

Isenberg School of Management
University of Massachusetts Amherst
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Education

Ph.D. Industrial Engineering
Georgia Institute of Technology, Atlanta, GA
Dissertation: Efficient Solution Procedures for Multistage Stochastic
Formulations of Two Problem Classes
Advisors: Ellis Johnson, John-Paul Clarke

M.S. Industrial Engineering
Georgia Institute of Technology, Atlanta, GA, *with co-op*

B.S. Electrical Engineering
United States Naval Academy, Annapolis, MD, *with distinction*

University Experience

John F. Smith Memorial Professor and
Department Chair
University of Massachusetts Amherst Amherst, MA
Isenberg School of Management
Department of Operations and Information Management

Professor and Department Chair
University of Massachusetts Amherst Amherst, MA
Isenberg School of Management
Department of Operations and Information Management

Associate Professor
University of Massachusetts Amherst Amherst, MA
Isenberg School of Management
Department of Operations and Information Management

Assistant Professor
University of Massachusetts Amherst Amherst, MA
Isenberg School of Management
Department of Operations and Information Management

Professional Experience

Planning Analyst
Hartsfield-Jackson Atlanta Intl. Airport Atlanta, GA
Planning and Development Department

Honors and Awards

- Finalist, INFORMS Service Science Section Best DEIJ Paper Award (2023)
- Honorable Mention, POMS College of Sustainable Operations Student Paper Competition - Research Advisor (2023)
- Distinguished Paper Award, Decision Science Institute Southwest Region Conference (2023)
- Best Poster Award, FICS Research Conference on Cybersecurity (2018)
- Best Publication Award in Environment and Sustainability, INFORMS Energy, Natural Resources, and the Environment Section (2017)
- Best Dissertation Award, INFORMS Aviation Applications Section - Research Advisor (2017)
- Outstanding Paper Award in Air Transportation, INFORMS Transportation Science and Logistics Society (2016)
- Research Excellence Award, Isenberg School of Management, University of Massachusetts Amherst (2015)
- Student Centered Teaching and Learning Fellowship Award, University of Massachusetts Amherst (2015)
- Best Student Paper Award in Conference, Third Place, International Conference on Industrial Engineering and Operations Management - Research Advisor (2015)
- Outstanding Researcher Award, Isenberg School of Management, University of Massachusetts Amherst (2014)
- Best Cybersecurity Solution Award, Second Place, Advanced Cyber Security Center (ACSC) Annual Conference (2014)
- Graduate Research Award, Federal Aviation Administration (FAA) - Research Advisor (2014)
- Best Paper Award in Computer and Information Systems, Institute of Industrial Engineers (IIE) Annual Conference (2014)
- Honorable Mention, INFORMS Section on Public Programs, Services and Needs Best Paper Award (2013)
- Finalist, INFORMS Doing Good with Good OR Student Paper Competition - Research Advisor (2013)
- Best Paper Award in Operations Research and Management, 3rd International Conference on Industrial Engineering and Operations Management (2012)

Senay Solak (continued)

- Best Paper Award, Joseph A. Hartman Student Paper Competition - Research Advisor (2012)
- Best Paper Award in Conference, Second Place, 28th Digital Avionics Systems Conference (2009)
- Best Paper Award in Air Traffic Management, 28th Digital Avionics Systems Conference (2009)
- Best Paper Award in Conference, 43rd Southeastern INFORMS Conference (2007)
- The Supply Chain & Logistics Institute Global Logistics Scholar, Georgia Institute of Technology (2005)

Journal Papers

1. W. Wei, P. Arora, S. Solak^S, “Allocation of Funds in Bilevel Subsidy Welfare Programs,” accepted. *Manufacturing & Service Operations Management* (2024).
2. S. Solak, Z. Li, M. Gumus, Y. Zhuo, “A Budgeting Resource Allocation Model for Capacity Expansion,” accepted. *International Journal of Production Economics* (2024).
3. Y. Zhuo, S. Solak^S, Y. Zou, B. Hu “Sharing is Caring: Designing Incentive Rebate Strategies for Information Sharing Alliances,” accepted. *Decision Sciences* (2024).
4. Z. Hu, H. Chen, E. Lyons, S. Solak^S, M. Zink, “Towards Sustainable UAV Operations: Balancing Economic Optimization with Environmental and Social Considerations in Path Planning,” *Transportation Research Part B*, 181, 103314 (2024).
5. Y. Zhuo, S. Solak^S, O. Harmanli, K. Jones “Optimal Treatment Policies for Pelvic Organ Prolapse in Women,” *Decision Sciences*, 54 (2), pp. 154–176 (2023).
6. A. Bayram, S. Solak^S, O. Harmanli, B. Cesaret “Selecting a Winning Team: Management of Surgical Team Composition in Robotic Surgery,” *Computers and Industrial Engineering*, 175, 108819 (2023).
7. P. Arora, W. Wei, S. Solak^S, “Improving Outcomes in Child Care Subsidy Voucher Programs under Regional Asymmetries,” *Production and Operations Management*, 30 (12), pp. 4435–4454 (2021).
8. H. Chen, Z. Hu, S. Solak^S, “Improved Delivery Policies for Future Drone-based Delivery Systems,” *European Journal of Operational Research*, 294 (3), pp. 1181–1201 (2021).
9. O. Harmanli, S. Solak, A. Bayram, B. Yuksel, K. Jones, “Optimizing The Robotic Surgery Team: An Operations Management Perspective,” *International Urogynecology Journal*, 32 (6), pp. 1379–1385 (2021).
10. S. Solak, Y. Zhuo, “Optimal Policies for Information Sharing in Information System Security,” *European Journal of Operational Research*, 284 (3), pp. 934–950 (2020).

