

Diego Klabjan

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General Interests: Analytics in the Areas of

- Sustainability (smart grid, green transportation, renewable energy)
- Transportation
- Supply Chain Management
- Retail
- Large-scale Optimization

Education

- **Ph. D. in Algorithms, Combinatorics, and Optimization**
Georgia Institute of Technology, Atlanta, GA 1999
Dissertation: Topics in Airline Crew Scheduling and Large Scale Optimization (*Advisors:* George Nemhauser and Ellis Johnson)
- **B.S. in Applied Mathematics**
University of Ljubljana, Ljubljana, Slovenia 1994
Dissertation: A Randomized Algorithm for Computing the Volume of a Convex Set (*Advisor:* Bojan Mohar)

Work Experience

- 2012-present: Professor, Northwestern University, Department of Industrial Engineering and Management Sciences, Evanston, Illinois
- 2007-2012: Associate professor, Northwestern University, Department of Industrial Engineering and Management Sciences, Evanston, Illinois
- 2006-2007: Associate professor, University of Illinois at Urbana-Champaign, Department of Civil and Environmental Engineering, Urbana, Illinois
- 2005-2006: Visiting professor, MIT, Department of Civil and Environmental Engineering, Cambridge, Massachusetts
- 1999-2005: Tenure-track assistant professor, University of Illinois at Urbana-Champaign, Department of Mechanical and Industrial Engineering, Urbana, Illinois

Awards

- 2011 Student Paper Contest, Railway Application Section of INFORMS, Second prize, Charlotte, NC (by post-doctoral student Conrado Borraz)
- 2006 Best Student Paper, The 22nd International Conference on Data Engineering, Atlanta, GA (by graduate student Hector Gonzales)
- 2004 Anna Valicek Medal Winner, AGIFORS, Singapore (by graduate student Rivi Sandhu)
- 2000 First Prize Transportation Science Section Dissertation Prize, INFORMS, Washington DC
- 1994 Preseren's Award for the Best Undergraduate Thesis, University of Ljubljana, Slovenia

