

Shahab Derhami

Senior Research Scientist
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Education

- Ph.D. Industrial & Systems Engineering, Auburn University, AL, 2017
- M.E. Industrial & Systems Engineering, Auburn University, AL, 2012
- M.S. Social & Economic Systems Engineering, Bu-Ali Sina University, Hamedan, Iran, 2006
- B.S. Industrial Engineering, Azad University, South Tehran Branch, Tehran, Iran, 2004

Research interest

Using business analytics to solve business problems in supply chain management, omnichannel retail and distribution networks, logistics systems, and warehouses and inventory management systems

Employment

- Senior Research Scientist**, Georgia Institute of Technology, Atlanta, GA, 2018-Present
- Postdoctoral Fellow**, Georgia Institute of Technology, Atlanta, GA, 2017-2018
- Instructor, Research Assistant, and Teaching Assistant**, Auburn University, AL, 2011-2017
- Economic Analyst**, PartLastic Factories Group, Mashhad, Iran, 2008-2011
- Production & Project Planning Specialist**, Atlas Afrooz Shargh Co., Mashhad, Iran, 2006-2008
- Instructor**, Department of Industrial Engineering, Azad University, Ilam, Iran, 2004-2005

Sponsored research

Funded projects

- Physical internet-inspired hyperconnected global air cargo networks, an international consortium formed by Georgia Tech, TU Delft, Amsterdam University of Applied Sciences, Hartsfield Jacksons Atlanta Int. Airport, Schiphol Cargo Mainport Program, and Schiphol Nederland BV, Investigators: T. Verduijn, L. Tavasszy, B. Montreuil, & **S. Derhami**, January 2020-December 2022, role: Co-PI (€1,000,000)
- Physical internet in automotive supply chains: concept engineering and simulation-based assessment of hyperconnecting Daimler's north American logistics, Investigators: B. Montreuil & **S. Derhami**, August 2019-December 2019, role: Co-PI (\$60,000)

Under review proposals

- Data driven models to visualize, assess, and manage inbound flow disruptions in the supply chain network of Nissan, Investigators: B. Montreuil, **S. Derhami**, L. McGinnis, & Y. Xie, role: Co-PI (\$301,000)
- Integrating data-based models and analytical approaches for dynamic production capacity planning and demand shaping in Nissan, Investigators: B. Montreuil, **S. Derhami**, L. McGinnis, & Y. Xie, role: Co-PI (\$238,000)
- Predictive data-based modeling for materials requirement prediction and dynamic supply route planning in Nissan, Investigators: B. Montreuil, **S. Derhami**, L. McGinnis, & Y. Xie, role: Co-PI (\$216,000)

Publications

Journal papers

1. **S. Derhami**, J. S. Smith, & K. R. Gue (2019), [A simulation-based optimization approach to design optimal layouts for block stacking warehouses](#), *International Journal of Production Economics*, DOI: 10.1016/j.ijpe.2019.107525.
2. **S. Derhami**, J. S. Smith, & K. R. Gue (2019), [Space-efficient layouts for block stacking warehouses](#), *IIE Transactions*, 51(9), 957-971.
3. **S. Derhami**, J. S. Smith, & K. R. Gue (2017), [Optimising space utilisation in block stacking warehouses](#), *International Journal of Production Research*, 55(21), 6436-6452.
4. **S. Derhami** & A. E. Smith (2017), [An integer programming approach for fuzzy rule-based classification systems](#), *European Journal of Operational Research*, 256(3), 924-934.
5. **S. Derhami** & A. E. Smith (2016), [A technical note on the paper “hGA: Hybrid genetic algorithm in fuzzy rule-based classification systems for high-dimensional problems”](#), *Applied Soft Computing*, 41, 91-93.

Under review manuscripts

1. **S. Derhami** & B. Montreuil, Assessing product availability in omnichannel retail networks in the presence of on-demand inventory transshipment and product substitution, *Under review in Omega*.
2. **S. Derhami** & B. Montreuil, Estimation of potential lost sales in retail networks of high-value substitutable products, *Under review in IIE Transactions*.
3. **S. Derhami**, I. Dayarian, & B. Montreuil, Inventory planning for high-value substitutable products in the presence of seasonal demand and long lead times, *Under review in IIE Transactions*.

In-preparation manuscripts

1. Inventory planning for omnichannel retail networks in the presence of inventory transshipments, with B. Montreuil.
2. Optimizing product availability in omnichannel retail networks of high-value substitutable products with fast replenishment capability, with J. Yim, & B. Montreuil.
3. Product availability optimization in omnichannel retail networks in the presence of on-demand inventory transshipment and long replenishment lead time, with J. Yim, & B. Montreuil.

Refereed conference proceedings

1. J. Yim, **S. Derhami**, & B. Montreuil (2019), [Optimizing high-value product availability in hyper-connected retail networks](#), in *6th International Physical Internet Conference*, 168-179.
2. B. Montreuil, S. Buckley, L. Faugère, R. Khir, & **S. Derhami** (2018), [Urban parcel logistics hub and network design: The impact of modularity and hyperconnectivity](#), *Progress in Material Handling Research*.
3. **S. Derhami**, J. S. Smith, & K. R. Gue (2016), [A Simulation model to evaluate the layout for block stacking warehouses](#), *Progress in Material Handling Research*.
4. **S. Derhami** & A. E. Smith (2014), [Iterative mixed integer programming model for fuzzy rule-based classification systems](#), *IEEE International Conference on Fuzzy Systems (FUZZ-IEEE)*, 2079-2084.