11. E. Erdin, M. Cebe, K. Akkaya, S. Solak, E. Bulut, S. Uluagac, “A Bitcoin Payment Network with Reduced Transaction Fees and Confirmation Times,” *Computer Networks*, 172, 107098 (2020).
12. H. Chen, S. Solak^S, “Lower Cost Departures for Airlines: Optimal Policies under Departure Metering,” *Transportation Research Part C*, 111, pp. 531–546 (2020).
13. S. Solak, A. Bayram, M. Gumus, Y. Zhuo, “Optimizing Foreclosed Housing Acquisition Portfolios in Societal Response to Foreclosures,” *Operations Research*, 67 (4), pp. 950–964 (2019).
14. A. Bayram, S. Solak^S, “An Application of Routing Location and Allocation Model for Drinking Water Distribution,” *International Journal of Industrial and Systems Engineering*, 31 (4), pp. 452–474 (2019).
15. S. Solak, G. Solveling, J-P. Clarke, E. Johnson, “Stochastic Runway Scheduling,” *Transportation Science*, 52 (4), pp. 739–1034 (2018).
16. S. Solak, H. Chen, “Optimal Metering Point Configurations for Optimized Profile Descent Based Arrival Operations at Airports”, *Transportation Science*, 52 (1), pp. 150–170 (2018).
17. Y. Chang, S. Solak^S, J-P. Clarke, E. Johnson, “Models for Single-sector Stochastic Air Traffic Flow Management under Reduced Airspace Capacity,” *Journal of the Operational Research Society*, 67 (1), pp. 54–67 (2016).
18. H. Chen, S. Solak^S, “Value of Extended Time-based Metering in Optimized Profile Descent Operations,” *Transportation Research Record: Journal of the Transportation Research Board*, 2600, pp. 27–38 (2016).
19. K. Jones, Y. Zhuo, S. Solak, O. Harmanli, “Hysterectomy at the Time of Colpocleisis: A Decision Analysis,” *International Urogynecology Journal*, 27 (5), pp. 805–810 (2016).
20. H. Chen, S. Solak^S, “Lower Cost Arrivals for Airlines: Optimal Policies for Managing Runway Operations under Optimized Profile Descent,” *Production and Operations Management*, 24 (3), pp. 402–420 (2015).
21. S. Solak, E. Baker, H. Chen, “Convexity Analysis of the Dynamic Integrated Model of Climate and the Economy (DICE),” *Environmental Modeling and Assessment*, 20 (5), pp. 443–451 (2015).
22. A. Bayram, S. Solak^S, M. Johnson, “Stochastic Models for Strategic Resource Allocation in Foreclosed Housing Acquisitions,” *European Journal of Operational Research*, 233 (1), pp. 246–262 (2014).
23. E. Baker, S. Solak^A, “Management of Energy Technology for Sustainability: How to Fund

^A Authors listed in alphabetical order. Both authors contributed equally to the paper.

^S Authors typically listed from most junior to senior. First or second author is a student directly advised.

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- Energy Technology R&D,” *Production and Operations Management*, 23 (3), pp. 348–365 (2014).
24. A. Bayram, S. Solak^S, “Decision Modeling for Foreclosed Property Acquisition by Community Development Corporations in the United States,” *International Transactions in Operational Research*, 21 (3), pp. 501–524 (2014).
 25. S. Solak, C. Scherrer, A. Ghoniem, “The Stop-and-Drop Problem in Nonprofit Food Distribution Networks,” *Annals of Operations Research*, 221 (1), pp. 407–426 (2014).
 26. O. Harmanli, K. Jones, S. Solak, A. Bayram, B. Yuksel, F. Al-Jehani “Optimizing Operating Room Efficiency in Robotic Surgery,” *International Urogynecology Journal*, 25 (Suppl 1), pp. S54-S55 (2014).
 27. J-P. Clarke, S. Solak, L. Ren, A. Vela, “Determining Stochastic Airspace Capacity for Air Traffic Flow Management,” *Transportation Science*, 47 (4), pp. 542–559 (2013).
 28. A. Ghoniem, C. Scherrer, S. Solak, “A Specialized Column Generation Approach for a Vehicle Routing Problem with Demand Allocation,” *Journal of the Operational Research Society*, 64 (1), pp. 114–124 (2013).
 29. M. Johnson, S. Solak, R. Drew, J. Keisler, “Property Value Impacts of Foreclosed Housing Acquisitions Under Uncertainty,” *Socio-Economic Planning Sciences*, 47 (4), pp. 292–308 (2013).
 30. A. Vela, K. Feigh, S. Solak^S, W. Singhose, J-P. Clarke, “Formulation of Reduced-Taskload Optimization Models for Conflict Resolution,” *IEEE Transactions on Systems, Man, and Cybernetics Part A*, 42 (6), pp. 1552–1561 (2012).
 31. E. Baker, S. Solak^A, “Climate Change and Optimal Energy Technology R&D Policy,” *European Journal of Operational Research*, 213 (2), pp. 442–454 (2011).
 32. G. Solveling, S. Solak^S, J-P. Clarke, E. Johnson, “Runway Operations Optimization in the Presence of Uncertainties, ” *Journal of Guidance, Control and Dynamics*, 34 (5), pp. 1373–1382 (2011).
 33. G. Solveling, S. Solak^S, J-P. Clarke, E. Johnson, “Runway Operations Planning with Reduced Environmental Impact,” *Transportation Research Part D*, 16 (2), pp. 110–120 (2011).
 34. S. Solak, J-P. Clarke, E. Johnson, E. Barnes, “Optimization of R&D Project Portfolios under Endogenous Uncertainty,” *European Journal of Operational Research*, 207 (1), pp. 420–433 (2010).
 35. A. Vela, S. Solak^S, J-P. Clarke, W. Singhose, E. Barnes, E. Johnson, “Near Real-Time Fuel-Optimal En-Route Conflict Resolution,” *IEEE Transactions on Intelligent Transportation Systems*, 11 (4), pp. 826–837 (2010).
 36. A. Ali, D. Vance, S. Solak, “Pure Network Based Procedures for Constrained Assignment

Problems in Naval Personnel Planning,” *Military Operations Research*, 15 (4), pp. 27–37 (2010).

37. J. Constantine, S. Solak^S, “SysML Modeling of Off-the-shelf-option Acquisition for Risk Mitigation in Military Programs,” *Systems Engineering*, 13 (1), pp. 80–94 (2010).
38. A. Adeniyi, S. Solak^S, “Reducing Human Errors in Consumer Product Design through Usability Life Cycle Analysis,” *Ergonomia IJE&HF*, 31(1) (2009).
39. S. Solak, J-P. Clarke, E. Johnson, “Airport Terminal Capacity Planning,” *Transportation Research Part B*, 43 (6), pp. 659–676 (2009).

