John Silberholz josilber@umd.edu

Education

MIT, Cambridge, MA *Sept. 2011 – Aug. 2015*
PhD, Operations Research Center
Dissertation: "Analytics for Improved Cancer Screening and Treatment"
Thesis Supervisor: Dimitris Bertsimas

University of Maryland, College Park, MD *Sept. 2006 – May 2010*
Bachelor of Science, Computer Science (summa cum laude)
Bachelor of Science, Mathematics (summa cum laude, high honors)

Academic Positions

University of Maryland R.H. Smith School of Business, College Park, MD
Assistant Professor *Aug. 2024 – present*

University of Michigan Ross School of Business, Ann Arbor, MI
Assistant Professor *July 2017 – May 2024*

MIT Sloan School of Management, Cambridge, MA
Postdoctoral Fellow and Lecturer *Sept. 2015 – May 2017*

MIT Operations Research Center, Cambridge, MA
Research assistant *Sept. 2011 – Aug. 2015*

Journal Publications

17. "Cost-saving synergy: Energy stacking in battery energy storage systems" with J. Bae and R. Kapuscinski. *Accepted at Management Science*.
16. "Can Employees' Past Helping Behavior be Used to Improve Shift Scheduling? Evidence from ICU Nurses" with D. Costa, Z. Jiang, M. Sjoding, Y. Wang. *Accepted at Management Science*
    - Third place in the 2022 POMS College of Healthcare Operations Management Best Paper Competition
    - Finalist for the 2022 Behavioral Operations Management Best Working Paper Award
15. "Adaptive Clinical Trial Designs with Surrogates: When Should We Bother?" with A. Anderer and H. Bastani. *Management Science*, 68(3), 1982–2002, 2022.
    - Winner of the 2019 William Pierskalla Best Paper Award
    - Winner of the 2020 MSOM Student Paper Competition
    - Finalist in the 2020 Public Sector OR Best Paper Award
14. "Time to first onset of chest binding-related symptoms in transgender adults" with S. Peitzmeier, I. Gardner, J. Weinand, K. Acevedo. *Pediatrics*, 147(3), 2021.
13. "Clinical Benefit, Toxicity and Cost of Metastatic Breast Cancer Therapies: Systematic Review and Meta-analysis," with D. Bertsimas and L. Vahdat. *Breast Cancer Research and Treatment*, 176(3), 535–543, 2019.
12. "An Applied Informatics Decision Support Tool for Mortality Predictions in Cancer Patients," with D. Bertsimas, E. Chen, J. Dunn, A. Elfiky, C. Pawlowski, A. Weinstein, and Y. Zhuo. *JCO Clinical Cancer Informatics* 2, 1–11, 2018.
11. "What Works Best When? A Systematic Evaluation of Heuristics for Max-Cut and QUBO," with I. Dunning and S. Gupta. *INFORMS Journal on Computing*, 30(3), 608–624, 2018.

- Special Recognition for the 2016 INFORMS Computing Society Student Paper Prize

10. "Optimal healthcare decision making under multiple mathematical models: Application in prostate cancer screening," with D. Bertsimas and T. Trikalinos. *Health Care Management Science*, 21(1), 105–118, 2018.
9. "An Analytics Approach to Designing Combination Chemotherapy Regimens for Cancer," with D. Bertsimas, A. O'Hair, and S. Relyea. *Management Science*, 62(5), 1511–1531, 2016.

