
Dr. Burak Cavdaroglu

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RESEARCH INTERESTS

Mathematical Programming, Network Modeling and Optimization, Combinatorial Optimization, Disaster Management, Sports Scheduling

WORK EXPERIENCE

Title: Assistant Professor

Institution: Kadir Has University, Industrial Engineering, Istanbul, TURKEY

Duration: Feb 2016 – Present

Title: Assistant Professor

Kurum: Işık University, Industrial Engineering, Istanbul, TURKEY

Duration: Oct 2012 – Feb 2016

EDUCATION

Doctor of Philosophy:

2007 – 2012 **Rensselaer Polytechnic Institute**, Troy, NY, USA

- Program: Decision Sciences and Engineering Systems
- Dissertation Title: Integrated Mitigation, Restoration, and Scheduling Problem for Interdependent Infrastructure Networks

Master of Science:

2005 – 2007 **Koç University**, İstanbul, TURKEY

- Program: Industrial Engineering
- Thesis Title: Integrated Pharmaceutical Marketing Optimization in Turkey

Undergraduate:

1999 – 2005 **Middle East Technical University**, Ankara, TURKEY

- Program: Industrial Engineering

RESEARCH ACTIVITIES

SCI-INDEXED PUBLICATIONS:

Atan T., **Cavdaroglu, B.** (2018). Minimization of Rest Mismatches in Round Robin Tournaments. *Computers and Operations Research*, 99, 78–89. <https://doi.org/10.1016/J.COR.2018.06.003>.

Sharkey, T. C., **Cavdaroglu, B.**, Nguyen, H., Holman, J., Mitchell, J. E. & Wallace, W. A. (2015). Interdependent network restoration: On the value of information-sharing. *European Journal of Operational Research*, 244(1), 309–321. <https://doi.org/10.1016/j.ejor.2014.12.051>

Selected Citations:

1. Nguyen, H., & Sharkey, T. C. (2017). A computational approach to determine damage in infrastructure networks from outage reports. *Optimization Letters*, 11(4), 753–770.
2. Fotouhi, H., Moryadee, S., & Miller-Hooks, E. (2017). Quantifying the resilience of an urban traffic-electric power coupled system. *Reliability Engineering & System Safety*, 163, 79–94.
3. Habib, M. S., & Sarkar, B. (2017). An Integrated Location-Allocation Model for Temporary Disaster Debris Management under an Uncertain Environment. *Sustainability*, 9(5), 716-741.
4. Bozza, A., Asprone, D., Parisi, F., & Manfredi, G. (2017). Alternative Resilience Indices for City Ecosystems Subjected to Natural Hazards. *Computer-Aided Civil and Infrastructure Engineering*, 32(7), 527–545.
5. Çelik, M. (2016). Network restoration and recovery in humanitarian operations: Framework, literature review, and research directions. *Surveys in Operations Research and Management Science*, 21(2), 47–61.

Cavdaroglu, B., Hammel, E., Mitchell, J. E., Sharkey, T. C. & Wallace, W. A. (2013). Integrating restoration and scheduling decisions for disrupted interdependent infrastructure systems. *Annals of Operations Research*, 203(1), 279–294. <https://doi.org/10.1007/s10479-011-0959-3>

Selected Citations:

1. Garrett, R. A., Sharkey, T. C., Grabowski, M., & Wallace, W. A. (2017). Dynamic resource allocation to support oil spill response planning for energy exploration in the Arctic. *European Journal of Operational Research*, 257(1), 272–286.
2. Liu, X., Ferrario, E., & Zio, E. (2017). Resilience Analysis Framework for Interconnected Critical Infrastructures. *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering*, 3(2), 21001–21010.
3. Unal, M., & Warn, G. P. (2017). A Set-Based Approach to Support Decision-Making on the Restoration of Infrastructure Networks. *Earthquake Spectra*, 33(2), 781–801.
4. Duque, P. A. M., Dolinskaya, I. S., & Sørensen, K. (2016). Network repair crew scheduling and routing for emergency relief distribution problem. *European Journal of Operational Research*, 248(1), 272–285.
5. Ouyang, M. (2016). Critical location identification and vulnerability analysis of interdependent infrastructure systems under spatially localized attacks. *Reliability Engineering & System Safety*, 154, 106–116.

Nurre, S. G., **Cavdaroglu, B.**, Mitchell, J. E., Sharkey, T. C. & Wallace, W. A. (2012). Restoring infrastructure systems: An integrated network design and scheduling (INDS) problem. *European Journal of Operational Research*, 223(3), 794-806. <https://doi.org/10.1016/j.ejor.2012.07.010>

Selected Citations:

1. Barker, K., Lambert, J. H., Zobel, C. W., Tapia, A. H., Ramirez-Marquez, J. E., Albert, L., Caragea, C. (2017). Defining resilience analytics for interdependent cyber-physical-social networks. *Sustainable and Resilient Infrastructure*, 2(2), 59–67.
2. Sousa, N., Alçada-Almeida, L., & Coutinho-Rodrigues, J. (2017). Bi-objective Modeling Approach for Repairing Multiple Feature Infrastructure Systems. *Computer-Aided Civil and Infrastructure Engineering*, 32(3), 213–226.
3. Sun, H., & Sharkey, T. C. (2017). Approximation guarantees of algorithms for fractional optimization problems arising in dispatching rules for INDS problems. *Journal of Global Optimization*, 68(3), 623–640.

