Available at SSRN: https://ssrn.com/abstract=3703181 (collaboration with Massachusetts General Hospital and Harvard Medical School).

66. **[HOps]** **[ML+Opt]** Keyvanshokooh, E., M. Zhalechian, C. Shi, M.P. Van Oyen, and P. Kazemian, Contextual learning with online convex optimization: Theory and application to chronic diseases. Minor Revision at *Management Science* 2022. Available at SSRN: https://ssrn.com/abstract=3501316 (collaboration with Massachusetts General Hospital & Harvard.) Finalist (winner pending) Best Student Paper Award, 2022, POMS CHOM; Finalist Best Student Paper Award, 2021 INFORMS Health Applications Society (HAS); Finalist, INFORMS Decision Analysis Society (DAS) Best Student Paper, 2020. Winner of Katta G. Murty Best Student Paper Award on Optimization, 2020.

67. **[HOps]** **[OO]** Zhalechian, M., E. Keyvanshokooh, C. Shi, MP. Van Oyen (2020), Personalized Hospital Admission Control: A Contextual Learning Approach, 3rd round review at *Operations Research*

68. **[HOps]** **[Opt]** Liu, Y., P. Shi, J.E. Helm, M.P. Van Oyen, L. Ying, T. Huschka, Coordinated Care: Capacity Allocation to Improve Itinerary Completion in Queueing Networks, under review.

Selected Working Papers/Technical Reports

- **[MDM]** **[ML+Opt]** Jones, I.A., N. Bommakanti, E. Keyvanshokooh, M.P. Van Oyen, M.S. Lavieri, C. Andrews, C. Johnson, M. O. Gordon, M.A. Kass, JD Stein, Predictive modeling of conversion to POAG in the OHTS study. Working Paper.

- **[HOps]** **[ML]** Meisami, A., C. Stromblad, N. Kastango, M.P. Van Oyen, R.S. Wilson, and N.R. Abu-Rustum, Towards individualized care delivery planning: Big data analytics and surgical case duration. Working paper,

- **[MDM]** **[ML]** E. Keyvanshokooh, D.Felipe Otero-Leon, MP. Van Oyen, M. Lavieri, C. Andrew, J. Stein (2020), Prediction of progression to open-angle glaucoma by machine learning for patients in the ocular hypertension treatment study, Working paper.
- **[HOps]** **[DRO]** Zhalechian, M., E. Keyvanshokooh, and M.P. Van Oyen, A distributionally robust capacity planning model for optimizing access delay in surgical services under limited information. Working paper
- **[MDM]** **[ML]**N. Bommakanti, I.A. Jones, M.P Van Oyen, M.S. Lavieri, Chris Andrews, C. Johnson, M.O. Gordon, M.A. Kass, J.D. Stein, A comparison of VF criteria for assessing conversion to POAG in the OHTS study. Working Paper. (collaboration with Kellogg Eye Center).
- Sharma, S., V. Babich, D. Teneketzis, and M.P. Van Oyen, A decentralized mechanism implementing in Nash equilibria the optimal centralized solution of a supply-chain problem, Working paper.
- **[MDP]**Saghafian, S., M.P. Van Oyen, and E. Kim, Optimal control of production and refurbishment activities: a Markov decision process model, Working Paper
- **[MDP]**Parvin, H., H-S. Ahn, and M.P. Van Oyen, Control policies for the n-network with impatient customers and finite buffers, Technical Report

Refereed Conference or Symposium Proceedings Papers

68. A. Meisami, H. Lam, and M. Van Oyen, Uncertainty quantification on simulation analysis driven by random forests, Proc. of the 2017 Winter Simulation Conference, W. K. V. Chan, A. D'Ambrogio, G. Zacharewicz, N. Mustafee, G. Wainer, and E. Page, eds. Las Vegas, NV (12/3/2017)
69. G.J. Schell, M.S. Lavieri, J.E. Helm, M.P. Van Oyen, D.C. Musch, and J.D. Stein Comparison of Control Algorithms for Scheduling Testing Visits, Society for Medical Decision Making (Oct. 2013) 1 page.
70. J.D. Stein, J.E. Helm, M.S. Lavieri, D. Musch, G. Schell, M. Van Oyen. "Using Filtered Forecasting Techniques to Determine Personalized Monitoring Schedules for Patients with Open Angle Glaucoma," 5th World Glaucoma Congress 2013 (7/17/2013) 1 page.
71. M.S. Lavieri, J.E. Helm, G. Schell, M. Van Oyen, D. Musch, J.D. Stein. "Personalizing the Frequency and Timing of Testing to Check for Glaucoma Progression: A Novel Approach," The Association for Research in Vision and Ophthalmology (5/28/13) 1 page.
72. J. D. Stein, J.E. Helm, M.S. Lavieri, D. Musch, G. Schell, M. Van Oyen, "Using Filtered Forecasting Techniques to Determine Personalized Monitoring Schedules for Patients with Open Angle Glaucoma," American Glaucoma Society Annual Meeting (Feb. 28 – Mar. 3, 2013) 1 page.
73. F. Dong, Jivan Deglise-Hawkinson, M. P. Van Oyen, and D. J. Singer, "Analytical Approach to a Two-Stage Queueing Network for the Planning of Outfitting Processes in Shipbuilding", Society of Naval Architects and Marine Engineers Annual Meeting and Ship Production Symposia, Providence, RI, (2012) 6 pages.
74. Dong, F., M.P. Van Oyen, and D.J. Singer, Dynamic control of a flexible shipbuilding system under CONWIP discipline, Proceedings of ICCAS 2011, (2011) 10 pages
75. Parvin, H., A. Bose, and M.P. Van Oyen, Priority-Based Routing with Strict Deadlines and Server Flexibility Under Uncertainty, Winter Simulation Conference, Wash. DC. (2009) 3181 - 3188
76. Helm, J.E., S. AhmadBeygi, and M.P. Van Oyen, The Flexible Patient Flow Simulation Framework, IIE Annual Conference Proceedings, Miami, FL, (2009) 803-808.
77. Saghafian, S., and M.P. Van Oyen, Flexibility of Reliable Suppliers and Monitoring of Unreliable Suppliers: How Much Should a Manufacturer Invest? Proc. 2008 MSOM Conference, (Jun. 2008) 7 pages.
78. Van Oyen, M.P. and J. Pichitlamken, Allocating a server to job families with set-up times, Proc. 1998 Manufacturing and Service Operations Management Conference, Seattle, WA (Jun. 1998) 101-106.