Working Papers

1. Y. Zhuo, S. Solak^S, “Investing in Information Systems Security: Some Insights on Resource Allocation,” in preparation.
2. Z. Hu, H. Chen, S. Solak^S, “Stochastic Network Design for Bitcoin-based Electric Vehicle Charging Payment Systems,” in preparation.
3. G. Karkili, S. Solak^S, “Interactions Between Mission-oriented And Profit-oriented Organizations In Community Welfare Programs: A Case Study On Childcare Subsidy Vouchers,” in preparation.
4. W. Wei, P. Arora, S. Solak^S, “Contract or Voucher?: Policies for Operating Subsidy Welfare Programs,” in preparation.
5. S. Abbaspour, S. Solak^S, “Equitable Incentive Management for Demand Response Programs,” in preparation.

Grants

1. “Center on Use-Inspired Community Based Participatory Research for Equitable Demand Response and Energy Justice,” University of Massachusetts Large-Scale Interdisciplinary Research Grant, 2023, co-I (PI: E. Baker, K. Harper, R. Peltier), \$30,000
2. “Establishing an IT Audit Unit within OSA,” Massachusetts State Auditor’s Office, 2022-2023, co-PI (with G. Gal), \$99,978
3. “Dynamic Route Optimization for Autonomous Aerial Vehicles in Inclement Weather with Socio-economic Cost Considerations,” University of Massachusetts Amherst Interdisciplinary Faculty Research Grant, 2020-2021, co-PI (with M. Zink, D. Ni), \$39,939
4. “Improving Access and Equity in the Massachusetts Childcare Subsidy Voucher System,” University of Massachusetts Amherst Public Service Endowment Grant, 2019-2020, co-PI (with P. Arora), \$10,708
5. “Improving Operating Room Efficiency in Robotic Surgery Phase II: Validation of Genesis Service and Use of a Simulation Model,” Intuitive Surgical, Inc., 2014-2015, co-I (PI: O.

Harmanli - Baystate Medical Center), \$50,000

6. “Cybersecurity Risk Analysis for Enterprise Security,” Advanced Cyber Security Center (ACSC), 2014, co-PI (with W. Burleson, A. Nagurney, M. Sherman - UMass Amherst; A. Lo - MIT), \$40,000
7. “Optimizing Operating Room Efficiency in Robotic Surgery,” Intuitive Surgical, Inc., 2012-2013, co-I (PI: O. Harmanli - Baystate Medical Center), \$50,000
8. “Cyber Security Risk Analysis and Security Investment Optimization,” Advanced Cyber Security Center (ACSC), 2012, co-PI (with W. Burleson, C. Misra, A. Nagurney, M. Sherman), \$75,000
9. “Centralized Decision Making in Societal Response to Foreclosures through Housing Acquisition and Redevelopment,” University of Massachusetts Amherst Faculty Research Grant / Healey Endowment Grant, 2011-2012, \$11,257
10. “Decision Models for Foreclosed Housing Acquisition and Redevelopment,” National Science Foundation (NSF), 2010-2012, co-PI (with M. Johnson - UMass Boston; D. Turcotte - UMass Lowell), \$374,715
11. “Location-Allocation and Routing Problems in Humanitarian Distribution Networks,” University of Massachusetts Amherst Faculty Research Grant/Healey Endowment Grant, 2009, \$8,009
12. “Surface Optimization for Air Traffic Flow Management,” Georgia Institute of Technology, 2008, \$16,000.
13. “Approaches to Traffic Flow Management in the Presence of Uncertainty,” National Aeronautics and Space Administration (NASA) via subcontract, 2006-2008, co-PI (with J-P. Clarke, Georgia Tech), \$706,365
14. “Portfolio Optimization”, Federal Aviation Administration (FAA) via Georgia Tech subcontract, 2006-2007, \$10,965.

Books

1. M. Johnson, J. Keisler, S. Solak, D. Turcotte, A. Bayram, R. Drew, *Decision Science for Housing and Community Development*. Hoboken, NJ: John Wiley & Sons (2016)

Book Chapters

1. S. Solak, J-P. Clarke, E. Johnson, E. Barnes, “A Stochastic Programming Model with Decision Dependent Uncertainty Realizations for Technology Portfolio Management,” *Operations Research Proceedings: Selected Papers*. S. Nickel, J.Kalcsics eds. Berlin, Germany: Springer (2008).
2. R. Jarnagin, S. Solak^S, “Combined Discrete-Continuous Simulation Modeling of an Autonomous Underwater Vehicle,” *Extending the Horizons: Advances in Computing, Opti-*

mization and Decision Technologies. E. Baker, A. Joseph, A. Mehrotra, M. Trick eds. Norwell, MA: Springer (2007).

Trade Journal Articles

1. S. Solak, J-P. Clarke, L. Ren, A. Vela, “Probability Theory: A Probabilistic Look at Airspace Capacity for Air Traffic Flow Management,” *The International Review of Air Traffic Technology and Management*, 32–35 (2011)
2. A. Vela, S. Solak^S, J-P. Clarke, W. Singhose, “En Route Traffic Optimization to Reduce Environmental Impact,” *International Airport Review*, **5** (3), 38–41 (2009)