    - Winner of the 2013 William Pierskalla Best Paper Award

8. "Tenure Analytics: Models for Predicting Research Impact," with D. Bertsimas, E. Brynjolfsson, and S. Reichman. *Operations Research*, 63(6), 1246–1261, 2015.
7. "A Course on Advanced Software Tools for Operations Research and Analytics," with I. Dunning, V. Gupta, A. King, J. Kung, and M. Lubin, *INFORMS Transactions on Education*, 15(2), 169–179, 2015.
6. "Comparison of Heuristics for the Colorful Traveling Salesman Problem," with A. Raiconi, R. Cerulli, M. Gentili, B. Golden, and S. Chen, *International Journal of Metaheuristics*, 2(2): 141–173, 2013.
5. "Empirical Analysis of the Effect of Residents on Emergency Department Treatment Times," with D. Anderson, B. Golden, M. Harrington, and J. M. Hirshon, *IIE Transactions on Healthcare Systems Engineering* 3(3), 171–180, 2013.
4. "The Impact of the Residency Teaching Model on the Efficacy of the Emergency Department at an Academic Center," with D. Anderson, B. Golden, M. Harrington, and J. M. Hirshon, *Socio-Economic Planning Sciences* 47(3), 183–190, 2013.
3. "Statistical Constraints on Binary Black Hole Inspiral Dynamics," with C. Galley, F. Herrmann, M. Tiglio, and G. Guerberoff, *Classical and Quantum Gravity* 27(24), 245007, 2010.
2. "The Effective Application of a New Approach to the Generalized Orienteering Problem," with B. Golden, *Journal of Heuristics* 16(3), 393–415, 2010.

    - Winner of the 2010 INFORMS Undergraduate Operations Research Prize

1. "Integrating Post-Newtonian Equations on Graphics Processing Units," with F. Herrmann, M. Bellone, G. Guerberoff, and M. Tiglio, *Classical and Quantum Gravity* 27(3), 032001, 2010.

ARTICLES SUBMITTED

"Enhancing Safety Signaling: Integrating Clinical Trials and Post-Marketing Adverse Event Reports" with F. Bravo and Y. Chen. *First Round Major Revision at Manufacturing and Service Operations Management.*

WORKING PAPERS

"Optimal COVID-19 Containment Strategies: Evidence Across Multiple Mathematical Models" with H.-S. Ahn, X. Song, and X. Wu.

"Measuring Utility and Speculation in Blockchain Tokens" with D. Wu.

Articles in Preparation

"Online Learning with Survival Data" with A. Anderer and H. Bastani. *Targeted for Manufacturing & Service Operations Management*.

"Do Regulators Adequately Control for the Control Arm? An Empirical Analysis of Drug Approvals" with S. Verma and X. Wu. *Targeted for Management Science*.

"Dynamic Valuation of a Battery Under Performance Degradation" with J. Bae and R. Kapuscinski. *Targeted for Management Science*.

Dissertation

"Analytics for Improved Cancer Screening and Treatment," MIT Operations Research Center, 2015.

Other Publications

"Computational Comparison of Metaheuristics," with B. Golden, S. Gupta, and X. Wang, *Handbook of Metaheuristics, Third Edition (M. Gendreau and J. Potvin, eds.)*, Springer, 581–604, 2019.

"Black Hole Simulations with CUDA," with F. Herrmann and M. Tiglio, *GPU Computing Gems Emerald Edition (W. Hwu, ed.)*, Morgan Kaufmann, 103–111, 2011.

"Comparison of Metaheuristics," with B. Golden, *Handbook of Metaheuristics (M. Gendreau and J. Potvin, eds.)*, Springer, 625–640, 2010.

"Comparison of Heuristics for Solving the GMLST Problem," with Y. Chen, N. Cornick, A. Hall, R. Sahajpal, I. Yahav, and B. Golden, *Proceedings of the 9th INFORMS Telecommunications Conference*, 191–217, 2008.

"The Generalized Traveling Salesman Problem: A New Genetic Algorithm Approach," with B. Golden, *Proceedings of the 10th INFORMS Computing Society Conference*, 165–181, 2007.

Invited Presentations

Learning Adaptive Behavioral Interventions to Reduce ASCVD Risk
2024 INFORMS Annual Meeting, Seattle, WA — *Oct. 2024*

Adaptive Clinical Trial Designs with Surrogates
Southern Methodist University, Cox School of Business — *Mar. 2024*
University of Maryland, Robert H. Smith School of Business — *Dec. 2023*
2020 INFORMS Annual Meeting, Virtual — *Nov. 2020*

Combining Clinical Trial and Observational Data in Drug Safety Signaling
2023 INFORMS Annual Meeting, Phoenix, AZ — *Oct. 2023*
2023 INFORMS Healthcare Conference, Toronto, ON — *July 2023*
Inst. for Mathematical and Statistical Innovation Workshop, Chicago, IL — *May 2023*
2022 INFORMS Annual Meeting, Indianapolis, IN — *Oct. 2022*
The Future of Analytics and OR Workshop, Indianapolis, IN — *Oct. 2022*
University of Pennsylvania, Wharton School — *Feb. 2022*

