

# CURRICULUM VITAE OF SOROUSH SAGHAFIAN

Ph.D. Candidate, University of Michigan, Department of Industrial and Operations Engineering

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## Education

- **Ph.D. (April 2012)**, Industrial and Operations Engineering, University of Michigan
  - Advisors: Dr. Wallace Hopp (Ross) and Dr. Mark Van Oyen (IOE)
  - University of Michigan College of Engineering 2011 Outstanding Ph.D. Research Award
- **M.S. (2009)**, Mathematics, University of Michigan
- **M.S. (2005)**, Industrial Engineering and Operations Research, Sharif University of Technology, Tehran, Iran
- **B.S. (2003)**, Industrial Engineering, Isfahan University of Technology, Isfahan, Iran

## Academic Teaching Positions

- **University of Michigan**
  - **Primary Instructor** [with Full Course Responsibility] for “*IOE 440 (Operations Analysis and Management)*,” (Fall 2010: 75 undergraduate and graduate students).
  - **Primary Instructor** [with Full Course Responsibility] for “*IOE 440 (Operations Analysis and Management)*,” (Fall 2009: 70 undergraduate and graduate students).
- **Other Universities**
  - **Primary Instructor** [with Full Course Responsibility] for “*Probability Theory*,” (Ghazvin University, Ghazvin, Iran).
  - **Primary Instructor** [with Full Course Responsibility] for “*Engineering Statistics*,” (Ghazvin University, Ghazvin, Iran).
  - **Primary Instructor** [with Full Course Responsibility] for “*Facility Planning and Plant Layout*,” (Sharif University of Technology, Golpaiegan Branch, Golpaiegan, Iran).
  - **Primary Instructor** [with Full Course Responsibility] for “*Preliminary Training for World Mathematical Olympiad*,” (Isfahan University of Tech, Isfahan, Iran).

## Industrial Employment

- **June 2002 - June 2003:** Project Manager for “*Synchronized Production Planning and Supply Chain Coordination*,” Iran Khodro Company (The largest automobile manufacturer in the Middle East).
- **September 2003 - November 2005:** Project Manager for “*Vehicle Routing Problem with Backhauls*,” Raja Trains Company (The Rail Road and Passenger Trains Company of Iran).
- **November 2005 - January 2006:** Project Manager for “*Software Development for the Applications of Maximal Weighted Planar Graphs*,” (Sponsored by Sharif University of Technology).

## Honors and Awards

- **2012 IOE Richard Wilson Prize** for the Best Student Paper
- **INFORMS 2010 Pierskalla Award** for the Best Paper in Healthcare (from INFORMS Healthcare Applications Society)
- **INFORMS 2011 Doing Good with Good OR Award** (finalist)
- **University of Michigan College of Engineering 2011 Outstanding Ph.D. Research Award** (Richard and Eleanor Towner Award, \$2500)
- **POMS 2011 College of Healthcare Best Student Paper Award** (second place)
- **MSOM 2011 Healthcare Operations Management SIG Workshop** (among 6 papers accepted)
- **2010 Katta Murty Prize** for the Best Research Paper on Optimization
- **POMS 2009 College of Supply Chain Best Student Paper Award** (finalist)
- **IOE 2007 Bonder Fellowship Award in Applied Operations Research**
- **University of Michigan 2006 Named & Deans Fellowship Award**
- **Honor Society of Phi Kappa Phi**
- **University Honor of Exceptionally Outstanding Graduate Student** (Department of Industrial Engineering, Sharif University of Technology)
- **Top Ranked Graduate Student** for the highest graduate cumulative GPA among all peers (Department of Industrial Engineering, Sharif University of Technology)
- **Second Top Ranked Undergraduate Student** for the second highest cumulative GPA among all peers (Department of Industrial Engineering, Isfahan University of Technology)
- **Top 10 Students in the Country** for 9<sup>th</sup> highest score among about 3500 participants in Iranian Nation-Wide Graduate Entrance Exam
- **Honorable Mention: 3rd and 4th International Conference of Industrial Engineering** (2004 and 2005)