Refereed Conference Proceedings

1. Y. Zhuo, S. Solak^S, Z. Zou, “Investing in IT security: Managerial Insights on Resource Allocation - A Case Study,” *Proceedings of the Decision Science Institute Southwest Region Annual Conference, 2023, Mar. 8-11, Houston, TX*
2. Z. Hu, H. Chen, S. Solak^S, “A Decision Framework for Optimal Revenue, Capacity, and Delivery Fee Policies for Future Drone-Based Delivery Systems,” *Proceedings of the 4th North American Industrial Engineering and Operations Management Conference, 2019, Oct. 23-25, Toronto, Canada*
3. E. Erdin, M. Cebe, K. Akkaya, S. Solak, E. Bulut, S. Uluagac, “Building a Private Bitcoin-based Payment Network among Electric Vehicles and Charging Stations,” *Proceedings of the IEEE International Conference on Blockchain 2018, Jul. 30-Aug. 3, Halifax, Canada*
4. Y. Zhuo, S. Solak^S, “Treatment Planning for Pelvic Organ Prolapse,” *Proceedings of Industrial and Systems Engineering Research Conference 2015, May 30-Jun. 2, Nashville, TN*
5. Y. Zhuo, S. Solak^S, “Cybersecurity Investment Optimization with Risk: Insights for Resource Allocation,” *Proceedings of the 5th International Conference on Industrial Engineering and Operations Management, 2015, Mar. 3-5, Dubai, UAE*
6. O. Harmanli, K. Jones, S. Solak, A. Bayram, B. Yuksel, F. Al-Jehani, “Optimizing Operating Room Efficiency in Robotic Surgery,” *Proceedings of the 14th American Urogynecologic Society / International Urogynecological Association Scientific Meeting, 2014, Jul. 22-26, Washington, DC*
7. E. Baker, S. Solak^A, “Management of Energy Technology for Sustainability: How to Fund Energy Technology R&D,” *Proceedings of the 5th World Congress of Environmental and Resource Economics, 2014, Jun. 28-Jul. 2, Istanbul, Turkey*
8. Y. Zhuo, S. Solak^S, “Measuring and Optimizing Cybersecurity Investments: A Quantitative Portfolio Approach,” *Proceedings of Industrial and Systems Engineering Research Conference 2014, May 31-Jun. 3, Montreal, Canada*

Senay Solak (continued)

9. H. Chen, S. Solak^S, “Optimal Metering Policies for Optimized Profile Descent Operations at Airports,” *Proceedings of the 6th International Conference on Research in Air Transportation, 2014, May 26-30, Istanbul, Turkey*
10. E. Baker, S. Solak^A, “Management of Energy Technology for Sustainability: How to Fund Energy Technology R&D,” *Proceedings of the Workshop on Climate Change Impacts and Integrated Assessment, 2012, Jul. 23-Aug. 3, Snowmass, CO*
11. A. Bayram, S. Solak^S, “Dynamic and Stochastic Knapsack-Type Models for Foreclosed Housing Acquisition and Redevelopment,” *Proceedings of the 3rd International Conference on Industrial Engineering and Operations Management, 2012, Jul. 3-6, Istanbul, Turkey*
12. H. Chen, S. Solak^S, “Runway Operations Planning through Continuous Descent Approach with Sustainability Considerations ,” *Proceedings of the INFORMS MSOM Conference 2012, Jun. 17-19, New York, NY*
13. E. Baker, S. Solak^A, “Optimal Climate Change Policy: R&D Investments and Abatement Under Uncertainty,” *Proceedings of the AERE Summer Conference 2011, Jun. 9-10, Seattle, WA*
14. A. Bayram, S. Solak^S, M. Johnson, D. Turcotte, “Managing Foreclosed Housing Portfolios for Improved Social Outcomes,” *Proceedings of the 22nd POMS Annual Conference, 2011, Apr. 29-May 2, Reno, NV*
15. A. Bayram, S. Solak^S, M. Johnson, D. Turcotte, “Stochastic Dynamic Models for Foreclosed Housing Acquisition and Redevelopment,” *Proceedings of Industrial and Systems Engineering Research Conference 2011, May 21-25, Reno, NV*
16. G. Solveling, S. Solak^S, J-P. Clarke, E. Johnson, “Runway Operations Optimization in the Presence of Uncertainties,” *Proceedings of the 10th AIAA Aviation Technology, Integration, and Operations Conference, 2010, Sep. 13-15, Fort Worth, TX*
17. E. Baker, S. Solak^A, “Climate Change and Optimal Energy Technology R&D Policy,” *Proceedings of the 4th World Congress of Environmental and Resource Economics, 2010, Jun. 28-Jul. 2, Montreal, Canada*
18. A. Vela, E. Salaun, P. Burgain, J-P. Clarke, K. Feigh, E. Feron, W. Singhose, S. Solak, “Predicting Controller Communication Time for Capacity Estimation,” *Proceedings of the 4th International Conference on Research in Air Transportation, 2010, June 1-4, Budapest, Hungary*
19. A. Vela, S. Solak^S, W. Singhose, J-P. Clarke, “A Mixed Integer Program for Flight-Level Assignment and Speed Control for Conflict Resolution,” *Proceedings of the 48th IEEE Conference on Decision and Control, 2009, Dec. 16-18, Shanghai, China*
20. E. Baker, S. Solak^A, “Implementing Uncertainty and Learning in Climate Change Policy Analysis,” *Proceedings of the Workshop on Uncertainty and Learning in the Management of Environmental and Natural Resources, 2009, Dec. 3-4, Santa Barbara, CA*

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21. A. Vela, E. Salaun, S. Solak^S, E. Feron, W. Singhose, J-P. Clarke, "A Two-Stage Stochastic Optimization Model for Air Traffic Conflict Resolution under Wind Uncertainty," *Proceedings of the 28th Digital Avionics Systems Conference, 2009, Oct. 25-29, Orlando, FL*
22. A. Vela, S. Solak^S, E. Feron, K. Feigh, W. Singhose, J-P. Clarke, "A Fuel Optimal and Reduced Controller Workload Optimization Model for Conflict Resolution," *Proceedings of the 28th Digital Avionics Systems Conference, 2009, Oct. 25-29, Orlando, FL*
23. E. Salaun, A. Vela, E. Feron, J-P. Clarke, S. Solak, "A Simplified Approach to Determine Airspace Complexity Maps under Automated Conflict Resolution," *Proceedings of the 28th Digital Avionics Systems Conference, 2009, Oct. 25-29, Orlando, FL*
24. J-P. Clarke, S. Solak, Y. Chang, L. Ren, A. Vela, "Air Traffic Flow Management in the Presence of Uncertainty," *Proceedings of the 8th USA/Europe Seminar on Air Traffic Management Research & Development, 2009, Jun. 29-Jul. 2, Napa, CA*
25. E. Baker, S. Solak^A, "Climate Change Energy Technology R&D Portfolio," *Proceedings of International Energy Workshop 2009, Jun. 17-19, Venice, Italy*
26. L. Ren, D. Chang, S. Solak, J-P. Clarke, E. Barnes, E. Johnson, "Simulating Convective Weather for Air Traffic Management Modeling," *Proceedings of Winter Simulation Conference 2007, Dec. 9-12, Washington, DC*
27. S. Solak, J-P. Clarke, E. Johnson, "Optimization of Project Portfolios," *Proceedings of Southeastern Chapter of INFORMS Annual Meeting 2007, Oct. 4-5, Myrtle Beach, SC.*
28. S. Solak, S. Bolat, G. Sarpkaya, "A Multiattribute Utility Model for Consumer Decision Making and Optimal Product Configuration," *Proceedings of AMS Annual Conference 2006, May 24-27, San Antonio, TX.*
29. S. Bolat, A. Fairhurst, Y. Kim, S. Solak, "Ph.D. Students' Value Perceptions of Their Education: An Applications of Means End Chain Model," *Proceedings of AMS Annual Conference 2006, May 24-27, San Antonio, TX.*
30. S. Solak, J-P. Clarke, E. Johnson, "A Multicommodity Flow Based Multistage Stochastic Programming Approach to Capacity Analysis at Airport Terminals," *Proceedings of Industrial and Systems Engineering Research Conference 2006, May 20-24, Orlando, FL.*