Refereed Publications

1. P. Pei, D. Klabjan (2012), Approximations to Auctions of Digital Goods with Share-averse Bidders, To appear in *Electronic Commerce Research and Applications*.
2. L. Guimaraes, B. Klabjan, B. Almada-Lobo (2013), Pricing, Relaxing and Fixing under Lotsizing and Scheduling, *European Journal of Operational Research* 230 (2013) 399-411.
3. D. Klabjan and C. Borraz, Optimal Placement of Reconfigurable Optical Add/Drop Multiplexers with Packing, Blocking, and Signal Loss, *Computer Networks* 57 (2013) 1443-1458.
4. F. Schneider and D. Klabjan, Inventory Control in Multi-channel Retail, *European Journal of Operational Research* 227 (2013) 101-111.
5. M. Song, D. Klabjan, D. Simchi-Levi, Robust Stochastic Lot-sizing by Means of Histograms, *Production and Operations Management* 22 (2013) 691-710.
6. J. Ahn, O. de Weck, Y. Gang and D. Klabjan, The Generalized Location Routing Problem with Profits, *European Journal of Operational Research* 223 (2012) 47-59.
7. Seth, D. Klabjan and P. Ferreira (2012), Analyses of Advanced Iterated Tour Partitioning Heuristics for Generalized Vehicle Routing Problems. To appear in *Networks*.
8. L. Guimaraes, D. Klabjan, B. Almada-Lobo, Annual Production Budget in the Beverage Industry. *International Scientific Journal Engineering Applications of Artificial Intelligence* 25 (2012) 229-241.
9. P. Bless, D. Klabjan, and S. Chang , Automated Knowledge Source Selection and Service Composition. *Computational Optimization and Applications* 52 (2012) 507-535.
10. Y. Zhao and D. Klabjan, A Polyhedral Study of Lot-sizing with Supplier Selection. *Discrete Optimization* 9 (2012) 65-76.
11. D. Adelman and D. Klabjan, Computing Near Optimal Policies in General Joint Replenishment. *INFORMS Journal on Computing* 24 (2012) 148-164.
12. M. Sohoni, Y-C. Lee, D. Klabjan, Block Time Estimation and Robust Airline Scheduling. *Transportation Science* 45 (2011) 451-464.
13. D. Klabjan and J. Pei, In-store One-to-one Marketing. *Journal of Retailing and Consumer Services* 18 (2011) 64-73.
14. S. Chang, D. Klabjan, and T. Vossen, Optimal Radio Frequency Identification Deployment in a Supply Chain Network. *International Journal of Production Economics* 125 (2010) 71-83.
15. L. Schenk and D. Klabjan, Intra Market Optimization for Express Package Carriers with Station to Station Travel and Proportional Sorting. *Computers & Operations Research* 37 (2010) 1749-1761.
16. J. Pei and D. Klabjan, Inventory Control in Serial Systems under Radio Frequency Identification. *International Journal of Production Economics* 123 (2010) 118-136.
17. S. Choo, D. Klabjan and D. Simchi-Levi, Multi-ship Crane Sequencing with Yard Congestion Constraints. *Transportation Science* 44 (2010) 98-115.
18. H. Gonzalez, J. Han, H. Cheng, X. Li, D. Klabjan and T. Wu, Modeling Massive RFID Datasets: A Gateway-Based Movement-Graph Approach. *IEEE Transactions on Knowledge and Data Engineering* 22 (2010) 90-104.
19. B. Almada-Lobo, D. Klabjan, M.A. Carravilla and J.F. Oliveira, Multiple Machine Multi-Item Continuous Setup Lotsizing with Sequence-dependent Setups. *Computational Optimization and Applications* 47 (2010) 529-552.
20. L. Schenk and D. Klabjan, Intra Market Optimization for Express Package Carriers. *Transportation Science* 42 (2008) 530-545.
21. N. Halman, D. Klabjan, M. Mostagir, J. Orlin, D. Simchi-Levi, A Fully Polynomial Time Approximation Scheme for Single-Item Stochastic Inventory Control Problems with Discrete Demand. *Mathematics of Operations Research* 34 (2009) 674-685.
22. D. Klabjan, Subadditive Approaches in Integer Programming. *European Journal of Operational Research* 183 (2007) 525-545.
23. B. Almada-Lobo, D. Klabjan, M.A. Carravilla, J.F. Oliveira, Single Machine Capacitated Lotsizing Problem with Sequence-dependent Setup Costs and Times. *International Journal of Production Research* 45 (2007) 4873-4894.
24. J. Han, H. Gonzales, X. Li, and D. Klabjan, Warehousing and Mining Massive RFID Data Sets, *Lecture Notes in Computer Science* 4093 (2006) 1-18.
25. D. Klabjan and D. Adelman, A Convergent Infinite Dimensional Linear Programming Algorithm for Deterministic Semi-Markov Decision Processes on Borel Spaces. *Mathematics of Operations Research* 32 (2007) 528-550.
26. P. Bless, D. Klabjan, and S. Chang, Heuristics for Automated Knowledge Source Selection and Service Composition. *Computers and Operations Research* 35 (2008) 1292-1314.
27. R. Sandhu and D. Klabjan, Fleeting with Passenger and Cargo Origin-Destination Booking Control. *Transportation Science* 40 (2006) 517-528.

