

Huseyin Topaloglu

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Education

- Ph.D. in Operations Research and Financial Engineering, Princeton University, Princeton, NJ, 2001.
Dissertation Title: “Dynamic Programming Approximations for Dynamic Resource Allocation Problems” (advised by Warren B. Powell).
- M.A. in Operations Research and Financial Engineering, Princeton University, Princeton, NJ, 1999.
- B.Sc. in Industrial Engineering, Bogazici University, Istanbul, Turkey, 1997.
Thesis Title: “Behavioral Validation of System Dynamics Models” (advised by Yaman Barlas).

Academic Experience

- Professor, School of Operations and Information Engineering, Cornell University, Ithaca, NY, 2014-present.
- Associate Professor, School of Operations and Information Engineering, Cornell University, Ithaca, NY, 2008-2014.
- Assistant Professor, School of Operations and Information Engineering, Cornell University, Ithaca, NY, 2002-2008.
- Postdoctoral Research Fellow, Department of Operations Research and Financial Engineering, Princeton University, Princeton, NJ, 2001-2002.

Selected Awards

- INFORMS Revenue Management and Pricing Section Prize for the paper “Using Lagrangian relaxation to compute capacity-dependent bid prices in network revenue management,” 2010.*
- Sonny Yau ‘72 Excellence in Teaching, College of Engineering, Cornell University, 2005, 2012.†
- Professor of the Year voted by the undergraduate and Master of Engineering students, School of Operations Research and Information Engineering, Cornell University, 2005, 2006, 2010, 2013, 2014.
- James M. and Marsha D. McCormick Award for Outstanding Advising, College of Engineering, Cornell University, 2014.
- COIN-OR Cup for the application of DFO and IPOPT to develop technologies for cargo capacity management and dynamic pricing in joint work with Y. Levin, T. Levin, J. McGill and M. Nediak, 2009.

* Awarded annually by INFORMS Revenue Management and Pricing Section for the best contribution to the science of pricing and revenue management published in English.

† Awarded by College of Engineering at Cornell University to recognize teaching excellence.

Selected Publications

Refereed Journal Publications

1. G. Li, P. Rusmevichientong and H. Topaloglu, “The d -level nested logit model: Assortment and price optimization problems,” *Operations Research*, to appear.
2. J. Feldman and H. Topaloglu, “Technical note: Capacity constraints across nests in assortment optimization under the nested logit model,” *Operations Research*, to appear.
3. G. Gallego and H. Topaloglu, “Constrained assortment optimization for the nested logit model,” *Management Science*, to appear.
4. M.S. Maxwell, E.C. Ni, C. Tong, S.R. Hunter, S.G. Henderson and H. Topaloglu, “A bound on the performance of an optimal ambulance redeployment policy,” *Operations Research*, to appear.
5. J. Feldman, N. Liu, H. Topaloglu and S. Ziya, “Appointment scheduling under patient preference and no-show behavior,” *Operations Research*, to appear.
6. J.M. Davis, G. Gallego and H. Topaloglu, “Assortment optimization under variants of the nested logit model,” *Operations Research*, to appear.
7. C. Ding, P. Rusmevichientong and H. Topaloglu, “Balancing revenues and repair costs under partial information about product reliability,” *Production and Operations Management*, to appear.
8. P. Rusmevichientong, D. Shmoys, C. Tong and H. Topaloglu, “Assortment optimization under the multinomial logit model with random choice parameters,” *Production and Operations Management*, to appear.
9. C. Tong and H. Topaloglu, “On the approximate linear programming approach for network revenue management problems,” *INFORMS Journal on Computing*, vol. 26, pp. 121–134, 2014.
10. M.S. Maxwell, S.G. Henderson and H. Topaloglu, “Tuning approximate dynamic programming policies for ambulance redeployment via direct search,” *Stochastic Systems*, vol. 3, pp. 322–361, 2013.
11. H. Topaloglu, “Joint stocking and product offer decisions under the multinomial logit model,” *Production and Operations Management*, vol. 22, pp. 1182–1199, 2013.
12. P. Rusmevichientong and H. Topaloglu, “Robust assortment optimization in revenue management under the multinomial logit choice model,” *Operations Research*, vol. 60, pp. 865–882, 2012.
13. H. Topaloglu, S.I. Birbil, J.B.G. Frenk and, N. Noyan, “Tractable open loop policies for joint overbooking and capacity control over a single flight leg with multiple fare classes,” *Transportation Science*, vol. 46, pp. 460–481, 2012.
14. Y. Levin, M. Nediak and H. Topaloglu, “Cargo capacity management with allotments and spot market demand,” *Operations Research*, vol. 60, pp. 351–365, 2012.
15. S. Kunnumkal, K. Talluri and H. Topaloglu, “A randomized linear programming method for network revenue management with product-specific no-shows,” *Transportation Science*, vol. 46, pp. 90–108, 2012.
16. S. Kunnumkal and H. Topaloglu, “A stochastic approximation algorithm to compute bid prices for joint capacity allocation and overbooking over an airline network,” *Naval Research Logistics*, vol. 54, pp. 323–343, 2011.