Technical Reports

1. "En Route Traffic Optimization to Reduce Environmental Impact," with J-P. Clarke, M. Lowther, L. Ren, W. Singhose, A. Vela, L. Wong, *Partnership for Air Transportation Noise and Emissions Reduction: An FAA/NASA/Transport Canada sponsored Center of Excellence* (2008)
2. "Advanced Multistage Local Search Applications to Vehicle Routing Problem with Time Windows: A Review," *Georgia Institute of Technology* (2005).

Select Invited Talks

1. "Allocation of Funds in Bilevel Subsidy Welfare Programs," *Ozyegin University, 2023, November 22, Istanbul, Turkey.*
2. "Some Operational Problems in Emerging Technologies in Transportation: UAVs, EVs, and Blockchains," *National Yang Ming Chiao Tung University, 2023, June 5, Hsinchu, Taiwan.*
3. "Investing in Information Systems Security: Some Insights for Resource Allocation," *Florida International University, 2023, April 17, Miami, FL.*
4. "Investing in Information Systems Security under Asymmetric Information Sharing," *International Conference on Industrial Engineering and Operations Management, 2023, March 6-9, Manila, Philippines.*
5. "Stochastic Scheduling of Runway Operations," *University of Massachusetts Amherst, 2022, October 22, Amherst, MA.*
6. "DEI Awareness and Its Value in Academia," *INFORMS Annual Meeting 2021, October 24-27, Anaheim, CA.*
7. "Analysis of New Operational Systems," *NEXTOR 20th Anniversary Workshop, 2016, September 30, Adelphi, MD.*
8. "Investing in Information Systems Security: Some Insights for Resource Allocation," *North-eastern University, 2015, December 11, Boston, MA.*
9. "Investing in Information Systems Security: Some Insights for Resource Allocation," *Massachusetts Institute of Technology, 2015, July 28, Lexington, MA.*
10. "Minimizing Airline Delays through Improved Airport Departure Operations," *Industrial and Systems Engineering Research Conference 2015, May 30-June 2, Nashville, TN.*
11. "Optimal Staffing Policies in Robotic Surgery," *INFORMS Annual Meeting 2014, November 9-12, San Francisco, CA.*
12. "Cybersecurity Investment Optimization with Risk: Insights for Resource Allocation," *ACSC Workshop on Cybersecurity Risk Analysis for Enterprise Security, 2014, September 19, Boston, MA.*
13. "Selecting a Winning Team: Dynamic Portfolio Management for Surgical Teams," *25th POMS Annual Conference, 2014, May 9-12, Atlanta, GA.*
14. "Lower Cost Arrival Operations under Optimized Profile Descent," *INFORMS Annual Meeting 2013, October 6-9, Minneapolis, MN.*
15. "Stochastic Optimization for Surgical Team Selection in Robotic Surgery," *INFORMS Annual Meeting 2013, October 6-9, Minneapolis, MN.*

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16. "Is Stochastic Runway Scheduling Computationally Implementable in Practice?," *INFORMS Annual Meeting 2012, October 14-17, Phoenix, AZ.*
17. "Stochastic Multicriteria Models for Long Term Investment in Foreclosed Housing Acquisition," *INFORMS Annual Meeting 2011, November 13-16, Charlotte, NC.*
18. "Reduced-Taskload Optimization Models for Air Traffic Conflict Resolution," *INFORMS Annual Meeting 2011, November 13-16, Charlotte, NC.*
19. "Stochastic Programming Approaches to Energy Technology R&D Portfolio Management," *MITRE Corporation, 2011, October 17, Bedford, MA.*
20. "Panel: The Academic Job Search Process," *INFORMS Northeast Regional Conference, 2011, May 6-7, Amherst, MA.*
21. "Stochastic Programming Approaches to Energy Technology R&D Portfolio Management," *INFORMS Northeast Regional Conference, 2011, May 6-7, Amherst, MA.*
22. "Decomposition Methods for Stochastic Runway Planning," *INFORMS Northeast Regional Conference, 2011, May 6-7, Amherst, MA.*
23. "Recent Advances in Stochastic Air Traffic Management: Runway Operations Planning and En Route TFM," *McGill University, 2011, March 11, Montreal, Canada.*
24. "Optimization of R&D Project Portfolios under Endogenous Uncertainty," *INFORMS Annual Meeting 2010, November 7-10, Austin, TX.*
25. "A Stochastic Programming Approach to Air Traffic Flow Management," *INFORMS Annual Meeting 2010, November 7-10, Austin, TX.*
26. "Recent Advances in Stochastic Air Traffic Management," *GE Global Research, 2010, September 1, Niskayuna, NY.*
27. "Optimizing R&D Investment and Abatement Policy in response to Climate Change," *International Conference on Stochastic Programming 2010, August 16-20, Halifax, Canada.*
28. "Scheduling of Runway Operations for Reduced Environmental Impact," *Sensis Corporation, 2010, February 18, Syracuse, NY.*
29. "Steps Towards Modeling Controller Workload and Airspace Capacity using Mathematical Programming" *Air Transportation Laboratory Research Symposium 2009, December 1-2, Atlanta, GA*
30. "Value of Stochastic Runway Scheduling," *University of Maryland, 2009, October 21, College Park, MD.*
31. "A Dynamic Programming Model for Project Selection with Unknown Return and Investment Characteristics," *INFORMS Annual Meeting 2009, October 11-14, San Diego, CA.*