79. <u>Kim, E.</u> and M.P. Van Oyen, Dynamic control of a multiclass queue with setups and lost sales, Proc. 36th IEEE Conf. on Decision and Control, San Diego, CA, (Dec. 1997) 6 pages.
80. M.P. Van Oyen, <u>E. Senturk Gel</u>, and W. J. Hopp, Performance opportunity for flexible workers, Proc. Thirty-Fifth Annual Allerton Conference on Communication, Control, and Computing, (Sep. 1997) 553-562.
81. Van Oyen, M.P. and D. Teneketzis, Optimal stochastic scheduling of connected queues with switching costs, Proc. 31st IEEE Conf. on Decision and Control, Tucson, AZ, (Dec. 16-18, 1992) 3328-3333.
82. Van Oyen, M.P., D.G. Pandelis, and D. Teneketzis, Optimality of index policies for stochastic scheduling with switching, Proc. Twenty-Ninth Annual Allerton Conference on Communication, Control, and Computing, (Oct. 1991) 8 pages.
83. Rizzoni, G., J. Pipe, R.N. Riggins, and M.P. Van Oyen, Fault isolation and analysis for internal combustion engine onboard diagnostics, Proc. 38th IEEE Vehicular Technology Conference, Philadelphia, PA, (Jun. 1988) 237-244.

Refereed Conference Summaries or abstracts

84. Lavieri, M. S., <u>X. Liu, G.-G. P. Garcia,</u> Z. Zhou, E. Lobaza, J. Wang, K. Sugiyama, K. Nitta, C. Andrews, M. P. Van Oyen, and J. D. Stein (2017). Using Kalman Filtering to Personalize the Monitoring of Persons with Normal Tension Glaucoma. The Association for Research in Vision and Ophthalmology, Annual Meeting 2018, Baltimore, MD.
85. J.D. Stein (presenter), P. Kazemian, J. Helm, M.S. Lavieri, M. Van Oyen. Using Kalman Filtering to Personalize Prediction of Open-Angle Glaucoma Progression Under Different Target Intraocular Pressure Levels. American Glaucoma Society Annual Meeting 2017, Coronado, CA.
86. M.P. Van Oyen (presenter), <u>J. Deglise-Hawkinson, J.E. Helm</u>, T. Huschka, and D.L. Kaufman, An Outpatient Planning Optimization Model for Integrated Care and Access Management, invited participant in Patient-Centric Healthcare Management in the Age of Analytics, Indiana Univ., October 8-10, 2015. (also had poster presentation)
87. M.S. Lavieri, M. Li, S. Devaprasad, <u>G.J. Schell,</u> P. Martinez Villarreal, <u>J.E. Helm</u>, M.P. Van Oyen, D. Musch, J.D. Stein, "Kalman Filter User-Friendly Decision Support Tool for Visualizing and Monitoring Open Angle Glaucoma Progression," American Glaucoma Society 25th Annual Meeting, February 26 - March 1, 2015, Coronado, CA.
88. M.S. Lavieri, S. Devaprasad, M. Li, <u>G.J. Schell,</u> P. Villarreal, J.E. Helm, M.P. Van Oyen, D.C. Musch and J.D. Stein. User-Friendly Tool Using Kalman Filter Algorithms to Display Glaucoma Progression Indicators and Personalized Time to Next Test. Proceedings of the Association for Research in Vision and Ophthalmology, 2014. Abstract.
89. M.S. Lavieri, J. Helm, G. Schell, M. Van Oyen, D. Musch, J. D. Stein, Personalizing the Frequency and Timing of Testing to Check for Glaucoma Progression: A Novel Approach. The Association for Research in Vision and Ophthalmology 2013
90. J. D. Stein, J. Helm, M.S. Lavieri, D. Musch, G. Schell, M. Van Oyen, Using Filtered Forecasting Techniques to Determine Personalized Monitoring Schedules for Patients with Open Angle Glaucoma. American Glaucoma Society Annual Meeting 2013

Selected Posters (*Excluding 11 poster presentations at NSF non-refereed conferences*)

1. Identifying Patients at Risk for Experiencing Rapid Progression of Open Angle Glaucoma Using Supervised Machine Learning, <u>Jones, I.A</u> (presenter), Van Oyen, M.P., Lavieri, M.S., Andrews, C.A., Stein, J.D. 2019 ARVO Conference, April 2019, Vancouver, CA.
2. <u>P. Kazemian</u> (presenter) and M.P. Van Oyen, ICU Shift Design and Shift Allocation, 2013 Annual Symposium on Healthcare Engineering and Patient Safety, University of Michigan, Ann Arbor, MI, Nov. 2013
3. <u>P. Kazemian</u> (presenter), Y. Dong, <u>J.E. Helm</u>, M.P. Van Oyen, "Handoff-sensitive Fellow Scheduling in a Medical ICU," Mayo Clinic Quality and Systems Engineering Conference, Rochester, MN, (May 14-18, 2012).

4. J. Deglise-Hawkinson, M.P. Van Oyen, and B.J. Roessler, Operational Planning Models with Service Pathways, Michigan Graduate Engr. Symposium, Ann Arbor MI, (Oct., 2011).
5. Helm, J.E. (presenter) and M.P. Van Oyen, Stabilizing Hospital Workloads through Patient Flow Management, SHS/ASQ Conference and Expo, Orlando, FL, (Feb. 2010).
6. Dong, F., (presenter) Parvin, H., Singer, D.J., and M.P. Van Oyen, Dynamic Control of the Flexible 'N' Queueing Network under CONWIP with Application to Flexible Shipbuilding, SNAME Conference, Seattle WA, (Nov. 3-5, 2010).
7. AhmadBeygi, S. (presenter), J. E. Helm, M.P. Van Oyen, and J. Du, A Simulation Approach to Improving Operating Room Performance, Conference on Systems Engineering & Operations Research in Health Care, Mayo Clinic, Rochester, MN, (August 2009).
8. Dong, F. (presenter), H. Parvin, D.J. Singer, and M.P. Van Oyen, Innovative Shipbuilding Processes Incorporating a Flexible Curved Block Shop, Winter Simulation Conference 2008, Miami, FL, (Dec. 7-10, 2008).
9. Saghafian, S. (presenter) and M.P. Van Oyen, Design for critical supply chains with disruption risks: Information, secondary sources, and flexibility, Third Annual Conf. on Improving Healthcare Delivery, Cincinnati, OH. (Sept. 2008)
10. AhmadBeygi, S. (presenter), J.E. Helm, and M.P. Van Oyen, Understanding the importance of linking admissions to census, Third Annual Conf. on Improving Healthcare Delivery, Cincinnati, OH. (Sept. 2008).
11. Helm, J.E. (presenter) and M.P. Van Oyen, A flexible simulation framework for patient flow modeling through core hospital processes, Third Annual Conf. on Improving Healthcare Delivery, Cincinnati, OH. (Sept. 2008).