Using Past Helping Behavior to Improve Shift Scheduling
2023 INFORMS Healthcare Conference, Toronto, ON — *July 2023*
POMS 32nd Annual Conference, Virtual — *Apr. 2022*

Clinical Trial Design From A Network Meta-Analysis Lens
2021 INFORMS Annual Meeting, Virtual — *Oct. 2021*

Optimal COVID-19 Containment Strategies
2021 INFORMS Healthcare Meeting, Virtual — *July 2021*
MSOM Conference 2021, Virtual — *June 2021*

Batch Bayesian Optimization for Healthcare Policy Optimization
2019 INFORMS Annual Meeting, Seattle, WA — *Oct. 2019*
2019 INFORMS Healthcare Meeting, Cambridge, MA — *July 2019*

Price of Simplicity in Personalized Cancer Screening

2019 INFORMS Healthcare Meeting, Cambridge, MA	*July 2019*
2018 INFORMS Annual Meeting, Phoenix, AZ	*Nov. 2018*
2017 INFORMS Annual Meeting, Houston, TX	*Oct. 2017*

Designing Drug Therapies for Cancer

University of Michigan, Ross School of Business	*Mar. 2017*
University of Michigan, College of Engineering	*Feb. 2017*
Georgia Institute of Technology, College of Engineering	*Feb. 2017*
University of California Los Angeles, Anderson School of Management	*Feb. 2017*
Yale University, Yale School of Management	*Feb. 2017*
Boston College, Carroll School of Management	*Jan. 2017*
University of Maryland, Robert H. Smith School of Business	*Jan. 2017*
University of North Carolina Chapel Hill, Kenan-Flagler Business School	*Jan. 2017*
University of California San Diego, Rady School of Management	*Jan. 2017*
Northwestern University, McCormick School of Engineering	*Jan. 2017*
2016 INFORMS Annual Meeting, Nashville, TN	*Nov. 2016*
MIT Sloan School of Management, Operations Management Seminar	*Oct. 2016*
INFORMS Healthcare 2015, Nashville, TN	*July 2015*
2013 INFORMS Annual Meeting, Minneapolis, MN	*Oct. 2013*
INFORMS Healthcare 2013, Chicago, IL	*June 2013*

Optimal Screening Under Multiple Mathematical Models

POMS 27th Annual Conference, Orlando, FL	*May 2016*
2015 INFORMS Annual Meeting, Philadelphia, PA	*Nov. 2015*
2014 INFORMS Annual Meeting, San Francisco, CA	*Nov. 2014*
POMS 25th Annual Conference, Atlanta, GA	*May 2014*

Awards

2024 OPRE Meritorious Service Award, award for Operations Research reviewers who have gone above and beyond normal expectations (Mar. 2025)

Neary Teaching Excellence Award, award for the top Master's of Business Analytics teacher at the Ross School of Business (May 2024)

William Pierskalla Best Paper Award, best paper award of the INFORMS Health Applications Society (Awarded twice — Oct. 2013 and Oct. 2019)

Special Recognition for the INFORMS Computing Society Student Paper Prize (Nov. 2016)

Course Central's Top 50 MOOCs of All Time recognition for *15.071x: The Analytics Edge*, a Massive Open Online Course (MOOC) I developed as a PhD student jointly with Sloan faculty/instructors and four other PhD students (July 2016)

NSF Graduate Research Fellowship Program Award (Mar. 2012)

INFORMS Undergraduate Operations Research Prize, an award for the top undergraduate operations research paper worldwide (Nov. 2010)

Barry M. Goldwater Scholarship, an award for the top 278 U.S. undergraduate researchers in science, mathematics, and engineering (Mar. 2009)

Grad Teaching Experience

BUDT758J: Enterprise Cloud Computing and Big Data *Spring '25*
Redeveloped and delivered Smith MSBA core course on enterprise cloud computing and big data.