28. R. Sandhu and D. Klabjan, Integrated Airline Fleeting and Crew Pairing Decisions. *Operations Research* 55 (2007) 430-438.
29. D. Klabjan and D. Adelman, Existence of Optimal Policies for Semi-Markov Decision Processes Using Duality for Infinite Linear Programming, *SIAM Journal on Control and Optimization* 44 (2006) 2104-2122.
30. S. Shebalov and D. Klabjan, Robust Airline Crew Pairing: Move-up Crews, *Transportation Science* 40 (2006) 300-312.
31. S. Shebalov and D. Klabjan, Sequence Independent Lifting for Mixed Integer Programs with Variable Upper Bounds. *Mathematical Programming* 105 (2006) 523-561.
32. P.N. Bless, S.G. Kapoor, R.E. DeVor, and D. Klabjan, An Algorithmic Strategy for Automated Development of Multi-component Software Tools for Virtual Manufacturing. *Journal of Manufacturing Science and Engineering* 127 (2005) 866-874.
33. D. Adelman and D. Klabjan, Existence of Optimal Policies and Duality in Generalized Joint Replenishment. *Mathematics of Operations Research* 30 (2005) 28-50.
34. D. Klabjan, A Practical Algorithm for Computing the Subadditive Dual Function for Set Partitioning, *Computational Optimization and Applications* 29 (2004) 347-368.
35. A. Makri and D. Klabjan, Algorithms for Source-to-all Maximum Cost to Time Ratio Problem in Acyclic Networks. *Networks* 42 (2003) 1-14.
36. D. Klabjan, E.L. Johnson, and G.L. Nemhauser, Airline Crew Scheduling with Time Windows and Plane Count Constraints, *Transportation Science* 36 (2002) 337-348.
37. D. Klabjan and G.L. Nemhauser, A Polyhedral Study of Integer Variable Upper Bounds. *Mathematics of Operations Research* 27 (2002) 711-739.
38. A. Arora and D. Klabjan, A Model for Budget Allocation in Multi-unit Libraries. *Library Collections, Acquisitions, and Technical Services* 26 (2002) 423-438.
39. A. Makri and D. Klabjan, A New Pricing Scheme for Airline Crew Scheduling, *INFORMS Journal on Computing* 16 (2004) 56-67.
40. D. Klabjan, E.L. Johnson, and G.L. Nemhauser, Solving Large Airline Crew Scheduling Problems: Random Pairing Generation and Strong Branching, *Computational Optimization and Applications* 20 (2001) 73-91.
41. D. Klabjan, E.L. Johnson, and G.L. Nemhauser, Airline Crew Scheduling with Regularity, *Transportation Science* 35 (2001) 359-374.
42. D. Klabjan, E.L. Johnson, and G.L. Nemhauser, A Parallel Primal-Dual Simplex Algorithm, *Operations Research Letters* 27 (2000) 47-55.
43. D. Klabjan and B. Mohar, The Number of Matchings of Low Order in Hexagonal Systems, *Discrete Mathematics* 186 (1998) 167-175.
44. D. Klabjan, C. Tovey, and G.L. Nemhauser, Cover Inequality Separation is NP-hard, *Operations Research Letters* 23 (1998) 35-40.

Chapters in Books

- D. Conway and D. Klabjan (2012), Innovation Patterns and Big Data, Forthcoming in *Big Data and Business Analytics*, Taylor and Francis. Editor J. Liebowitz.
- Y. Jiang, D. Klabjan, L. Williams (2010), Analytics in Retail. *Encyclopedia in Operations Research and Management Sciences*, Wiley & Sons.
- T. Sweda and D. Klabjan (2010), The Nascent Industry of Electric Vehicles. *Encyclopedia in Operations Research and Management Sciences*, Wiley & Sons.
- Y-C. Lee, D. Klabjan, G. Stojkovic (2009), Crew Management Information Systems. In B. Smith and C. Barnhart, editors, *Quantitative Problem Solving Methods in the Airline Industry: A Modeling Methodology*, Springer Verlag
- C. Taylor, D. Klabjan, and H. Mamani (2008), Advanced Optimization for Interplanetary Logistics. In O. de-Weck and B. Shisko, editors, *Interplanetary Supply Chain Management and Logistics Architecture*.
- C. Barnhart, A. Cohn, E.L. Johnson, D. Klabjan, G.L. Nemhauser, and P.Vance (2002), Airline Crew Scheduling. In Hall, R.W., editor, *Handbook in Transportation Science*, Kluwer Scientific Publishers.
- D. Klabjan (2005), Large-scale Models in the Airline Industry. In G. Desaulniers, J. Desrosiers, M.M. Solomon, editors, *Column Generation*, Kluwer Academic Publishers.
- D. Klabjan (2007), Radio Frequency Identification Enabled Business Applications in Supply Chain Management. In T.