32. "Value of Stochastic Runway Scheduling," *INFORMS Annual Meeting 2009, October 11-14, San Diego, CA.*
33. "Stochastic Scheduling of Runway Operations," *CORS/INFORMS International Meeting 2009, June 14-17, Toronto, Canada.*
34. "Near Real-Time Air Traffic Conflict Resolution through Speed and Flight Level Control," *CORS/INFORMS International Meeting 2009, June 14-17, Toronto, Canada.*
35. "Determining the Stochastic Capacity of a Volume of Airspace" *Air Transportation Laboratory Research Symposium 2008, November 19-20, Atlanta, GA*
36. "Air Traffic Flow Management in the Presence of Uncertainty," *University of Massachusetts Amherst, 2008, November 7, Amherst, MA.*
37. "Stochastic Programs for Fuel Optimal Conflict Resolution over Predefined Trajectories," *INFORMS Annual Meeting 2008, October 12-15, Washington, DC.*
38. "Air Traffic Flow Management in the Presence of Uncertainty," *INFORMS Annual Meeting 2008, October 12-15, Washington, DC.*
39. "The Stop and Drop Problem," *INFORMS Annual Meeting 2008, October 12-15, Washington, DC.*
40. "Stochastic Models for Air Transportation," *Ellis Johnson Research Symposium 2008, July 24-27, Grand Cayman, Cayman Islands*
41. "Stochastic Programming Methods for Project Portfolio Optimization in the Presence of Endogenous Uncertainty," *Purdue University, 2008, January 24, West Lafayette, IN*
42. "Stochastic Programming Based Approaches to Project Portfolio Management in the Presence of Endogenous Uncertainty," *Drexel University, 2008, January 22, Philadelphia, PA*
43. "Air Traffic Flow Management in the Presence of Uncertainty," *United States Naval Academy, 2008, January 18, Annapolis, MD*
44. "Stochastic Programming Based Solution Methods for Project Portfolio Optimization in the Presence of Endogenous Uncertainty," *United States Naval Academy, 2008, January 18, Annapolis, MD*
45. "An Optimization Model for Project Portfolio Management in the Presence of Endogenous Uncertainty," *University of Massachusetts Amherst, 2007, December 18, Amherst, MA*
46. "Portfolio Optimization for Aviation Technology Development," *INFORMS Annual Meeting 2007, November 4-7, Seattle, WA.*
47. "A Stochastic Programming Approach for Sector Level Traffic Flow Management," *INFORMS Annual Meeting 2007, November 4-7, Seattle, WA.*

Senay Solak (continued)

48. “Network Flow Based Stochastic Programming Formulations for Capacity Planning at Airport Terminals,” *INFORMS Annual Meeting 2006, November 5-8, Pittsburgh, PA.*
49. “Resource Allocation to a Portfolio of Modernization Technologies for the NAS,” *INFORMS Annual Meeting 2006, November 5-8, Pittsburgh, PA.*
50. “Analysis of Air Transportation System Delay,” *INFORMS Annual Meeting 2006, November 5-8, Pittsburgh, PA.*
51. “Improving Schedule Design through A Priori Evaluation of Robustness and Reliability,” *INFORMS Annual Meeting 2006, November 5-8, Pittsburgh, PA.*
52. “An Iterative Multilayer Network Flow Approach to Personnel Duty Assignment,” *INFORMS Annual Meeting 2005, November 13-16, San Francisco, CA.*

Grants for Research/Teaching Support

1. University of Massachusetts Amherst Research Support Fund Grant, 2014-2020, \$6,800.
2. University of Massachusetts Amherst Office of Faculty Development Flex Grant, 2014-2020, \$3,500.
3. University of Massachusetts Amherst Research Support Fund Grant, 2012, \$800.
4. University of Massachusetts Amherst Office of Faculty Development Flex Grant, 2012, \$500.
5. University of Massachusetts Amherst Mellon Mutual Mentoring Micro Grant, 2011, \$1,200
6. University of Massachusetts Amherst Research Support Fund Grant, 2010, \$800.
7. University of Massachusetts Amherst Office of Faculty Development Flex Grant, 2010, \$500.
8. Sloan Industry Studies Travel Grant, 2009, \$1,000.
9. Isenberg School of Management Junior Faculty Travel Grant, 2009, \$600.

Professional Service

- *Chair*, INFORMS Section on Aviation Applications (2015-2017)
- *Chair*, INFORMS Transportation Science and Logistics Society Air Transportation Special Interest Group (2015-2017)
- *Vice-Chair/Chair Elect*, INFORMS Section on Aviation Applications (2013-2015)
- *Vice-Chair*, INFORMS Transportation Science and Logistics Society Air Transportation Special Interest Group (2013-2015)
- *Treasurer/Secretary*, INFORMS Section on Aviation Applications (2011-2013)

Senay Solak (continued)