TO 640: Big Data Mgmt. Tools and Techniques *Winter '18, '19, '21, '23; Fall '23*
Delivered Ross MBA elective on software tools for big data management.

MBAN 554: Data Exploration and Visualization *Fall 2023*
Delivered Ross MBAn core course on data visualization theory and practice.

BA 553: Multidisciplinary Action Projects *Winter 2022, 2023*
Co-advised Ross MBA consulting teams.

TO 502: Applied Business Statistics *Fall 2019*
Delivered the Ross MBA statistics core.

15.071 The Analytics Edge *Spring 2017*
Delivered (with Prof. Robert Freund) two sections of this Sloan MBA elective course on analytics.

15.060 Data, Models, and Decisions *Fall 2016*
Delivered two sections of this Sloan MBA Core course on quantitative methods.

15.071 The Analytics Edge *Spring 2016*
Delivered (with Prof. Robert Freund) two sections of this Sloan MBA elective course on analytics. Co-developed 13 new lectures for the course.

Other Teaching Experience

15.003: Analytics Software Tools *Sept. 2016*
Developed and delivered a 3-hour module on data wrangling with dplyr in R.

15.S60 SSIM: Software Tools for Operations Research *Jan. 2015*
Developed and delivered a 3-hour module on network analysis in R.

15.071x The Analytics Edge *Mar. 2013 – May 2014*
Co-developed a Massive Open Online Course (MOOC). Curated 14 datasets/associated materials, co-developed three lectures, and developed and videoed two recitations.

15.S60 SSIM: Software Tools for Operations Research *Jan. 2014*
Developed and delivered a 3-hour module on data wrangling in base R.

Teaching Assistant: 15.071 The Analytics Edge *Feb. – May 2013*
Graded assignments and developed and delivered recitations.

15.S60 SSIM: Software Tools for Operations Research *Jan. 2013*
Developed and gave 3-hour modules on advanced R and distributed optimization.

Case Studies Developed

"Organ Allocation at the National Paired Kidney Exchange," with D. Gamarnik and I. Ashlagi.

Service

Session chair: INFORMS Annual Meeting (2015, 2017, 2018, 2020); POMS Annual Conference (2019), INFORMS Healthcare (2019)

Cluster chair: CORS/INFORMS International Conference (2022)

Ad Hoc Reviewer: Applied Soft Computing, Cancer Informatics, Cancer Research, Computers & Operations Research, INFORMS Journal on Computing, INFORMS Transactions on Education, Journal of Experimental Algorithmics, Management Science, MSOM, MSOM Healthcare SIG, Naval Research Logistics, Operations Research, PLOS One, Production and Operations Management

Guest Associate Editor: Naval Research Logistics (special issue on Pandemic Preparedness)

Competition Judge: Pierskalla Award (2014 [co-chair], 2017, 2020 [co-chair]), POMS College of Healthcare Operations Best Paper Contest (2020), Nicholson Prize (2020, 2021), MSOM Student Paper Contest (2020, 2021, 2022, 2023), Seth Bonder Scholarship (2021, 2022), BOM Best Working Paper Competition (2022), INFORMS Health Applications Society Student Paper Competition (2023), Public Sector OR Student Paper Contest (2023)

PhD Students Advised

Joonho Bae (2019 – present); PhD student co-advised with Roman Kapuscinski. First academic placement: Assistant Professor at Indiana University

Arielle Anderer (2018–2023); PhD student (primary advisor: Hamsa Bastani). First academic placement: Assistant Professor at Cornell University

Chuxuan Liu (2024–present); PhD student.

Other Experience

Google, New York, NY
Software Development Engineer Intern *May – Aug. 2011*
Implemented validation framework for predictions published by Google AdWords.

Enertaq, Inc., Chevy Chase, MD
Co-founder and Chief Technology Officer *Jan. – Dec. 2010*
Co-developed a novel control-theoretic approach to providing electricity grid reliability via frequency regulation. Designed and implemented a distributed software system, managing a small development team.

Microsoft Corporation, Redmond, WA
Software Development Engineer Intern *May – Aug. 2008*
Implemented UI and cache optimization projects shipped in Microsoft Office 2010.

Last Updated

June 9, 2025