Teaching experience

Instructor

- Auburn University, AL (Fall 2015)
Stochastic Operations Research (98 students, avg. review: 5.0/6.0)
- Business Trading University, Mashhad, Iran (2007)
Introduction to Manufacturing Processes, Production Management
- Azad University, Ilam, Iran (2004-2005)
Plant Layout, Inventory Management, Production Planning, Application of Computer in IE

Teaching assistant

Auburn University, AL (2011-2016): Operations Planning & Control, Stochastic Operation Research, Simulation (graduate), Probability & Statistics I, Simulation Modeling & Analysis, Deterministic Operations Research

Honors & awards

- Funding supports to attend the Material Handling Teachers Institute and Future Faculty Symposium, the College Industry Council on Material Handling Education (CICMHE), 2015 and 2017
- Finalist in the INFORMS data mining best student paper for the paper “An integer programming approach for fuzzy rule-based classification systems”, 2016
- Honorable award for the poster “A novel optimization approach for data mining: a medical diagnosis case”, Graduate Engineering Research Showcase, Auburn University, AL, 2015 (\$1,000)
- Conveyor & Sortation Systems Honor Scholarship, the Material Handling Education Foundation, Inc., 2015 (\$2,000)
- Departmental award for the poster “Optimizing Space Utilization in Block Stacking Warehouses”, Graduate Engineering Research Showcase, Auburn University, AL, 2014 (\$500)
- Storage equipment manufacturers association honor scholarship, the Material Handling Education Foundation, Inc., 2012 (\$3,000)
- Auburn University graduate travel grants to attend three conferences, 2014-2016 (\$2,800)
- Graduate teaching assistantship, Auburn University, AL, 2011-2017
- Graduate teaching assistantship, Bu-Ali Sina University, Hamedan Iran, 2005-2006

Computer skills

- **Programming:** Java, Python, MATLAB, Visual Basic, Visual Basic for Application (VBA)
- **Optimization and simulation software:** CPLEX, Gurobi, AnyLogic, Simio
- **Other software:** Microsoft Office, Linux, L^AT_EX

Conference presentations & seminars

- “Inventory planning in interconnected retail networks”, INFORMS Annual Meeting, Seattle, WA, 2019
- “A simulation-based approach to estimate demand across retail networks and supply chains of high-value products”, IISE Annual Meeting, Orlando, FL, 2018
- “A novel optimization approach for disease diagnosis, poster presentation”, 4th Annual Postdoctoral Symposium at Georgia Institute of Technology, Atlanta, GA, 2017

- “Designing space-efficient warehouse layouts”, INFORMS Annual Meeting, Houston, TX, 2017
- “An integer programming approach for fuzzy rule-based classification systems”, Best data mining student paper competition, INFORMS Annual Meeting, Nashville, TN, 2016
- “Designing layouts for block stacking warehouses”, poster presentation, INFORMS Annual Meeting, Nashville, TN, 2016
- “Optimal design for block stacking warehouses”, INFORMS Annual Meeting, Nashville, TN, 2016
- “Optimizing space utilization in block stacking warehouses”, INFORMS Annual Meeting, Philadelphia, PA, 2015
- “Operations research in data mining: an application to medical diagnosis”, INFORMS Annual Meeting, Philadelphia, PA, 2015
- “Optimizing space utilization in designing block stacking warehouses”, IIE Annual Meeting, Nashville, TN, 2015
- “Ant colony optimization for work load smoothing in assembly lines”, 6th International Industrial Engineering Conference, Tehran, Iran, 2009
- “Using ant colony algorithm to solve multi objective assembly line balancing problem”, 2nd International Operation Research Conference, Babolsar, Iran, 2009
- “Solving fuzzy assembly line balancing problem with ant algorithm”, 3rd Joint Congress on Fuzzy and Intelligent Systems, Yazd, Iran, 2009

Service to profession

- Reviewer for IIE Transactions, European Journal of Operational Research, International Journal of Production Research, Computers & Operations Research, IEEE Transactions on Automation Science and Engineering, Applied Mathematical Modelling, SIMULATION: Transactions of The Society for Modeling and Simulation International, and 2015 IIE Annual Conference
- Session chair in 2018 and 2019 INFORMS Annual Meetings
- Session chair in 2018 IIE Annual Meeting
- Session chair and student volunteer in 2015 IIE Annual Conference
- Member of Institute for Operations Research and the Management Sciences (INFORMS)
- Member of Institute of Industrial & Systems Engineers (IIE)

References

- Dr. Jeffrey Smith
Joe W. Forehand Jr. Professor
Auburn University, Department of Industrial and Systems Engineering
Email: jsmith@auburn.edu
- Dr. Kevin Gue
Professor and Mary Lee and George F. Duthie Endowed Chair of Engineering Logistics
University of Louisville, Department of Industrial Engineering
Email: kevin.gue@louisville.edu
- Dr. Benoit Montreuil
Professor and director of Supply Chain & Logistics Institute, and Physical Internet Center
Georgia Institute of Technology, School of Industrial and Systems Engineering
Email: benoit.montreuil@isye.gatech.edu