17. S. Kunnumkal and H. Topaloglu, “A new dynamic programming decomposition method for the network revenue management problem with customer choice behavior,” *Production and Operations Management*, vol. 19, pp. 575–590, 2010.
18. S. Kunnumkal and H. Topaloglu, “A stochastic approximation method with max-norm projections and its applications to the Q-Learning algorithm,” *The ACM Transactions on Modeling and Computer Simulation*, vol. 20, pp 12:1–12:26, 2010.
19. A. Erdelyi and H. Topaloglu, “A dynamic programming decomposition method for making overbooking decisions over an airline network,” *INFORMS Journal on Computing*, vol. 22, pp. 443–456, 2010.
20. S. Kunnumkal and H. Topaloglu, “Computing time-dependent bid-prices in network revenue management problems,” *Transportation Science*, vol. 44, pp. 38–62, 2010.
21. M.S. Maxwell, M. Restrepo, S.G. Henderson and H. Topaloglu, “Approximate dynamic programming for ambulance redeployment,” *INFORMS Journal on Computing*, vol. 22, pp. 266–281, 2010.
22. S. Kunnumkal and H. Topaloglu, “A stochastic approximation method for the single-leg revenue management problem with discrete demand distributions,” *Mathematical Methods of Operations Research*, vol. 70, pp. 477–504, 2009.
23. H. Topaloglu, “Using Lagrangian relaxation to compute capacity-dependent bid prices in network revenue management,” *Operations Research*, vol. 57, pp. 637–649, 2009.
24. S. Kunnumkal and H. Topaloglu, “A duality-based relaxation and decomposition approach for inventory distribution systems,” *Naval Research Logistics*, vol. 55, pp. 612–631, 2008.
25. H. Topaloglu, “A stochastic approximation method to compute bid prices in network revenue management problems,” *INFORMS Journal on Computing*, vol. 20, pp. 596–610, 2008.
26. S. Kunnumkal and H. Topaloglu, “Using stochastic approximation methods to compute optimal base-stock levels in inventory control problems,” *Operations Research*, vol. 56, pp. 646–664, 2008.
27. S. Kunnumkal and H. Topaloglu, “Exploiting the structural properties of the underlying Markov decision problem in the Q-learning algorithm,” *INFORMS Journal on Computing*, vol. 20, pp. 288–301, 2008.
28. H. Topaloglu and W.B. Powell, “Incorporating pricing decisions into the stochastic dynamic fleet management problem,” *Transportation Science*, vol. 41, pp. 281–301, 2007.
29. H. Topaloglu and W.B. Powell, “Sensitivity analysis of a dynamic fleet management model using approximate dynamic programming,” *Operations Research*, vol. 55, pp. 319–331, 2007.
30. H. Topaloglu and W.B. Powell, “Dynamic programming approximations for stochastic, time-staged integer multicommodity flow problems,” *INFORMS Journal on Computing*, vol. 18, pp. 31–42, 2006.
31. H. Topaloglu and W.B. Powell, “A distributed decision making structure for dynamic resource allocation using nonlinear functional approximations,” *Operations Research*, vol. 53, pp. 281–297, 2005.
32. W.B. Powell, A. Ruszczyński and H. Topaloglu, “Learning algorithms for separable approximations of discrete stochastic optimization problems,” *Mathematics of Operations Research*, vol. 29, pp. 814–836, 2004.

Working Papers

Manuscripts are available at

<http://people.orie.cornell.edu/huseyin/publications/publications.html>.

1. J.M. Davis, G. Gallego and H. Topaloglu, “Assortment planning under the multinomial logit model with totally unimodular constraint structures,” submitted to *Manufacturing & Service Operations Management*, J.M. Davis won an honorable mention in 2014 Nicholson Student Paper Prize with this paper.
2. J. Feldman and H. Topaloglu, “Revenue management under the Markov chain choice model,” submitted to *Operations Research*.