- *Council Member*, INFORMS Subdivisions Council (2015-2021)
- *Webmaster*, INFORMS Section on Aviation Applications (2006-2010)
- *Web Committee Member*, Turkish American Scientists and Scholars Association (2012-2016)
- *Review Panel Chair*, INFORMS Aviation Applications Section Dissertation Award Committee 2018
- *Conference/Panel Organizing Committee*, Global Joint Conference on Industrial Engineering and Its Application Areas (GJCIE), Antalya, Turkey, August 7-9, 2024; INFORMS Transportation and Logistics Society Conference, Chicago, IL, July 23-26, 2023; Early Career Sustainable Operations Management Workshop, Amherst, MA, February 25-26, 2023; GJCIE, New York, NY, August 14-16, 2023; GJCIE, Istanbul, Turkey, October 29-30, 2022; GJCIE, Antalya, Turkey, August 13-14, 2021; GJCIE, Antalya, Turkey, July 16-17, 2020; 9th International Conference on Research in Air Transportation (ICRAT), Tampa, FL, June 26-29, 2020; 2nd INFORMS Transportation and Logistics Society Triennial Conference, Washington, DC, May 27-29, 2020; 8th International Conference on Research in Air Transportation (ICRAT), Barcelona, Spain, June 26-29, 2018; 1st INFORMS Transportation and Logistics Society Triennial Conference, Chicago, IL, July 26-29, 2017; GJCIE, Istanbul, Turkey, July 14-15, 2016; 7th ICRAT, Philadelphia, PA, June 20-24, 2016; 1st New England Security Day Workshop, Amherst, MA, September 17, 2015; 2nd Global Conference on Engineering & Technology Management (GCETM), Chicago, IL, September 4-5, 2015; Workshop on Cybersecurity Risk Analysis for Enterprise Security, Boston, MA, September 19, 2014; 1st GCETM, Istanbul, Turkey, June 23-26, 2014; 6th ICRAT, Istanbul, Turkey, May 26-30, 2014; 5th ICRAT, Berkeley, CA, May 22-25, 2012; 4th ICRAT, Budapest, Hungary, June 1-4, 2010; Precision Manufacturing Regional Alliance Project Innovation Forum Organizing Committee 2010; NextGen NSF-NITRD Presentation Panel Committee 2010
- *Review Panel Member*, INFORMS Minority Issues Forum Paper Competition 2024; University of New Hampshire External Program Review Committee 2019; INFORMS TSL Air Transportation SIG Best Paper Award Committee 2017; AGIFORS Anna Valicek Award Committee 2013; INFORMS Aviation Applications Section Best Presentation Award Committee 2013; National Science Foundation 2012, 2010, 2009; 4th ICRAT Best Paper Award Committee 2010; INFORMS Aviation Applications Section Dissertation Award Committee 2010
- *Cluster Chair*, INFORMS Annual Meeting 2015, 2016; INFORMS Northeast Regional Conference 2011
- *Session Organizer/Chair*, INFORMS Annual Meetings 2007-2011, 2015, 2016; CORS / INFORMS International Meeting 2009
- *Editorial Board Member*, Transportation Research Part E 2020-present
- *Journal Reviewer*, Annals of Operations Research; Computers and Operations Research; Decision Sciences; EURO Journal on Decision Processes; European Journal of Operational

Senay Solak (continued)

Research; IEEE Transactions on Automatic Control; IEEE Transactions on Engineering Management; IEEE Transactions on Intelligent Transportation Systems; IEEE Transactions on Systems, Man, Cybernetics Part A; IIE Transactions; Interfaces; International Journal of Operations & Quantitative Management; International Transactions in Operational Research; Journal of Cleaner Production; Journal of Guidance, Control and Dynamics; Journal of the Operational Research Society; Manufacturing & Service Operations Management; Mathematical Problems in Engineering; Omega; Operations Research; Socio-Economic Planning Sciences; Technovation; The Energy Journal; Transportation Research Part B; Transportation Research Part C; Transportation Research Part E; Transportation Research Record; Transportation Science; Wiley Encyclopedia of Operations Research and Management Science

- *Conference Reviewer*, 2024 Early Career Sustainable Operations Management Workshop; 2020 ICRAT, 2016 ICRAT, 2014 ICRAT, 2012 ICRAT, 2010 ICRAT, 2009 IEEE Conference on Decision and Control; 2009 International Conference in Computers & Industrial Engineering; 2006 Industrial Engineering Research Conference

Courses Developed / Taught

- *University of Massachusetts Amherst*
 - OIM 310: Manufacturing and Service Operations Methods
 - OIM 321: Business Process Simulation (developed)
 - SCH-MGMT 758: Supply Chain Management
 - SCH-MGMT 797AE: Stochastic Models (developed)
 - SCH-MGMT 797SS: Quantitative Analysis in Supply Chain Ops. (developed)
- *Kennesaw State University*
 - IET 2227: Industrial Statistics
 - IET 4405: Operations Research
 - IET 4451: Systems Simulation
 - QA 6610: Statistics for Quality Assurance (developed)
 - QA 7403: Graduate Seminar
 - SYE 6005: Introduction to Systems Engineering
 - SYE 6035: Modeling and Simulation (developed)
 - SYE 6055: System Development Workshop (developed)

Doctoral Students

Solmaz Abbaspour (2023-present)
Gulten Busra Karkili (2020-present)
Wei Wei (2023) [Placement: University of New Hampshire, Assistant Professor]
Zhangchen Hu (2023) [Placement: California State Uni., Fullerton, Assistant Professor]
Yueran Zhuo (2018) [Placement: Harvard University, Postdoctoral Researcher]

Heng Chen (2016) [Placement: University of Nebraska - Lincoln, Assistant Professor]

Armagan Bayram (2013) [Placement: Northwestern University, Postdoctoral Researcher]

Ph.D. Committee Membership

Ron Mallach, Ph.D., Department of Mechanical and Industrial Engineering, 2023

Prashant Meckoni, Ph.D., Department of Mechanical and Industrial Engineering, 2023

Amro El-Adle, Ph.D., Department of Operations and Information Management, 2021

Matteo Brucato, Ph.D., Department of Computer Science, 2021

Mohammad Reihaneh, Ph.D., Department of Operations and Information Management, 2018

Umit Taner, Ph.D., Department of Civil and Environmental Engineering, 2017

Olaleye Olaitan, Ph.D., Department of Mechanical and Industrial Engineering, 2015

Xiaoling Gao, Ph.D., Department of Mechanical and Industrial Engineering, 2014

Güven Ince, Ph.D., Department of Operations and Information Management, 2014

Asli Ozen, Ph.D., Department of Mechanical and Industrial Engineering, 2014

Amir Masoumi, Ph.D., Department of Operations and Information Management, 2013

Eric Morgan, Ph.D., Department of Civil and Environmental Engineering, 2012

Gustaf Solveling, Ph.D., School of Industrial and Systems Engineering, Georgia Institute of Technology, 2012

Alan Carlin, Ph.D., Department of Computer Science, 2011

Kai Wu, Ph.D., Department of Mechanical and Industrial Engineering, 2011

Yu-Heng Chang, Ph.D., School of Industrial and Systems Engineering, Georgia Institute of Technology, 2010