Abstracts in non-refereed conference proceedings (*Excluding over 100 conference presentations at INFORMS or POMS-sponsored conferences which had brief abstracts, most of which were invited*)
1. P. Kazemian, J. Helm, M.S. Lavieri, J.D. Stein, M. Van Oyen. Optimal Simultaneous Dynamic Monitoring and Treatment Control for Chronic Diseases. Institute for Operations Research and the Management Sciences Healthcare 2013.
2. F. Dong, M. P. Van Oyen, and D. J. Singer, "Dynamic Control of a Closed Two-stage Queueing Network for Ship Production with Outfitting", IIE Annual Conference, Orlando, FL, (May 2012) 1 page.
3. Van Oyen, M.P., S. Saghafian, and B. Kolfal, A New Policy for The Control of Parallel Queueing Systems, Proc. of 2009 NSF Engineering Research and Innovation Conference, HI, (Jun. 22-25, 2009) 4 pages.
4. Van Oyen, M.P. and S. Saghafian, The Value of Operational Flexibility and Risk Level Information in Supply Chains under Disruption, Proc. 2008 NSF CMMI Engr. Research and Innovation Conference, Knoxville, TN. (Jan. 2008) 7 pages.
5. Van Oyen, M.P., S.M.R. Iravani, and B. Kolfal, Service Center Shift Scheduling with Cross-Trained Labor, Proc. 2006 NSF Design and Manufacturing Conference, St. Louis, MO (Jul. 2006) 7 pages.
6. Van Oyen, M.P., S.M.R. Iravani, and B. Kolfal, Call Center Labor Cross-Training, Flexibility, and Network Models, Proc. 2005 NSF Design and Manufacturing Grantees Conference, Scottsdale, AZ (Jan. 2005) 7 pages.
7. Iravani, S.M.R., B. Kolfal, and M.P. Van Oyen, Ranking the operational flexibility of parallel systems, Proc. 2004 National Science Foundation Design, Service and Manufacture and Industrial Innovation Grantees and Research Conference Dallas, TX (Jan. 2004) 13 pages.
8. Iravani, S.M.R., K.T. Sims, and M.P. Van Oyen, The structural flexibility method: Evaluation of cross-training strategies, Proc. 2003 National Science Foundation Design, Service, Manufacturing and Industrial Innovation Grantees and Research Conference Birmingham, AL (Jan. 2003) 26 pages.
9. Hopp, W.J., M.P. Van Oyen,., and E. Tekin, Cross-training strategies for dynamic line balancing, Proc. 2002 NSF Design and Manufacturing Grantees Conference, San Juan, Puerto Rico (Jan. 2002) 733-753.

10. Hopp, W.J., and Van Oyen, M.P., Agile workforce evaluation: A framework for cross-training and coordination, Proc. 2001 NSF Design and Manufacturing Grantees Conference, Tampa, FL (Jan. 2001) 21 pages.
11. Van Oyen, M.P., Stochastic scheduling methods for queueing systems Proc. 2000 NSF Design and Manufacturing Grantees Conference, Vancouver, BC (Jan. 2000) 7 pages.
12. Hopp, W.J., and M.P. Van Oyen,, Toward a taxonomy of agile worksystems, Proc. 2000 NSF Design and Manufacturing Grantees Conference, Vancouver, BC (Jan. 2000) 6 pages.
13. Hopp, W.J., M.P. Van Oyen, and E.G.S. Gel, Workforce agility: Classification and modeling, Part I, Proc. 1999 NSF Design and Manufacturing Grantees Conference, Long Beach, CA (Jan. 1999). 11 pages.

Chapters in books

1. Appendix J in "The Logical Thinking Process: A Systems Approach to Complex Problem Solving," by H. William Dettmer, 2007, American Society for Quality (ASQ), Quality Press. ISBN 978-0-87389-723-5. Described software supporting the methodology of the book. Significant exchanges over years were made with the author to create synergy between the software application and the evolving methodology of the book.

Publications in Popular Press and Magazines

1. Deglise-Hawkinson, J, David L. Kaufman, B.J. Roessler, and M.P. Van Oyen, The trials of the operations that conduct clinical trials, ISE Magazine July, **52,** 52-53 (2020)

2. "A Predictive Model to Personalize Follow-Up?" *EyeNet Magazine* (2014) http://www.aao.org/eyenet/article/news-in-review-9 [written about us, but not by us]
3. Saghafian, S., and M.P. Van Oyen, "Managing supply risks: Should you monitor your risky suppliers? Inject flexibility into your backup system?" *Industrial Engineer*, **44**, (2012)
4. Gel, E.G.S., W. J. Hopp, and M.P. Van Oyen, "Best Use of Cross-trained Workers," *Industrial Engineer*, **39:2**, (2007)

Selected Recent Conference Presentations:

Over 110 Presentations made by Prof. Van Oyen (or one of his Doctoral advisees or colleagues as joint work) are omitted for brevity. Details will be furnished upon request.

(A) Recent
1. Personalized learning and Allocation of Hospital Care Unit Beds Under Adversarial Arrivals and Delayed Feedback, A. Dean, M. Zhalechian, and M.P. VanOyen, Production and Operations Management Society (POMS) April 21– 25, 2022
2. Contextual Learning and Online Convex Optimization: Theory with Applications to Chronic Diseases, E. Keyvanshokooh, M. Zhalechian, C. Shi, MP. Van Oyen, and P. Kazemian, Production and Operations Management Society (POMS) April 21– 25, 2022 **Selected one of the six finalists for the 2022 POMS CHOM Best Paper Competition*
3. Personalized Hospital Admission Control: A Contextual Learning Approach, Annual INFORMS Conference, Oct (2021) M.P. Van Oyen, Mohammad Zhalechian, Esmaeil Keyvanshokooh, and Cong Shi.
4. Joint Learning and Optimization for Healthcare Operations and Medical Decision-Making. M. Zhalechian, E. Keyvanshokooh, C. Shi, and MP. Van Oyen, Annual INFORMS Conference, Oct (2021)
5. Contextual Learning and Online Convex Optimization: Theory with Applications to Chronic Diseases, Annual INFORMS Conference, Oct (2021) Keyvanshokooh, E., M. Zhalechian, C. Shi, MP. Van Oyen, and P. Kazemian, (2021) M. Zhalechian, E. Keyvanshokooh, C. Shi, M.P. Van Oyen
6. Personalized Unit Placement: Joint Online Learning and Control with Delayed Feedback, A. Dean, M. Zhalechian, and M.P. VanOyen, Virtual INFORMS Healthcare Conference (2021)

7. Adaptive Robust Optimization for Resource Sharing during a Pandemic, Data-driven, 2021 Virtual INFORMS Healthcare Conference. (2021) E. Keyvanshokooh, M. Zhalechian, C. Shi, MP. Van Oyen, and Kazemian, P.