## Professional Service

- **Co-Chair of 2011 INFORMS Pierskalla Award Committee for the Best Paper in Healthcare** (awarded by INFORMS Healthcare Applications Society)
  - Committee: Dr. Stefanos Zenios, Dr. Retsef Levi, Dr. Linda Green, and Dr. Sergei Savin
- **Session Organizer (INFORMS 2011):** “Emergency Department and Healthcare Operations Management” [Invited Speakers: Dr. Eva Lee, Dr. Stefanos Zenios, Dr. Christian Terweisch]
- **Session Organizer (INFORMS 2010):** “Patient Flows, ED, and Healthcare Operations Management,” [Invited Speakers: Dr. Brian Denton, Dr. Stefanos Zenios, Dr. Linda Green, Dr. Amy Ward]

## Referee and Review Experiences

- Book proposal review for *Wiley* Publication (Healthcare Operations Research).
- Referee and paper review for *Operations Research*, *Operations Research Letters*, *Production and Operations Management*, *Naval Research Logistics*, *IIE Transactions*, *IEEE Transactions on Evolutionary Computation*.

## Publications (Accepted and Working Papers)

- **Saghafian, S.**, Hopp, W.J., Van Oyen, M.P., Desmond (M.D.), J.S., and S.L. Kronick (M.D.) “Patient Streaming as a Mechanism for Improving Responsiveness in Emergency Departments,” *Operations Research* (To Appear), 2012.
  - **INFORMS 2010 Pierskalla Award** for the best paper in Healthcare (from INFORMS Healthcare Applications Society)
  - **POMS 2011 College of Healthcare Best Student Paper Award** (second place)
  - **MSOM 2011 Healthcare Operations Management SIG Workshop** (among 6 papers accepted)
- **Saghafian, S.**, Hopp, W.J., Van Oyen, M.P., Desmond (M.D.), J.S., and S.L. Kronick (M.D.) “Complexity-Based Triage: A Tool for Improving Patient Safety and Operational Efficiency,” under review, 2012
  - **INFORMS 2011 Doing Good with Good OR Award** (among 5 finalists)
  - **Univ. of Michigan College of Engineering 2011 Outstanding Ph.D. Research Award (\$2500)**
  - **SSRN's Top Ten download list (Health Economics)**
- **Saghafian, S.**, Van Oyen, M.P., and B. Kolfal “The “W” Network and the Dynamic Control of Unreliable Flexible Servers,” *IIE Transactions*, 2011, 43 (12), 893-907.
  - **2010 Murty Prize for the Best Paper on Optimization**
- **Saghafian, S.** and M.P. Van Oyen “The Value of Flexible Suppliers and Disruption Risk Information: Newsvendor Analyses with Recourse.” *IIE Transactions* (forthcoming), 2011.
  - **POMS 2009 College of Supply Chain Best Student Paper Award** (among 4 finalists)
  - An earlier version was listed on the **SSRN's Top Ten download list** "SCM: Analytical" and "MRN Production & Operations Management."
- **Saghafian S.** and X. Chao “Impact of Operational Decisions on the Optimal Design of Salesforce Incentives,” under review, 2012.
- **Saghafian, S.** and M.P. Van Oyen “Compensating for Dynamic Supply Disruptions with Backup Flexibility,” under review, 2011.
  - **2012 IOE Richard Wilson Prize**
- Hejazi, S.R. and **S. Saghafian**, “Flowshop-Scheduling Problems with Makespan Criterion: a Review,” *International Journal of Production Research*, 2005, 43 (14), 2895-2929.
  - **Cited over 55 times**
- **Saghafian, S.** and M.R. Akbari “Integrative Cell Formation and Layout Design in Cellular Manufacturing Systems,” *Journal of Industrial and Systems Engineering*, 2009, 3 (2), 97-115.
- **Saghafian, S.** and S.R. Hejazi “Multi-criteria Group Decision Making Using A Modified Fuzzy TOPSIS Procedure,” *IEEE Proc.: Computational Intelligence for Modeling, Control and Automation*, 2005, 215-221.
  - **Cited over 25 times**
- **Saghafian, S.**, Van Oyen, M.P., and E. Kim “Joint Control of Production and Refurbishment Activities: A Markov Decision Process Model,” *Mathematical Methods of Operations Research* (2<sup>nd</sup> round of review), 2011.
- Kim, E., **Saghafian, S.**, and M.P. Van Oyen “Joint Production and Disposal Activities in a Hybrid Manufacturing-Remanufacturing System,” *European Journal of Operational Research* (2<sup>nd</sup> round of review), 2011.