Davit Khachatryan, Ph.D., Department of Finance and Operations Management, 2010

Masters Committee Membership

Andrew Frere, M.S., Department of Mechanical and Industrial Engineering, 2021

Olaleye Olaitan, M.S., Department of Mechanical and Industrial Engineering, 2012

Sebastian Biehl, M.S., Department of Mechanical and Industrial Engineering, 2011

Yiming Peng, M.S., Department of Mechanical and Industrial Engineering, 2010

Liang Wang, M.S., Department of Mechanical and Industrial Engineering, 2010

Jan Hippchen, M.S., Department of Mechanical and Industrial Engineering, 2009

Georg Schorpp, M.S., Department of Mechanical and Industrial Engineering, 2009

Core/Comprehensive Exam Committee Membership

- *Comprehensive Exams*
 - 2022: Gulden Busra Karkili, Semih Boz
 - 2020: Ron Mallach, Wei Wei
 - 2019: Zhangchen Hu, Prashant Meckoni
 - 2018: Amro El-Adle
 - 2015: Amirhossein Yazdi
 - 2014: Zana Cranmer, Yueran Zhuo
 - 2013: Olaleye Olaitan, Hyun Jung Oh, Tulay Varol, Heng Chen
 - 2012: Armagan Bayram, Dong Li, Asli Ozen

- *Core Exams*
 - 2024: Solmaz Abbaspour, Samira Samadi
 - 2023: Josh Gladstone
 - 2021: Gulden Busra Karkili, Semih Boz
 - 2019: Wei Wei
 - 2018: Zhangchen Hu, Emre Eryigit
 - 2017: Amro El-Adle
 - 2014: Amirhossein Yazdi
 - 2013: Sara Saberi, Shivani Shukla, Yueran Zhuo
 - 2012: Heng Chen, Tulay Varol
 - 2011: Armagan Bayram, Dong Li

Institutional Service

- *University of Massachusetts Amherst*

[University Service]

Member, University Information and Communication Technology Council, 2008-present
Member, IT Minor Steering Committee, 2023-present

[School Service]

Member, Isenberg School of Management Research Award Committee, 2023
Chair, Isenberg School of Management Engineering Management Faculty Advisory Committee, 2009-2016
Member, Isenberg School of Management Financial Analyst Search Committee, 2011
Member, Isenberg School of Management Accountant Search Committee, 2010
Member, Isenberg School of Management Statistics Task Force Committee, 2009
Member, Isenberg School of Management Information Technology Advisory Committee, 2008-2010

[Departmental Service]

Chair, Department of Operations and Information Management, 2021-present

Chair, Department of Operations and Information Management Staff Search Committee, 2023

Director, Department of Operations and Information Management Honors Program, 2013-2021

Member, Department of Operations and Information Management Personnel Committee, 2019-2021

Member, Department of Operations and Information Management Staff Search Committee, 2021

Member, Department of Operations and Information Management Faculty Search Committee, 2018-2019

Member, Department of Operations and Information Management Faculty Search Committee, 2017-2018

Member, Department of Operations and Information Management Strategic Plan Committee, 2015

Member, Department of Finance and Operations Management Faculty Search Committee, 2011-2012

Member, Department of Finance and Operations Management Personnel Committee, 2010-2011

Member, Department of Finance and Operations Management Curriculum Task Force Committee, 2009

Member, Department of Finance and Operations Management Lecturer Search Committee, 2009

- *Kennesaw State University*

Advisor, Southern Polytechnic State University IIE Chapter, 2004-2008

Advisor, Southern Polytechnic State University Simulation Team, 2004-2008

Chair, School of Engineering Technology and Management ABET Planning Committee, 2006-2007

Chair, Department of Industrial Engineering Technology ABET Planning Committee, 2004-2008

Member, Southern Polytechnic State University Information Technology Advisory Committee, 2007-2008

Member, School of Engineering Technology and Management Futures Committee, 2007-2008

Professional Associations

Member, Institute of Operations Research and the Management Sciences (INFORMS)

Member, Institute of Industrial and Systems Engineers (IISE)

Member, Production and Operations Management Society (POMS)

Member, Airline Group of the Int. Fed. of Operational Research Societies (AGIFORS)

Past Chair, INFORMS Section on Aviation Applications

Air Transportation SIG Past Chair, INFORMS Transportation Sci. and Logistics Society

Member, INFORMS Section on Public Sector Operations Research

Media Coverage of Research

- “Isenberg Researchers Address Inequity Concerns in Access to Child Care Subsidy Support”. In *UMass News & Media Relations*, June 24, 2021
- “UMass Amherst Professor Senay Solak is Coauthor of New Book on Housing and Community Development in the U.S.”. In *UMass News & Media Relations*, November 23, 2015
- “Faculty Coordinate MIT Workshop on Cybersecurity Risk Analysis for Enterprises”. In *UMass News & Media Relations*, September 23, 2014
- “Isenberg Professors Coordinate Workshop on Cybersecurity Risk Analysis for Enterprises”. In *Isenberg School of Management News*, September 18, 2014
- “Isenberg Ph.D. Candidate Earns Prestigious FAA Grant”. In *Isenberg School of Management News*, August 22, 2014
- “UMass Amherst Researchers Say Investing in Better Technology Secures Payoff When Dealing with Climate Change”. In *UMass News & Media Relations*, May 5, 2014
- “Best Paper Award to Isenberg Researchers”. In *Isenberg School of Management News*, June 21, 2012
- “Isenberg Professor’s Research Furthers Low-Income Home Ownership”. In *Isenberg School of Management News*, July 20, 2011
- “Home Foreclosure Crisis: Possible Models for Recovery,” by Jim Lescault. In *ACTV, Key News*, June 16, 2011
- “With NSF Grant, Isenberg’s Solak Will Devise Decision Model for Non-profits Looking at Foreclosed Property”. In *In the Loop, People*, July 1, 2010
- “With NSF Grant, Isenberg School Professor Will Devise Decision Models for Nonprofit Organizations’ Purchases of Foreclosed Properties”. In *Isenberg School of Management News*, July 1, 2010
- “Isenberg School Researchers Advise Food Bank on Supply Chain Management”. In *In the Loop, Talking Points*, November 17, 2009

- “Isenberg School Researchers Help Food Bank with Supply Chain Management”. In *Isenberg School of Management News*, November 12, 2009