Sponsored Research

- “Collaborative Research: Integrating Complex Choice Behavior into Assortment, Inventory and Pricing Decisions,” National Science Foundation, CMMI-1433398, co-principal investigator with Paat Rusmevichientong, \$323,637 (Portion of Cornell University is \$251,000), 2014-2017.
- “A General Framework for Incorporating Choice Models into Operations Management Decisions,” National Science Foundation, CMMI-0969113, co-principal investigator with Paat Rusmevichientong, \$300,000, 2010-2013.
- “Approximate Dynamic Programming for Perishable Asset Management with Applications in Dynamic Pricing, Capacity Allocation and Revenue Management,” National Science Foundation, CMMI-0825004, \$320,942, 2008-2011.
- “Approximate Dynamic Programming, Simulation Optimization and Emergency Services,” National Science Foundation, CMMI-0758441, co-principal investigator with Shane Henderson, \$267,422, 2008-2011.
- “Sensitivity Analysis of the Dynamic Fleet Management Problem, with Applications in Fleet Sizing, Pricing and Terminal Capacity Planning,” National Science Foundation, DMI-0422133, \$199,996, 2004-2007.

Selected Recent Seminars and Plenary Talks

- University of California, Santa Cruz, CA, “Revenue management under the multinomial logit model,” March 2015.
- University of British Columbia, Vancouver, BC, “Revenue management under the Markov chain choice model,” October 2014.
- Stanford University, Stanford, CA, “Revenue management under the Markov chain choice model,” October 2014.
- University of Minnesota, Minneapolis, MN, “Revenue management under the Markov chain choice model,” September 2014.
- INFORMS Revenue Management and Pricing Section Conference, Istanbul, Turkey, “Assortment optimization under variants of the multinomial logit model,” June 2014.
- INFORMS Revenue Management and Pricing Section Conference, Tutorial for Ph.D. Students, Istanbul, Turkey, “Fundamental models and solution methods in revenue management,” June 2014.
- Revenue Management and Pricing Workshop Hosted by Universidad Torcuato Di Tella, Buenos Aires, Argentina, “Assortment optimization under variants of the multinomial logit model,” May 2014.

- University of Southern California, Los Angeles, CA, “Assortment optimization when customers choose according to the nested logit model,” November 2013.
- 13th International Conference on Stochastic Programming, Bergamo, Italy “Role of stochastic programming in revenue management,” July 2013.
- Tsinghua University, Beijing, China, “A unified look at decomposition methods for network revenue management problems,” May 2013.
- Duke University, Durham, NC, “Assortment optimization under variants of the nested logit model,” November 2012.
- SAS Institute, Cary, NC, “A unified look at decomposition methods for network revenue management problems,” October 2012.
- University of Colorado, Boulder, CO, “Assortment optimization under variants of the nested logit model,” September 2012.
- New York University, New York, NY, “Robust assortment optimization under multinomial logit model,” April 2012.
- Columbia University, New York, NY, “A unified look at decomposition methods for network revenue management problems,” February 2012.
- University of Maryland, College Park, MD, “Robust assortment optimization under multinomial logit model,” December 2011.
- Columbia University, New York, NY, “Robust assortment optimization under multinomial logit model,” October 2011.
- INFORMS Simulation Society Research Workshop, Montreal, Canada, “Revenue management: Applications, models and algorithms,” July 2011.
- Rutgers University, Newark, NJ, “Algorithms for large-scale network revenue management,” April 2011.
- University of Michigan, Ann Arbor, MI, “Assortment optimization with mixtures of logits,” December 2010.
- Northwestern University, Evanston, IL, “Assortment optimization with mixtures of logits,” November 2010.
- 12th International Conference on Stochastic Programming, Ph.D. Workshop Series, Halifax, Canada, “Solution methods for stochastic programs,” August 2010.

Short Term University Visits

- Kellogg School of Management, Northwestern University, Evanston, IL, May 14-18, 2012.
- Bogazici University, Istanbul, Turkey, February 12-June 8, 2010.
- Tecnologico de Monterrey, Santiago de Queretaro, Mexico, Academic Leaders Program, March 16-20, 2009.
- Indian School of Business, Hyderabad, India, June 30-July 11, 2008.

Selected Professional Service

- Associate editor for *Management Science*, 2014-Present.
- Associate editor for *Surveys in Operations Research and Management Science*, 2013-Present.