- Li, X., Li., Y, and **S. Saghafian** “A Hybrid Manufacturing/Remanufacturing System with Random Remanufacturing Yield and Market-Driven Product Acquisition” *IEEE Transactions on Engineering Management* (2<sup>nd</sup> round of review), 2011.
- **Saghafian, S.**, Hopp, W.J., Van Oyen, M.P., Desmond (M.D.), J.S., and S.L. Kronick (M.D.) “Optimal Design of Emergency Care Supervisions,” under preparation for *Operations Research*, 2012.
- **Saghafian, S.**, Hopp, W.J., Van Oyen, M.P., Desmond (M.D.), J.S., and S.L. Kronick (M.D.) “Investigating the Effectiveness of a New Patient Streaming Design for Emergency Departments,” working paper to be submitted to *Academic Emergency Medicine*, 2012.
- **Saghafian, S.** and M.P. Van Oyen “Flexibility of Reliable Suppliers and Monitoring of Unreliable Suppliers: How Much Should a Manufacturer Invest?” Refereed Extended Abstract, *Proc. of 2008 Manufacturing and Service Operations Management (M&SOM)*.
- **Saghafian, S.**, Van Oyen, M.P., and B. Kolfal “A New Policy for the Control of Parallel Queueing Systems,” *Proceedings of 2009 NSF Engineering Research and Innovation Conference*, Honolulu, Hawaii.
- **Saghafian, S.** and M.P. Van Oyen “The Value of Operational Flexibility and Risk Level Information in Supply Chains under Disruption,” *Proceedings of 2008 NSF Engineering Research and Innovation Conference*, Knoxville, Tennessee.
- **Saghafian, S.** and M.R. Akbari “A Service Level Based Approach to Supply Chain Network Design”, *Proceedings of International Conference on Operations and Supply Chain Management (OSCM 2005)*, Bali, Indonesia.
- **Saghafian, S.** and M.R. Akbari “Location-Allocation Decisions For Supply Chain Networks Management: A Customer Satisfaction Focus,” *Proceedings of 3rd International Management Conference*, 2005.
- **Saghafian, S.** and M.R. Akbari “An Integrated Approach to Supply Chain Network Design with Service Level Consideration,” *Proceedings of First National Conference on Logistics and Supply Chain*, 2005.
- **Saghafian, S.** and M.R. Akbari “Integrative Cell Formation and Layout Design in Cellular Manufacturing Systems,” 1st Edition, *Proceedings of 3rd International Conference of Industrial Engineering (IIEC 2004)*.
- **Saghafian, S.** and M.R. Akbari “An Integrated Approach to Supply Chain Network Design with Service Level Consideration,” 2nd Edition, *Proceedings of 4th International Conference of Industrial Engineering (IIEC 2005)*.
- **Saghafian, S.** and M.R. Akbari “A New Hybrid Metaheuristic Approach to Cellular Manufacturing Systems Design,” *IEEE conference of Computational Intelligence: Methods and Applications (CIMA 2005)*, Istanbul, Turkey.

## Other Refereed Publications (Not in English)

- **Saghafian, S.** “Heuristic Algorithms for Terminal Assignment Problem,” *Behood Industrial Engineering Journal*, 2002, 9, 57-61.
- **Saghafian, S.** “Assuring Performance in E-commerce Systems,” *Behood Industrial Engineering Journal*, 2002, 11 122-127.
- **Saghafian, S.** “Applications of WLANs: Wireless Local Area Networks,” *Behood Industrial Engineering Journal*, 2002, 7, 51-54.
- **Saghafian, S.** “An Introduction to StarOffice 5.2,” *Behood Industrial Engineering Journal*, 2001, 5, 61-66.
- **Saghafian, S.** “Hacking Techniques,” *Arpanet*, 2002, 3, 55-63.

- **Saghafian, S.** “Windows Systems: a Review,” *Behbood Industrial Engineering Journal*, 2002, 9, 62-65.
- **Saghafian, S., M. Jalilpour and M. Setak** “Applications of Neural Networks in Prediction,” *Proceedings of First Iranian National Conference on Logistics and Supply Chain*, 2005.
- **Saghafian, S., and M. Setak** “Applications of Fuzzy Theory in Inventory and Production Control,” *Proceedings of First Iranian National Conference on Logistics and Supply Chain*, 2005.
- **Saghafian, S. , M. Setak** “Vehicle Routing Problem with Backhauls and Heterogeneous Vehicles,” *Ph.D. Thesis Chapter*, (Co-authored with Ph.D. Candidate M. Setak)