8. Data-driven Adaptive Robust Optimization For Resource Sharing During A Pandemic (2021) Personalized Hospital Admission Control: A Contextual Learning Approach, Annual INFORMS Conference, Oct (2021) P. Kazemian, Esmaeil Keyvanshokooh, Mohammad Fattahy, Maryam Zokaeinikoo, Kenneth Freedberg, Mark P. Van Oyen,

9. Adaptive Robust Optimization for Resource Sharing During a Pandemic, Data-driven, Kazemian, P, E. Keyvanshokooh, M. Fattahi, M.P. Van Oyen, and K. Freedberg, 2021 Virtual INFORMS Healthcare Conference

10. Contextual Learning and Online Convex Optimization: Theory with Applications to Chronic Diseases, E. Keyvanshokooh, M. Zhalechian, C. Shi, MP. Van Oyen, and P. Kazemian, 2021 Virtual INFORMS Healthcare Conference

11. Personalized Unit Placement: Joint Online Learning and Control with Delayed Feedback, A. Dean, M. Zhalechian, and M.P. VanOyen, 2021 Virtual INFORMS Healthcare Conference

12. Joint Learning and Optimization for Healthcare Operations and Medical Decision-Making. M. Zhalechian, E. Keyvanshokooh, C. Shi, and MP. Van Oyen. INFORMS Annual Meeting 2020 Virtual, Session for finalists (M. Zhalechian) of Seth Bonder Scholarship 2020

13. Contextual Learning with Online Convex Optimization: Theory with Applications to Chronic Diseases, E. Keyvanshokooh, M. Zhalechian, C. Shi, and MP. Van Oyen, INFORMS 2020 Virtual Conference

14. Online Advance Scheduling with Personalized Learning: A Primal-Dual Approach, E. Keyvanshokooh, M. Zhalechian, C. Shi, and MP. Van Oyen, INFORMS 2020 Virtual,

15. Personalized Hospital Admission Control: A Contextual Learning Approach, M. Zhalechian, E. Keyvanshokooh, C. Shi, M.P. Van Oyen (2020), INFORMS Annual Meeting 2020 Virtual

16. Kalman Filtering Based Machine Learning to Predict Future Mean Deviation Values for Patients with Glaucoma--Enhancing Existing Models Using Data from Optical Coherence Tomography. A Study Using Data from ADAGES and DIGS. M. Zhalechian, M.P. Van Oyen, M.S. Lavieri, C.G.De Moraes, C.A. Girkin, M.A. Fazio, R.N. Weinreb, C. Bowd, J.M. Liebman, L.M. Zangwill. C. A. Andrews, J.D. Stein *ARVO Annual Meeting 2020, Baltimore, MD*

17. Predicting Rapid Progression Phases in Glaucoma via a Statistical Learning & Filtering Approach, Isaac Jones (Presenter), M. Van Oyen, M. Lavieri, C. Andrews, JD Stein. INFORMS 2019 (Seattle, WA)

18. Managing Coordinated and Priority-based Care in Clinical and Surgical Suites, E. Keyvanshokooh, P. Kazemian, M. Fattahi, and MP. Van Oyen INFORMS Healthcare 2019 (Cambridge, MA).

19. Online Personalized Care Framework to Reduce Readmission Risk, E. Keyvanshokooh, M. Zhalechian, C. Shi, and MP. Van Oyen, INFORMS Healthcare 2019 (Cambridge, MA).

20. Dynamic Learning of Personalized Patient Progression in Chronic Diseases, E. Keyvanshokooh, MP. Van Oyen, MS. Lavieri, C. Andrews, and J. Stein, INFORMS Healthcare 2019 (Cambridge, MA)

21. Disease modeling and machine learning for dynamic surveillance and monitoring of patients: Lessons from glaucoma, Mark P. Van Oyen (presenter), Isaac A. Jones, Mariel S. Lavieri, Christopher A. Andrews, Joshua D. Stein. POMS 2019 Annual Conference (Wash. DC).

22. Improving Itinerary Completion at a Destination Healthcare Institution, J.E. Helm, P. Shi, D.L. Kaufman, M.P. Van Oyen, POMS 2019, (Wash. DC).

23. Online Personalized Care Framework to Reduce Readmission Risk, M. Zhalechian, E. Keyvanshokooh, M.P. Van Oyen, POMS 2019, (Wash. DC).

24. Managing Coordinated and Priority-based Care in Clinical and Surgical Suites under Integrated Uncertainty, E. Keyvanshokooh, P. Kazemian, M. Fattahi, and MP. Van Oyen, POMS 2019 (Wash. DC)