4. Álvarez-Miranda, E., & Pereira, J. (2017). Designing and constructing networks under uncertainty in the construction stage: Definition and exact algorithmic approach. *Computers & Operations Research*, 81, 178–191.
5. Ouyang, M. (2017). A mathematical framework to optimize resilience of interdependent critical infrastructure systems under spatially localized attacks. *European Journal of Operational Research*, 262(3), 1072–1084.

CONFERENCE PROCEEDINGS:

Kaya S.S., **Cavdaroglu B.**, Sensoy K.S. (2018). “Detection of Click Spamming in Mobile Advertising”, Springer Proceedings in Business and Economics: OR in Balkans - Recent Advances, Proceedings from the Balkan Conference on Operational Research, Belgrad, SIRBIA, May 2018.

Loggins R., Wallace W., **Cavdaroglu B.** (2013) “MUNICIPAL: A Decision Technology for the Restoration of Critical Infrastructures”, Conference Proceedings, Industrial and Systems Engineering Research Conference (ISERC), Pages 1767-1776, San Juan, PUERTO RICO, May 2013.

Cavdaroglu B., Nurre S.G., Mitchell J.E., Sharkey T.C., Wallace W.A. (2011) “Decomposition Methods for Restoring Infrastructure Systems”, in Proceedings of the International Conference on Vulnerability and Risk Analysis and Management (ICVRAM) 2011, Pages 171-179, Hyattsville, MD, USA, April 2011. [https://doi.org/10.1061/41170\(400\)21](https://doi.org/10.1061/41170(400)21)

Wallace W.A., **Cavdaroglu B.**, Khan S., Loggins R. (2011) “Transportation and the Social Resiliency of a Community”, Proceedings of the DHS Science Conference - Fifth Annual DHS University Summit, Washington DC, USA, March 2011.

Cavdaroglu B., Gür Ali Ö. (2007) “Profit Maximizing Pharmacy Decision and Pharmacy Discounts in Turkey”, in Proceedings of the 14th International Annual EurOMA Conference, Ankara, TURKEY, 2007.

CONFERENCE TALKS:

INTERNATIONAL

Cavdaroglu B., Bilgesu D., “Game-Day Scheduling Problem for Sports Events”, Global Joint Conference on Industrial Engineering and Its Application Areas, Vienna, Austria, July, 2017.

Cavdaroglu B., Ozcan Z., Halic T., “Optimum Blend of Fractal Methods Applied on Dermoscopic Images for the Diagnosis of Melanoma”, 28th European Conference on Operational Research, Poznan, POLAND, July, 2016.

Cavdaroglu B., Wallace W.A. “Information Sharing among Interdependent Infrastructure Systems in the Context of Disaster Management”, The International IIE Conference, Istanbul, TURKEY, June 2013.

Cavdaroglu B., Wallace W., Mitchell J., Sharkey T. “Integrated Mitigation and Restoration Problem for Infrastructure Systems”, INFORMS 2011 Annual Meeting, Charlotte, NC, USA, November 2011.

Cavdaroglu B., Sharkey T., Mitchell J., Wallace W. “An Integrated Network Design and Scheduling Problem: Solving with Decomposition”, INFORMS 2010 Annual Meeting, Austin, TX, USA, November 2010.

Cavdaroglu B., Sharkey T., Wallace W., Mitchell J. “Integrated Restoration Planning and Scheduling for Critical Interdependent Infrastructure Systems”, INFORMS 2009 Annual Meeting, San Diego, CA, USA, October 2009.

NATIONAL

Çavdaroğlu B., Barlas S. “Yoğun Saatlerdeki Ek Şerit Uygulamasının Köprü Trafikine Etkileri”, Yöneylem Araştırması ve Endüstri Mühendisliği 37. Ulusal Kongresi, Yıldız Teknik University – İstanbul, July 2017

Çavdaroğlu B., Özcan Z., Koçkara S., Haliç H. “Melanomların Dermoskopik Tanısında Oransal Kırılma Boyutu Metodlarının Optimum Oranlarda Kullanımı”, Yöneylem Araştırması ve Endüstri Mühendisliği 35. Ulusal Kongresi, Middle East Technical University – Ankara, September 2015

OTHER PUBLICATIONS:

Çavdaroğlu B., Spor müsabakaları daha adil planlanabilir mi?, Cumhuriyet (Newspaper) - 05 December 2014