## Talks and Presentations

- **POMS 2012** (Chicago, IL) “A New Triage System for Emergency Departments” (**invited talk**).
- **POMS 2012** (Chicago, IL) “Compensating for Dynamic Supply Disruptions with Backup Flexibility” (**invited talk**).
- **INFORMS 2011: Doing Good with Good OR Award Finalists** (Charlotte, NC): “Improving Patient Flow in Emergency Departments.”
- **INFORMS 2011**(Charlotte, NC): “Complexity-Based Triage: A Tool for Improving Patient Safety and Operational Efficiency” (**session organizer and co-chair**).
- **MSOM 2011: Healthcare Operations Management SIG Workshop** (Ann Arbor, Michigan): “Improving Patient Flow in Emergency Departments” (**among 6 papers accepted**).
- **POMS 2011** (Reno, NV): “Patient Streaming as a Mechanism for Improving Responsiveness in Emergency Departments” (**2<sup>nd</sup> place for best student paper award**).
- **INFORMS Healthcare 2011** (Montreal, Canada): “Emergency Department Patient Flow Redesign” (**invited talk**).
- **Society for Academic Emergency Medicine (SAEM) 2011 Meeting** (Boston, MA): “Modeling the Operational Characteristics of Patient Flow Schemes: Streaming vs Pooling.”
- **INFORMS 2010** (Austin, TX): “Patient Streaming as a Mechanism for Improving Responsiveness in Emergency Departments.” (**INFORMS Pierskalla Best Paper Award**).
- **INFORMS 2010** (Austin, TX): “Overcoming Crowding in Emergency Departments: A New Streaming Mechanism” (**session organizer and co-chair**).
- **INFORMS 2010** (Austin, TX): “Dynamic Control of Unreliable Flexible Servers: The “W” Network” and Beyond” (**invited talk**).
- **INFORMS 2010** (Austin, TX): “Disruption Risk Information and Flexible Backup Suppliers” (**invited talk**).
- **Mayo Clinic 2010 Conference** (Rochester, MN) “A New Patient Flow Design for Emergency Departments.”
- **University of Michigan Hospital 2010**: “Understanding Streaming VS. Pooling in Emergency Departments: Queueing Theory and Simulation” (**invited talk**).
- **INFORMS 2009** (San Diego, CA): “Dynamic Control of Flexible Servers under the Risk of Disruptions.”
- **POMS 2009** (Orlando, FL): “The Value of Flexible Suppliers and Disruption Risk Level Information in Supply Chains” (**finalist for POMS College of Supply Chain best student paper award**).
- **INFORMS 2008** (Washington DC): “Stochastic Networks with Breakdowns: Effective Control of Flexible Servers.”
- **MSOM 2008** (College Park, MD): “Flexibility of Reliable Suppliers and Monitoring of Unreliable Suppliers: How Much Should a Manufacturer Invest?”

- **NSF 2008** (NSF Engineering Research and Innovation Conference, Knoxville, Tennessee).
- **IHD 2008** (Third Annual Conference on Improving Healthcare Delivery, Cincinnati, OH).
- **INFORMS 2007** (Seattle, WA): “The Value of Flexible Suppliers in Supply Chains.”
- **International Conference of Industrial Engineering (IIEC)** 2004 & 2005.
- **International Management Conference (IMC)** 2004 & 2005.

## Technical Areas of Interest

- **Health Care Operations Research:** Stochastic modeling and optimization of patient flow in hospitals
- **Stochastic Modeling and Control:** Control and design of queuing networks, control of production/inventory systems, stochastic scheduling (main methodological tools: Markov Decision Processes, Partially Observable Markov Decision Processes, Queuing Theory, Sample-Path Analysis, Multi-Armed Bandit Indices, Approximate and Robust Dynamic Programming)
- **Operations and Supply Chain Management/Optimization:** Operational flexibility, mechanisms to mitigate supply chain disruption risks
- **Contract Theory:** Dynamic Principal-Agent models in Operations Management
- [Not Currently Active] Metaheuristic Optimization: Bee Colony, Ant Colony, Simulated Annealing, and Genetic Algorithms.

## References

### 1. Wallace Hopp (Ph.D.)

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### 3. Demosthenis Teneketzis (Ph.D.)

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### 6. Jeffrey Desmond (M.D.)

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