25. Dynamic Online Learning of Personalized Patient Progression in Chronic Diseases: Application to Glaucoma, E. Keyvanshokooh, MP. Van Oyen, MS. Lavieri, C. Andrews, and J. Stein, POMS 2019 (Washington DC).
26. A Distributionally Robust Capacity Planning Model for Optimizing Access Delay in Surgical Services, M. Zhalechian (presenter), M.P. Van Oyen. INFORMS 2018, Phoenix, AZ.
27. Managing Coordinated and Priority-based Care in Clinical and Surgical Suites under Integrated Uncertainty, E. Keyvanshokooh, P. Kazemian, M. Fattahi, and MP. Van Oyen, INFORMS 2018 (Phoenix, AZ)
28. Dynamic Personalized Patient Classification Via Learning Progression In Chronic Diseases: Application to Glaucoma, E. Keyvanshokooh (presenter), M.P. Van Oyen, J.D. Stein, M.S. Lavieri, C. Andrews. INFORMS 2018, Phoenix, AZ.
29. Coordinated Clinic Surgery Appointment Scheduling: A Multi-stage Stochastic and Distributionally Robust Approach, E. Keyvanshokooh (presenter), P. Kazemian, M.P. Van Oyen. INFORMS 2018, Phoenix, AZ.
30. Advance Online Scheduling with Overtime: a Primal-Dual Approach, E. Keyvanshokooh, C. Shi, M.P. Van Oyen, MSOM 2018 Conference, Dallas, TX,
31. Dynamic Classification Approach for Classifying Patients in Chronic Disease: Application to Glaucoma, E. Keyvanshokooh, MP. Van Oyen, MS. Lavieri, C. Andrews, and J. Stein, INFORMS 2017 (Houston, TX).
32. Online Appointment Scheduling with a Rolling Horizon Approach: Primal-Dual Competitive Analysis, E. Keyvanshokooh, C. Shi, and MP. Van Oyen, INFORMS 2017 (Houston, TX).
33. Improving Access Delays from Request to Surgery with Multiple Patient Types, MP. Van Oyen, E. Keyvanshokooh, B. Denton, and P. Kazemian, INFORMS Healthcare 2017 (Rotterdam, Netherlands).
34. Using Kalman Filtering to Personalize Prediction of Open-angle Glaucoma Progression under Different Target IOP Levels, J. Stein, P. Kazemian, E. Keyvanshokooh, MS. Lavieri, and MP. Van Oyen, American Glaucoma Society Annual Meeting 2017 (Coronado, CA).
35. Coordinated Clinic Surgery Appointment Scheduling: A Multi-stage Stochastic and Distributionally Robust Approach, E. Keyvanshokooh, P. Kazemian, M. Fattahi, and MP. Van Oyen, POMS 2017 (Seattle, WA).
36. Using Kalman Filtering to Personalize the Monitoring of Persons with Normal Tension Glaucoma. Lavieri, M. S. (presenter) X. Liu, G.-G. P. Garcia, Z. Zhou, E. Lobaza, J. Wang, K. Sugiyama, K. Nitta, C. Andrews, M. P. Van Oyen, and J. D. Stein. 2016, The Association for Research in Vision and Ophthalmology, Vancouver, BC.
37. Coordinated Clinic Surgery Appointment Scheduling: A Multi-stage Stochastic and Distributionally Robust Approach, E. Keyvanshokooh, P. Kazemian, M. Fattahi, and MP. Van Oyen, INFORMS 2016 (Nashville, TN)

Selected Invited Seminar Presentations:
1. Forthcoming: Univ. of Florida ISE Departmental Seminar, Joint Adaptive Learning and Optimization in Healthcare, April 21, 2022
2. Southern Methodist University, Operations with Machine Learning to Improve Patient Experience and Patient Outcomes Through the Lens of (i) Patient Access Delay and (ii) Personalized Bed Placement, October 7, 2022
3. **Distinguished Lecture:** Northeastern Univ. 2019 Vinod Sahney Distinguished Lecture on Health Systems Innovation, Northeastern University, "Access and Patient Experience Opportunities in Healthcare Delivery," April 22, 2019
4. **Keynote:** NSF Workshop at SMU on Future Directions in Service, Manufacturing, and Operations Research, "Perspectives on Healthcare Delivery Systems Research" Mar. 29, 2019

5. Univ. of Southern California (USC), "How first come first served scheduling may be replaced," Feb. 27, 2019.
6. Univ. of Texas San Antonio, "Opportunities for healthcare operations engineering & How first come first served scheduling may be replaced," Feb. 22, 2019.
7. **Keynote**: Wayne State University Research Symposium, "Opportunities for IE and OR in Healthcare: Access Improvement and Precision Medicine," Apr. 14, 2017.
8. Univ. of Michigan, Center for Healthcare Engineering and Patient Safety (CHEPS), "Forecasting and Control Methodology for Monitoring of Chronic Diseases," presented with J. Stein and M. Lavieri, Dec. 5, 2016.
9. Univ. of Michigan, U-M Center for Healthcare Engineering and Patient Safety (CHEPS), "Coordinating Clinic and Surgery Appointments to Meet Access Service Levels for Elective Surgery," presented with Pooyan Kazemian, Oct. 3, 2016.
10. Georgia Tech, I&SyE Dept., "Optimization and control models for medical decision making and operations: (1) Chronic disease management and (2) Limiting the wait to get an appointment," Oct. 28, 2015.
11. Univ. of Michigan, Providing Better Healthcare through Systems Engineering Seminar Series, with B.J. Roessler, M.P. Van Oyen, and J. Deglise-Hawkinson, "Novel Operational Planning and Scheduling Methods for Improved Access with Service Pathways," Nov. 4, 2013.
12. Arizona State University, Phoenix, AZ, "Patient Flow: Stochastic Modeling, and Scheduling Optimization," Feb 9, 2013.
13. Driving Value in Health Care workshop in Phoenix Co-sponsored by: Arizona State University Healthcare Delivery and Policy Program and Mayo Clinic Center for the Science of Health Care Delivery, "The Potential of Hospital-wide Patient Flow Forecasting, Admission Control and Capacity Planning," Feb 8, 2013
14. Statistical and Applied Mathematical Sciences Institute (SAMSI), Research Triangle Park, NC, Data-based patient flow working group online broadcast, "Improving Emergency Department Flow via Enhanced Triage Information," Nov. 28, 2012
15. University of Minnesota, Minneapolis, MN, "Reducing Waiting Time in Emergency Departments: Flow Redesign to Harness Operational Triage Information," Nov. 30, 2011.
16. Univ. of Michigan, U-M Center for Healthcare Engineering and Patient Safety (CHEPS), "Improving Emergency Department Patient Flow through Operations Decision Models," Oct. 24, 2011.
17. McGill University, Montreal, Quebec, "Reducing Waiting Time in Emergency Departments: Flow Redesign to Harness Operational Triage Information," Oct. 14, 2011.
18. Mayo Clinic, Rochester, MN, Reducing "Waiting Time in Emergency Departments," Sep. 9, 2011.
19. University of Toronto, Mechanical and Industrial Engineering Seminar, Toronto, "Hospital Occupancy Smoothing through Patient Flow Optimization," J.E. Helm (primary presenter) and M.P. Van Oyen, Apr. 28, 2011.
20. IBM T.J. Watson Research Center, "Service Delivery Research, Methodology for Service Center Flexibility and Models of Supply Chain Flexibility," Nov. 30, 2007.
21. University of Michigan, Control Systems Seminar, Topic: Modeling and Analysis of Flexible Operations, Fall 2007
22. University of Miami School of Business Admin., Research Seminar Series, "Operational Flexibility: Methodology and Insights with Emphasis on Cross-training in Call Centers" March 9, 2007.
23. **(Keynote/plenary)** INFORMS Doctoral Colloquium, Pittsburgh, "Teaching Production/Operations and O.R./Management Science in Engineering and Business Schools" presentation and panel discussant; talk focused on differences in student-oriented teaching across Undergrad Bus., MBA, Executive MBA, undergrad Engr., and Ph.D. Engr. program, Fall 2006.
24. Loyola University Chicago, School of Business Admin. Research Seminar Series, "Operational Flexibility via Multifunctionality," Oct. 21, 2005 (invited after joining UM)
25. University of Michigan, Department of Industrial and Operations Engineering, "New Perspectives on Operational Flexibility," Feb. 17, 2005 (invited while professor at Loyola)

26. Cornell University, Johnson School of Management, "Perspectives on and Methods for Quantifying Operational Flexibility," Nov. 22, 2004

27. **(Plenary)** Conference on Call Center Management to Create Competitive Advantage, hosted by the Wharton Financial Institutions Center, University of Pennsylvania, "Flexibility and Skills-based Routing," May 2003.