Blecker and G. Huang, editors, *RFID in Operations and Supply Chain Management: Research and Applications*, Erich Schmidt Verlag.

Peer-Reviewed Conference Proceedings

- O. Worley and D. Klabjan (2012), "Simultaneous Vehicle Routing and Charging Station Siting for Commercial Electric Vehicles", *IEEE International Electric Vehicle Conference*, Greenville, NC.
- T. Sweda and D. Klabjan (2012), "Finding Minimum-Cost Paths for Electric Vehicles", *IEEE International Electric Vehicle Conference*, Greenville, NC.
- T. Sweda and D. Klabjan (2011), "An Agent-Based Decision Support System for Electric Vehicle Charging Infrastructure Deployment," *7th IEEE Vehicle Power and Propulsion Conference*, Chicago, Illinois.
- O. Worley and D. Klabjan (2011), "Optimization of Battery Charging and Purchasing at Electric Vehicle Battery Swap Stations," *7th IEEE Vehicle Power and Propulsion Conference*, Chicago, Illinois.
- S. Ruangpattana, D. Klabjan, J. Arinez, and S. Biller (2011), "Optimization of On-site Renewable Energy Generation for Industrial Sites," *Proceedings of IEEE Power Systems 2011*, Phoenix, AZ.
- D. Klabjan and D. Yang (2010), "Strategic Gang Scheduling in the Railway Industry," *Proceedings of TRISTAN VII*.
- C. Cheng, C. Chekuri, and D. Klabjan (2009), "Topology Formation for Wireless Mesh Network Planning," *Proceedings of IEEE Infocom 2009 Mini-conference*, Rio de Janeiro, Brazil.
- N. Halman, D. Klabjan, C-L. Li, J. Orlin, and D. Simchi-Levi (2008), "Fully Polynomial Time Approximation Schemes for Stochastic Dynamic Programs," *Proceedings of ACM-SIAM Symposium on Discrete Algorithms*, San Francisco, CA.
- J. Pei and D. Klabjan (2007), "Inventory Control in Serial Systems under RFID," *EPC Connection Academic Convocation*, Chicago, IL.
- D. Klabjan (2007), "Radio Frequency Identification Enabled Business Applications in Supply Chain Management," *Proceedings of RFID Live 2007 Academic Convocation*, Orlando, FL.
- J. Han, H. Gonzalez, X. Li, and Diego Klabjan (2006), "Warehousing and Mining Massive RFID Data Sets," *Proceedings of the International Conference on Advanced Data Mining and Applications*, Xi'An, China.
- H. Gonzales, J. Han, X. Li, and D. Klabjan (2006), "Warehousing and Analyzing Massive RFID Data Sets," *Proceedings of the 22nd International Conference on Data Engineering*, Atlanta, GA.
- R. Sandhu and D. Klabjan (2004), "Integrated Airline Planning," *Proceedings of TRISTAN V*.
- D. Klabjan (2002), "A New Subadditive Approach to Integer Programming: Theory and Algorithms," *Proceedings of the 9th Integer Programming and Combinatorial Optimization Conference*, 384-400.
- D. Klabjan and K. Schwan (2001), "Airline Crew Pairing Generation in Parallel," *Proceedings of the 10th SIAM Conference on Parallel Processing for Scientific Computing*.
- D. Klabjan, A. Schaefer, E.L. Johnson, A. Kleywegt, and G.L. Nemhauser (2001), "Robust Airline Crew Scheduling," *Proceedings of TRISTAN IV*, 275-280.