- Associate editor for *IIE Transactions*, 2009-Present.
- Associate editor for *Transportation Science*, 2009-Present.
- Associate editor for *Mathematical Programming Computation*, 2008-Present.
- Associate editor for *Operations Research*, 2007-Present.
- Guest associate editor for *Management Science* for the special issue “Business Analytics,” 2012.
- Chair for INFORMS Revenue Management Section Prize, 2014.
- Co-chair for INFORMS George Nicholson Student Paper Competition, 2013.
- Chair for Tutorials Cluster at INFORMS Annual Meeting, 2013.
- Vice chair for Stochastic Programming for INFORMS Optimization Society, 2010-2012.
- Chair for INFORMS Transportation Science and Logistics Society Dissertation Prize, 2011.

Ph.D. Students

Graduated Ph.D. Students

- Zachary Rayfield, “Pricing and assortment problems under correlated product evaluations,” first position at Walt Disney Parks and Resorts, Lake Buena Vista, FL, 2014.
- Chao Ding, “Multi-dimensional problems in single-resource revenue management,” co-advised with Paat Rusmevichientong, first position at Google, Mountain View, CA, 2012.
- Collin Sik Kin Chan, “Decomposition methods for managing service parts with coupled demands,” co-advised with Peter Jackson, first position at Bank of America, New York, NY, 2012.
- Matthew Maxwell, “Approximate Dynamic Programming Policies and Performance Bounds for Ambulance Redeployment,” co-advised with Shane Henderson, first position at SAS Institute, Cary, NC, 2011.
- Alexander Erdelyi, “Dynamic Programming Decomposition Methods for Capacity Allocation and Network Revenue Management Problems,” first position at Austrian National Bank, Austria, 2009.
- Mateo Restrepo, “Computational Methods for Static Allocation and Real-Time Redeployment of Ambulances,” co-advised with Shane Henderson, first position at Merrill Lynch, New York, NY, 2008.
- Sumit Kunnunkal, “Approximate Dynamic Programming and Stochastic Approximation Algorithms for Inventory Control and Revenue Management,” first position at Indian School of Business, India, 2007.

Current Ph.D. Students

- James Davis, co-advised with David Williamson.
- Jacob Feldman.
- Jiayang Gao, co-advised with Kris Iyer.

Recent Courses Taught and Ratings

Question 8: Rate the teaching effectiveness of your lecturer compared to others at Cornell University. Highest possible rating is a five.

Term	Course Title	Rating for Topaloglu in Question 8	Number of Students Enrolled	Average Rating for Question 8 in College of Engineering
Fall 2014	ORIE 4580, 5580 Simulation Modeling and Analysis	4.7 [‡]	136	Not available yet
Fall 2014	ORIE 5581 Monte Carlo Simulation	4.5	51	Not available yet
Spring 2014	ORIE 7191 Special Topics: Revenue Management	4.8	10	3.7
Fall 2013	ORIE 4580, 5580 Simulation Modeling and Analysis	4.7	161	3.8
Fall 2013	ORIE 5581 Monte Carlo Simulation	4.7	46	3.8
Spring 2013	SYSEN 5200, 5210 [§] Systems Architecture, Behavior and Optimization	4.5	133	3.7
Fall 2012	ORIE 4580, 5580 Simulation Modeling and Analysis	4.5	134	3.9
Fall 2012	ORIE 5581 Monte Carlo Simulation	4.7	36	3.9
Spring 2012	SYSEN 5200, 5210 Systems Architecture, Behavior and Optimization	4.4	128	3.8
Fall 2011	ORIE 4580, 5580 Simulation Modeling and Analysis	4.5	123	3.8
Fall 2011	ORIE 5581 Monte Carlo Simulation	4.6	58	3.8
Spring 2011	SYSEN 5200, 5210 Systems Architecture, Behavior and Optimization	4.5	109	3.8
Spring 2011	ORIE 7191 Special Topics: Revenue Management	4.8	11	3.8
Did not teach in Spring and Fall 2010				
Fall 2009	ORIE 4580, 5580 Simulation Modeling and Analysis	4.7	141	3.8

[‡]Question 8: Rate the teaching effectiveness of your lecturer compared to others at Cornell University. Highest possible rating is a five.

[§]Students in SYSEN 5210 are distance learning students with full time jobs. Lectures for SYSEN 5200 and SYSEN 5210 are recorded and made available online for these students.

Term	Course Title	Rating for Topaloglu in Question 8	Number of Students Enrolled	Average Rating for Question 8 in College of Engineering
Fall 2009	ORIE 5581 Monte Carlo Simulation	4.8	44	3.8
Spring 2009	SYSEN 5200, 5210 Systems Architecture, Behavior and Optimization	4.5	93	3.7