28. University of Michigan, Department of Industrial and Operations Engineering, "Workforce Agility: Operations Management Perspective and Analysis," Feb. 8, 2001 (invited while employed at Loyola)

29. University of Washington, Department of Industrial Engineering, "Queueing Models and a Qualitative Taxonomy for Agile Worksharing," Feb. 1, 2000

30. The University of Chicago, Workshop in Operations Management/Management Science, "Classification of Production Systems for Workforce Agility," Dec. 9, 1999

31. Ecole Normale Superieure, Paris, France, Departement de Mathematiques et d'Informatique, "Performance Opportunity of Scheduling in Production with Agile Machines and Workers," Jul. 1999

32. Illinois State University, Mathematics Department Guest Lecturer, Optimal Expected Weighted Flow-time Policies with a Makespan Constraint and Set-up Times," Nov. 1998

33. Illinois State University, Mathematics Department Seminar, "Production Agility: Stochastic Models of Worksharing Among Cross-trained Workers," Nov. 1998

34. Kellogg Graduate School of Management, Northwestern University, Managerial and Economic Decision Sciences, "Agility of Cross-trained Workers: Achieving Economy of Coordination," Nov. 1998

35. ALCOA Corp: Alcoa Technical Center Seminar, "Production Logistics and Control," Dec. 1997

36. Purdue University, Dept. Industrial Engineering, "Comparison of Dynamic Programming Algorithms for a Controlled Queueing System," Mar. 1996

37. GE Corp. R&D, Signals and Systems Lab. Seminar, "Stochastic Scheduling of Queueing Systems with Set-ups," Jun. 1994

38. Martin-Marietta Management and Data Systems Corp., "Performance analysis of communication networks," Mar. 1993

39. Northwestern Univ., IEMS Dept. Seminar, Topic: Scheduling problems common to manufacturing and communications, Mar. 1993

40. University of Michigan, Control Systems Seminar, "An Introduction to the Control of Queueing Networks," Feb. 1992

41. GE Corp. R&D, Signals and Systems Lab. Seminar, "Resource Allocation Issues in Communication Networks," Dec. 1991

Technology Transfer and Entrepreneurship

Invention Disclosures Submitted

1. "Determining Optimal Frequency of Perimetric Testing for Evaluating Patients with Glaucoma / Suspected Glaucoma," Sept. 13, 2011. IR# 5140.

2. "CApacity Planning Tools and INformatics (CAPTAIN) Decision Support System for Phase I Trials Performance Sites," Sept. 14, 2011. IR# 5152.

Startups and Entrepreneurial Activities

1. Transformation Logic Tree, Inc. (2005 – 2020) Developed software to support teaching and practice of a robust problem-solving approach. Developed a commercial-quality software application for Windows XP (that still runs on Win10) to facilitate root cause analysis, conflict resolution, the integration of organizational strategy and tactics, business process improvement, and hand off to a project management tool. Distributed through a book by W. Dettmer and global internet sales. Has been used for courses in at least 6 universities including Clemson, Albany, Wash. St., U. Mich., and Loyola. Over 8,000 users have downloaded this software online (almost all having done so for free) while over 6,000 in the US alone purchased it in the book by Dettmer.

2. Lean Care Systems, Inc. (2007 – 2010). Led an S-Corp. in MI to provide healthcare consulting and tools for hospital improvement.
3. Lean Care Solutions PTE. LTD. Singapore. (2011–2020) Co-founder and took multiple leadership roles in this company focused on hospital management software and consulting.

Industry Interactions

The vast majority of my industry interactions are in the "pro-bono" category (e.g., R.R. Donnelley, Ruud Lighting, American Steel Foundries, ALCOA, Hewitt Associates, Rochester General Hospital, Mayo Clinic, Hamilton Health Services, Memorial Sloan Kettering Cancer Center, St. Mary's Hospital, St. Joseph Mercy Hospital, University of Michigan Hospital, etc.). However, I have occasionally consulted for a fee (e.g., Theo Capital, UNext, Lean Care Systems).

Selected Outreach Directly Related to Research

- Michigan Medicine – Main Hospital: Capacity Command Center Real Time Patient to Bed Assignment. (M2C2) Dec. 2021 – to present, with Jill Sklar, Max Garifullin, and Jenny Pardo.
- CLEAR Readmissions Reduction Initiative with Michigan Medicine, Univ. of Wisconsin Sch. of Medicine, Univ. of Pittsburgh Sch. of Medicine. Jan. 2021 – present; Design and implementation of the "Care Companion" cell phone app for urology/cystectomy patient support post-discharge and reduce readmissions.
- Michigan Medicine – Main Hospital: Strategic Nurse Training and Staffing for OR Cores. 2016-17, with Maya Bam and Brian Denton.
- St. Joseph Mercy Hospital (Trinity), Ypsilanti, MI, "OR Planning and Scheduling," 2015-17, with Maya Bam and Brian Denton.
- St. Joseph Mercy Hospital (Trinity), Ypsilanti, MI, "ICU Capacity, Queueing, and Patient Flow Modeling," May 1, 2012. Plus, multiple presentations since on progress of joint work.
- University of Michigan, Ann Arbor: Hosted a healthcare seminars in 2007-08 for regional academics and professionals
- Hamilton Health Sciences, McMaster University Medical Centre, Hamilton, ON, Hospital Occupancy Modeling Advances," M.P. Van Oyen and J.E. Helm co-presenters, Apr. 29, 2011.
- Vrije Universiteit, Mathematics Departmental Seminar, Amsterdam, "Dynamic Patient Flow Management in Hospitals," J.E. Helm (advisee presenter) and M.P. Van Oyen, July 2010.
- University of Michigan Healthcare Engineering Lab (HealthE) Seminar "A Vision of Healthcare Operations Engineering and Scheduling Based Research," Jan. 29, 2008.