Submitted Manuscripts

- C. Lindsey, A. Frei, H. S. Mahmassani, H. Alibabai, Y.W. Park, D. Klabjan, M. Reed, G. Langheim, T. Keating (2013), Online pricing and capacity sourcing for third-party logistics providers.
- C.S. Pun and D. Klabjan (2013), Air Cargo Allotment Planning.
- J. Pei, D. Klabjan, and F. Karaesmen (2013), Pricing of Digital Goods vs. Physical Goods.
- L. Guimaraes, D. Klabjan and B. Almada-Lobo (2013), Modeling lotsizing and scheduling problems with sequence dependent setups.
- F. Schneider, D. Klabjan, and U. Thonemann (2013), Incorporating Demand Response with Load Shifting into Stochastic Unit Commitment.
- T. Sweda, I. Dolinskaya, and D. Klabjan (2013), Optimal Recharging Policies for Electric Vehicles.
- Y-W Park and D. Klabjan (2013), Lot Sizing with Minimum Order Quantity.
- C. Lindsey, A. Frei, H. Alibabai, H. S. Mahmassani, Y.W. Park, D. Klabjan, M. Reed, G. Langheim, and T. Keating (2013), Modeling Carrier Truckload Freight Rates in Spot Markets.
- D. Wang, S. Shebalov, and D. Klabjan (2012), Attractiveness-Based Airline Network Models with Embedded Spill and

Recapture.

- D. Klabjan, W. Olszewski, and A. Wolinsky (2012), Attributes.
- Y. Jiang, D. Klabjan, and L. Williams (2012), Algorithms for Generalized Cluster-wise Linear Regression.
- Y. Jiang and D. Klabjan (2012), Optimal Emissions Reduction Investment under Green House Gas Emissions Regulations.
- T. Sweda and D. Klabjan (2012), An Agent-Based Information System for Electric Vehicle Charging Infrastructure Deployment.
- P. Pei, D. Klabjan, and F. Karaesmen (2012), Auctions under Shareability and Externality.
- A. Wald and D. Klabjan (2012), Structural Deplaning via Simulation and Optimization.
- C. Borraz-Sanchez, J. Ma, D. Klabjan, E. Pasalic, M. Aref (2012), Algebraic Modeling in Datalog.
- C. Kim, D. Klabjan, D Simchi-Levi (2012), Optimal expediting policies for an inventory system with expiry.
- Y. Jiang, N. DeHoratius and D. Klabjan (2012), Inventory Management with Purchase Order Errors and Rework.
- C. Almeder, D. Klabjan, and B. Almada-Lobo (2011), Lead Time Considerations for the Multi-Level Capacitated Lot-sizing Problem.
- Seth, D. Klabjan and P. Ferreira (2009), A Novel Local Search Integer-Programming-Based Heuristic for PCB Assembly on Collect-and-Place Machines.
- L. Li, C.S. Pun, D Klabjan (2011), Single Item Lot-Sizing Problem with Minimum Order Quantity.
- O. de Weck, D. Klabjan, C. Taylor, D. Simchi-Levi, J. Ahn, E. Gralla, S. Shull (2008), Interplanetary Supply Chain Management and Logistics at NASA.
- Kim, D. Klabjan and D. Simchi-Levi (2008), Optimal Expediting Policies for an Inventory System with Stochastic Lead Time under Radio Frequency Identification.
- C. Kim, D. Klabjan, and D. Simchi-Levi (2009), Optimal Policy for Expediting Orders in Transit.
- S. Shebalov, Y. W. Park, and D. Klabjan (2012), Lifting for Mixed Integer Programs with Variable Upper Bounds.
- N. Halman, D. Klabjan, C-L. Li, J. Orlin and D. Simchi-Levi (2012), Fully Polynomial Time Approximation Schemes for Convex and Monotone Stochastic Dynamic Programming.