WORKING PAPERS:

Atan T., **Çavdaroğlu B.**, “Minimization of Rest Mismatches in Sports Games”

Kaya S. Ş., **Çavdaroğlu B.**, Şensoy B., “RTB-OFFMAC: A Decision Technology for the Bidding Strategies of Mobile Advertisement Campaigns”

Barlas S., **Çavdaroğlu B.**, Çavdaroğlu Ayvaz N., “Impact of Counter Flow Lanes on Traffic Congestion at Bridges”

Özcan Z., **Çavdaroğlu B.**, Haliç T. “Optimum Blend of Fractal Methods Applied on Dermoscopic Images for the Diagnosis of Melanoma”

Çavdaroğlu B., Bilgesu D., “Game-Day Scheduling Problem for Soccer Leagues”

PROFESSIONAL ACTIVITIES

GRADUATE THESIS SUPERVISION

Duygu Bilgesu, “Game-day Scheduling Problem for Sport Events”, Işık Üniversitesi, 2016.

Zuhal Özcan, “Optimum Blend of Fractal Methods for Automatic Malignancy Determination in Dermoscopy Images”, Işık Üniversitesi, 2015.

Barlas Selçuk, “Traffic Simulation for Traffic Congestion Problem of Fatih Sultan Mehmet Bridge of Istanbul Turkey”, Işık Üniversitesi, 2014.

REFeree ASSIGNMENTS IN SCI-INDEXED JOURNALS

Journal: The International Journal of Medical Robotics and Computer Assisted Surgery – Editor: Clive Loughlin – Date of Acceptance: 24 October 2016

Journal: Computers & Operations Research – Editor: Francisco Saldanha da Gama – Date of Acceptance: 8 August 2015

Journal: Computers & Operations Research – Editor: Francisco Saldanha da Gama – Date of Acceptance: 21 July 2014

PROJECTS

Project Title: A Decision Technology for the Bidding Strategies of Mobile Display Advertising Campaigns in RTB Marketplaces

Responsibility: Principal investigator

Funded by: Apps Medya Teknoloji A.Ş.(AppSamurai) – Çankaya / ANKARA

Project duration: June 2017 – June 2018

AWARDS & HONORS

Rensselaer Polytechnic Institute, PhD Research Fellowship, August 2007 - August 2012

Koç University, Graduate Student Fellowship, Sept 2005 - August 2007

The 14th EurOMA Conference, Journal Proceeding: “Profit Maximizing Pharmacy Decision and Pharmacy Discounts in Turkey”, Chris Voss Highly Commended Award, June 2007

Middle East Technical University, Best Undergraduate Thesis Award, June 2005

TEACHING EXPERIENCE

Academic Year	Semester	Course Title	Course Hours		Number of Students
			Theory	PS/Lab	
2012-2013	Fall	IE303: Systems Simulation	3	1	110
	Spring	IE301: Operations Research I	3	2	48
		IE582: Combinatorial Optimization* (Graduate)	3	0	10
Summer	IE303: Systems Simulation	3	1	39	
2013-2014	Fall	IE301: Operations Research I	3	2	53
		IE412: Facilities Planning and Design	3	1	52
	Spring	IE412: Facilities Planning and Design	3	1	44
		IE301: Operations Research I	3	2	43
IE582: Combinatorial Optimization (Graduate)	3	0	10		
2014-2015	Fall	IE303: Systems Simulation	3	1	103
		IE301: Operations Research I	3	2	99
	Spring	IE412: Facilities Planning and Design	3	1	30
		IE301: Operations Research I	3	2	63
		IE582: Combinatorial Optimization (Graduate)	3	0	7
Summer	IE303: Systems Simulation			38	
2015-2016	Fall	IE301: Operations Research I	3	2	95
		IE301-T: Yöneylem Araştırması I (Turkish)	3	2	13
	Spring	IE102: Principals of Industrial Engineering	3	0	95
		IE412: Statistical Quality Control	3	0	77
Summer	IE412: Statistical Quality Control	3	0	15	
2016-2017	Fall	IE325: Analytical Methods for Facility Layout and Location	3	0	34
	Spring	IE102: Principals of Industrial Engineering	3	0	101
		IE412: Statistical Quality Control	3	0	60
Summer	IE412: Statistical Quality Control	3	0	13	
2017-2018	Fall	IE325: Analytical Methods for Facility Layout and Location	3	0	45
		IE318: Applications in Operations Research	3	0	27
	Spring	IE102: Principals of Industrial Engineering	3	0	102
		IE332: Systems Simulation	3	0	35
Summer	IE412: Statistical Quality Control	3	0	12	

SKILLS

TECHNICAL SKILLS

Programming: C, C++, MATLAB

Statistics/Simulation: ARENA, Minitab

Optimization: CPLEX Optimization Studio, GAMS

Computer Applications: TEX

LANGUAGE SKILLS

Native in Turkish

Fluent in English