Service

Major Committee Assignments in the Department, College, and/or University

College of Engineering:
- Ad hoc CoE committee to articulate criteria for tenure and promotion of tenure-track faculty, member AY 2017-18
- Contributed letter to P&T casebook committee AY 15-16
- 3-year Review Committee, member AY 15-16
- 3-year Review Committee for colleague in NAME, member AY 12-13
- Center for Healthcare Engineering and Patient Safety, steering committee, admissions committee AY 09-12
- Tauber Inst. (formerly TMI) Advisory Committee member AY 08-09
- IOE Chair Search Advisory Committee, member AY 08-09
- Founding member of CoE Diversity and Outreach Committee AY 07-08
- InterPro Program in Mfg. (PIM) Council, member AY 06, 07
- Mfg. Council, member AY 06, 07
- CoE Research Strategy task force: Successfully led proposal on "Health Engineering" that led to the Center for Healthcare Engineering and Patient Safety (CHEPS), member AY 06-07
- 3-year Review Committee for colleague in EECS, member AY's 06-07

Dept. of Industrial & Operations Engineering:
- Graduate Admissions C'tee 2021-22
- IOE Faculty Search Committee AY 2021-22
- Inaugural leader for the Health & Human Safety area
- IOE Facilities & Computing Committee, member 2018-20
- Tenure Review Casebook Committee, Member AY 2017-18
- Chaired LEO II Major Review Committee W 2017
- Elected to Department Committee (Advisory to Chair); member AY 06-07, 07-08, 15-16, 16-17
- Murty Prize chair Winter 17
- PDL (Production, Distribution, Logistics) area coordinator AY's 05-06, 12-13, 13-14, 15-16
- Graduate Program Committee AY 13-15
- Undergraduate Program Committee AY 13-15
- Healthcare Engineering and Patient Safety (HEPS) Advisory Board member (new IOE Masters Concentration in Healthcare Engineering and Patient Safety) 12-14
- Steffy Lecture Committee AY 13-14
- GAFA: Graduate Admissions & Financial Aid Committee, member 05-2015, 20-21
- Chair of MS Curriculum Redesign Committee Winter 11
- Dept. Murty Prize Committee; member AY 10-11
- Tenure Committee in IOE, member F08
- Coleman-100 cluster hire proposal in the area of healthcare operations/quality: participated in proposal 2008, 2009.
- Coordinator for Departmental Seminar Series AY 05-06
- OR (Operations Research) dept. area, coordinator 06-07
- 3-year Review Committee for Goker Aydin, member AY 05-06
- Dept. Wilson Prize; reviewer AY 05-06

Service to Loyola University Chicago:
- LUC School of Business Administration Dean's Advisory Committee, Elected Vice-chair (F04 - S05)
- LUC Elected to SBA Strategic Planning Task Force, Member (S05)
- LUC Loyola University Chicago Faculty Mentor (F04 - Smr 05)
- LUC Task Force on the Future of University Library Services, Member (S05)
- LUC School-wide Rank and Tenure & Faculty Development Review Committee (F03 - S05) Founding member of this committee (for which I advocated and advanced a proposal)
- LUC Teaching Excellence Committee, Member (00 - 04)
- LUC SBA Technology Strategy Task Force, Member (03 - 04)
- LUC MBA Curriculum Redesign Committee, Member (01 - 02)
- LUC Operations Management Curriculum Development Committee, Member (00 - 01)

Service to Northwestern University:
- NU IE/MS Undergraduate Advisor: 12-18 advisees per quarter (93-99)
- NU IE/MS Undergraduate Curriculum Committee (96-99)
- NU McCormick School Academic Standing Committee (95-98)
- NU IE/MS Faculty Search Committee (98-9)
- NU Organizer of IE/MS Departmental Seminar Series (95-6)
- NU Charter Member, School-wide Council on Dynamic Systems and Control (93-99)
- NU Lundgren Hall Faculty Associate, (Spr 95)
- NU McCormick Freshman Advisor (F 95)

Administrative Duties at U-M

- Director, Engineering Global Leadership program (EGL), College of Eng. (10% Appointment) June 06 - Aug. 09. Included EGL Student Honor Society Faculty Advisor & EGL Admissions Committee. • Led curricular oversight of foreign language and culture studies, business courses, and study abroad policies; • Solidified EGL policies as engineering gateway to Tauber Inst. for Global Op's; • doubled enrollment, • expanded from 2 departments to college-wide, • admitted its first under-represented students, • launched its first humanitarian service projects.

Service to Government or Professional Organizations, and Service on Review Board or Study Panels

- INFORMS Subdivisions Council (2023-present)
- *President,* Health Applications Society (HAS) within the Institute for Operations Research and Management Science (INFORMS), (2020– 2021)
  - o Elected as Vice President (2019– 2020)
  - o Past President position on the board of Directors. (2021– 2022)
  - o Engaged 14 journals to serve HAS • innovated solutions for the society and conference cluster during COVID-19 • helped develop HAS editorial role with Naval Research Logistics journal
- Cluster Chair, Annual INFORMS Conference fall 2019 (Seattle) Health Applications Society organizer (in collaboration with Hui Zhao) of the cluster of 72 sessions with 330 talks as co-chair (Created a panel on machine learning in healthcare, created more dense sessions of 5 talks per session to alleviate space issues, and pursued other journal connections, etc.)
- Judge for 2018 international POMS Col. of Health Care Operations Mgmt. best paper award
- Judge for 2017 INFORMS William Pierskalla Award
- Chair 2015 international Bonder Scholarship for Applied Operations Research in Health Services
- PhD Dissertation Reader/Judge, National University of Singapore, 2015
- Member of Organizing Committee for INFORMS Healthcare 2015 conference, Nashville (Poster Session Chair & *Chair of Poster Judging Committee*)
- National Science Foundation Review Panel; ENG, member 5 times between 2003 and present
- Chair of over 30 sessions at professional conferences, about 25 of which I organized (sometimes jointly)
- Judge for 2014 international Bonder Fellow award in healthcare Operations Research
- Judge for 2013 INFORMS William Pierskalla Award
- Judge for Mayo Clinic 2010 Systems Engineering & Operations Research in Health Care Conference.
- Elected to Applied Probability Council of the INFORMS Society, 1997 – 1999.
- National Academy of Sciences (Committee for Undergrad. Science Ed.), reviewer 1996