Technical Reports (to be submitted)

- Y. Jiang and D. Klabjan, Business-to-Consumer Single Period Fulfillment Strategies.
- M. Bundschuh, D. Klabjan, P. Pei, and D. Thurston, Modeling Robust and Reliable Supply Chains.
- Seth, D. Klabjan and P. Ferreira, Assembly Optimization for High-Volume High-Flexibility Robotic PCB Assembly.
- D. Klabjan, Algorithms for Lot Sizing with Supplier Selection.
- D. Klabjan, Economic Order Quantity for Business-to-Consumer Fulfillment.

Magazine Publications

- C. Taylor, M. Song, D. Klabjan, O. de Weck, D. Simchi-Levi, A Mathematical Model for Interplanetary Logistics, *Logistics Spectrum* 41 (2007), Issue 1, January-March, pages 23-33.
- D. Klabjan, R. Joshi, Harvesting Smart Grid Benefits, *M2M* (2009), September-October, page 40.

Academic Invited Lectures

- *University of Chicago*, Booth School of Business (2011)
- *Illinois Institute of Technology*, Applied Mathematics (2009)
- *University of Colorado, Boulder*, School of Business (2008)
- *Texas A&M*, Industrial and Systems Engineering (2008)
- *Northwestern University*, Kellogg School of Management (2008)
- *Fields Institute*, McMaster University (2007)
- *Ohio State University*, Integrated Systems Engineering (2007)
- *University of Wisconsin*, Industrial Engineering (2007)
- *MIT*, OR Center Seminar Series (2006)

- *University of Illinois at Urbana-Champaign*, Department of Aerospace Engineering (2006)
- *Cornell University*, Operations Research (2006)
- *Stanford*, Management Science and Engineering (2004)
- *Princeton University*, Operations Research (2004)
- *University of Michigan*, Industrial and Operations Engineering (2003)
- *University of California, Berkeley*, Civil and Environmental Engineering Seminar Series (2002)
- *MIT*, OR Center Seminar Series (2001)
- *SUNY Buffalo*, Industrial Engineering (2000)
- *University of Chicago*, Graduate School of Business (2000)
- *Georgia Institute of Technology*, Industrial and System Engineering (2000)

Corporate Invited Lectures

- Alcatel-Lucent, January, 2013.
- Amadeus, Nice, France, January 2013.
- NASA Langley, October 2012.
- FHWA, Freight & Carbon Footprint: Efforts to Enhance Supply Chain Sustainability, September 2010.
- Ford, R&D (2010)
- United Airlines, Enterprise Optimization (2008)
- Sabre Holdings, The Research Group (2007)
- O'Hare Airport, O'Hare Modernization Program (2007)
- Sears Holdings, Panelist of experts on Logistics Business Practices for Home Delivery (2007)
- FedEx Express, R&D (2006)
- RiverGlass Inc., R&D (2005)
- Motorola, R&D (2005)
- Caleb Technologies Corp., R&D (2004)
- SBS International, R&D (2003)
- American Airlines, Operations Research (2003)

Activities

- Department Editor of Design and Manufacturing, *IIE Transactions*
- Former President, INFORMS Aviation Section
- Memberships
 - Institute for Operations Research and the Management Sciences
 - Mathematical Optimization Society
 - Institute of Industrial Engineers
 - Alfred Sloan Foundation
 - Founding member of Industry Studies Association
 - IEEE
- Associate Editor
 - *Naval Research Logistics*
 - *Operations Research* (Area of Optimization)
 - *Operations Research* (Area of Transportation)
 - *IIE Transactions*
- Advisory Board member, INFORMS Practice meeting (2009,2010,2011)
- Main Organizer
 - Workshop: Innovation in Big Data Analytics, San Jose, CA (2012)
 - Workshop: The Greening of Transportation, Evanston, IL (2009)

- Workshop: Business Intelligence in Transportation, Evanston, IL (2009)
 - Fall INFORMS Meeting Cluster Chair: Scheduling in the Service Sector, Washington DC (2008)
- Evanston Mayor's Wind Farm Committee