Editorial Service:
- Associate Editor of *Management Science (MS)* (2018 – present)
- Associate Editor of *Service Science* in Healthcare Management (Jun. 2017 – present)
- Associate Editor, *Naval Research Logistics (NRL)* (Aug. 2004 - present)
- Associate Editor, *IIE Transactions on Healthcare Systems Engineering* (Feb. 2014 - present)
- Associate Editor, *IIE Transactions* (Sep. 2005 - Dec. 2012)
- Associate Editor, *Operations Research* (OR) (Sep. 2000 - Dec. 2005)
- Senior Editor, *Flexible Services and Manufacturing (FSM)*, formerly *International Journal of Flexible Manufacturing Systems* (Oct. 2006 - 2009)
- Co-edited a special issue on "Workforce Agility" for *IIE Transactions* with W.J. Hopp and S.M. Iravani: *IIE Transactions*, **36**, (2004).
- *IIE Transactions* Best Paper Selection Committee for the best paper in the Scheduling and Logistics issues 2004-5.
- Reviewer for many journals including: *BMC Medical Informatics and Decision Making, Communications in Statistics: Stochastic Models, Engr. Optimization, European Journal of Operational Research (EJOR), Health Informatics Journal, IEEE Transactions on Automatic Control (TAC), IIE Transactions, Interfaces, Int'l Jour. of Flexible Manufacturing Systems (IJFMS), Int'l Jour. of Production Research (IJPR), Journal of Applied Probability (JAP), Journal of Mathematical Analysis*

and Applications (JMAA), Management Science, Manufacturing and Service Operations Management (M&SOM), Mathematical and Computer Modeling, Mathematical and Computer Modelling of Dynamical Systems, Mathematics of Operations Research (MOR), Naval Research Logistics (NRL), Omega, Operations Research (OR), Operations Research Letters (ORL), PLOS ONE, Production and Operations Management (POM), Probability in the Engineering and Informational Sciences (PEIS), Queueing Systems: Theory and Applications (QUESTA), Telecommunication Systems

- Reviewer for several refereed conferences including: Allerton Conference on Communications, Control, and Computing, American Control Conference (ACC), IEEE Conference on Decision and Control (CDC)

Outreach that is Not Part of Research or Teaching, or Entrepreneurship

- Corresponded with or met with federal legislators such as J. Dingell, J. Conyers, and S. Brown to inform them about the potential that Industrial Engineering methods have to improve healthcare delivery and control costs.

Service on Master's Thesis (M), Ph.D. Qual. Exam (QE), Prelim. Exam Comm (PE), Dissertation Comm (DC):

- Industrial Engineering, Operations Research, Management Science: 31 Students
   Arlen Dean (PE 2020), Mohammad Zhalechian (PE – May 19, DC Aug 2022), Isaac Jones (PE – May 19, DC August 21), Francisco Alderondo (PE 16, DC 19) Xiang Liu (DC Dec 2018), Timothy Williams (PE May 18), Amirhossein Meisami (DC Apr 18, PE Jun16), Maya Bam (PE 15, DC17), Esmaeil Keyvanshokooh (PE Jun 17, DC Apr 21), Armando Bernal (PE 17, DC 20), (PE W13, DC 2016), Greggory Schell (PE 13, DC Mar 15), Robert Riggs (PE 12, DC W15), Chate Eamrungroj (DC 17), Young-Chae Hong (PDL-PE 14), Fang Dong (DC co-advisor Jun. 13), Arleigh Waring (DC Aug. 12), Jonathan Helm (DC advisor Jun 12), Soroush Saghafian (DC advisor, May 12), Hoda Parvin (DC advisor, Febr. 12), Betzabe Rodriguez (PDL DC Dec 09), Luz Caudillo Fuentes (OR DC Dec 09), Damon P. Williams (PDL - DC Aug 09), John Wang (PDL PE May 07, DC May 10) IOE & ME, Minsuk Suh (PDL PE May 06, DC May 10), Zhibin (Ben) Yang (PDL - DC Jul 09), Richard Chen (OR PE May 07), Stan Dimitrov (OR PE May 07), Yu-Li Huang (PDL - PE, DC Jan. 08), Kuo, Chia-Wei (PDL - DC 07), Irina Dolinskaya (OR PE May 06), Tara L. Terry (OR PE May 06), Emily M. Gray (OR PE May 06), Esra Sisikoglu (OR PE May 06), Bora Kolfal (DC May 07, PE May 05), Viji Krishnamurthy (DC Jan. 05, PE Jun. 04), Louis Luangkesorn (DC Sept. 04), Bo-Ray Huang (DC Mar. 04, PE Summer 01), Eylem Tekin (DC - co-advisor Nov. 02, PE Jun. 01), Hui Liu (DC Summer 01), Melanie Roof (DC Jan. 99), Michael Hegedus (DC Feb. 00, PE Aug. 94), Ebru Demir (PE Mar. 98), Esma Senturk Gel (DC - co-advisor Dec. 99, PE Dec. 97), Nirmal Hassan (DC May. 96), Philip Kaminsky (DC Aug. 97, PE Jan. 96), Eungab Kim (DC - advisor Oct. 96, PE Dec. 95), Sania Choudhury (DC Jun. 95, PE 94),

- Other Departments served for Preliminary Exam (PE), Dissertation Committee (DC), Master's Thesis (M):
   Ouyang Yi (EE:S PE W15, DC Aug. 15), Thunyarat (Bam) Amornpetchkul (T&O Ross PE Sum13, DC Dec. 13), Yoojin Choi (EE:S DC F11, PE F10), Yi Wang (EE:S DC W11, PE F09), Liyen Chen (EE:S DC Sum10, PE F09), Chachrist Srisuwanrat (CEE DC Dec. 08 PE Aug. 06), Chen Chen (NAME PE Jan. 07), Nicholas B Chang (EES DC Jul. 07, PE Oct. 06), Amy Csizmar (EECS PE Dec. 98), John Harris (EECS DC Jan 97, PE Jun. 96), Hong Jiang (EECS DC Nov. 95, PE 94), Ikhlaq Sidhu (EECS DC Oct. 95, PE 94), C.-Y. Ku (EECS DC Aug. 95, PE 94), Asad Kahn (EECS DC Mar. 96, PE 95), Samuel Charrington (EECS M Jul. 95)

Affiliated Faculty Member:

- **MIDAS** (**Michigan Institute for Data Science**)
- **[e-HAIL](e-Health and Artificial Intelligence)** **(e-Health and Artificial Intelligence)**, a multidisciplinary initiative established between Michigan Medicine and the College of Engineering