

# Vedat Bayram

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<https://www.pubsonline.informs.org/icymi/09-2017/authorspotlight>

## Education

Ph.D. Industrial Engineering, Bilkent University, August 2015.

*Dissertation:* “Nonlinear Mixed Integer Programming Models and Algorithms for Fair and Efficient Large Scale Evacuation Planning”.

*Advisor:* Prof. Barbaros Tansel (deceased) and Prof. Hande Yaman.

*Committee:* H. Yaman, A. Sen, I. Akgun, B. Kara, C. Iyigun.

M.S. Operations Research, U.S. Naval Postgraduate School, 2002.

*Thesis:* “Optimizing the Capacity and Operation of U.S. Army Ammunition Production Facilities”.

*Advisor:* Prof. Gerald G. Brown.

*Second Reader:* Prof. Robert F. Dell.

B.S. Systems Engineering, Turkish Army Academy, 1997.

## Experience

### 0.1 Academic Experience

TED University, Department of Industrial Engineering, Ankara, TURKEY, Assistant Professor of Operations Research, February 2017–.

University of Waterloo, Department of Management Sciences, Waterloo, ON, CANADA, Postdoctoral Research Fellow, January 2016–January 2017.

### 0.2 Industry Experience

Turkish General Staff Headquarters, Project Management Division, Ankara, TURKEY, Senior Operations Research Analyst, August 2012–January 2016.

NATO Science and Technology Organization, Systems Analyses and Studies Panel, Turkish Armed Forces Representative, 2012–January 2016.

NATO Missile Defence Project Group, Study Support Group, Consequences of Intercept Analysis Team (COIAT), Analysis Officer, Turkish Representative, 2010–2012.

Turkish General Staff Headquarters, Scientific Decision Support Center (BILKARDEM), Ankara, TURKEY, Operations Research Analyst, August 2009–August 2012.

Turkish Land Forces Command, 6th Border Regiment, Caldiran, Van, TURKEY, Company Commander, August 2007–August 2009.

Kabul Multinational Brigade, Kabul, AFGHANISTAN, Manpower Planning Officer, Feb–August 2006.

South Eastern Europe Brigade, SEEBRIG, Constanta, ROMANIA, Manpower Planning Officer, August 2005–August 2007.

Turkish Land Forces Command, Training and Doctrine Command, Combat Simulation and Leader Training Center, Ankara, Weapon Systems Analysis Officer, August 2002–August 2005.

Turkish Land Forces Command, 105th Artillery Regiment, Corlu, Tekirdag, TURKEY, Battery Officer, August 1998–August 2000.

Turkish Land Forces Command, Artillery School, Polatli, Ankara, TURKEY, Battery Officer, August 1997–August 1998.

## Research Interests

1. Application areas  
Disaster Management/Humanitarian Logistics (particularly Evacuation Planning/Management), Transportation and Logistics, Warehouse Management, City Logistics, Homeland Security and Defense Planning
2. Methodologies  
Large Scale Optimization, Convex Optimization (Conic Programming), Integer Programming, Stochastic/Robust Optimization, Data Analytics

## Research

### *Peer-Reviewed Journal Articles (Published)*

1. Bayram, V., F. Gzara and S. Elhedhli. Joint Capacity, Inventory and Demand Allocation Decisions in Manufacturing Systems. **IISE Transactions**, 51.3 (2019) 248-265 <https://doi.org/10.1080/24725854.2018.1490045>, Forthcoming article.
2. Bayram, V. and H. Yaman. Shelter Location and Evacuation Route Assignment under Uncertainty: A Benders Decomposition Approach. **Transportation Science**, 52 (2018): 416-436.
3. Bayram, V. and H. Yaman. A Stochastic Programming Approach for Shelter Location and Evacuation Planning. **RAIRO - Operations Research**, 52.3 (2018): 779-805.
4. Bayram, V. Optimization Models in Large Scale Evacuation Planning and Management: A Literature Review. **Surveys in Operations Research and Management Science**, 21 (2016): 63-84.
5. Bayram, V., B.C. Tansel and H. Yaman. Compromising System and User Interests in Shelter Location and Evacuation Planning. **Transportation Research Part B: Methodological**, 72 (2015): 146-163.

### *Papers Under Review or Revision*

6. Bayram, V., G. Baloch, F. Gzara and S. Elhedhli. Data-Driven Robust Order Batching Decisions for Warehouse Management: A Data Analytics and Branch and Price Approach. Under Review, **Management Science** special issue on **Data-Driven Prescriptive Analytics**

### *Work in Progress*

7. Bayram, V., B. Yildiz, Saleh Farham. Hub Location under Congestion and Capacity Considerations: An Exact Solution Approach
8. Bayram, V., H. Yaman. Cell-Based Dynamic Evacuation Traffic Management under Risk and Resource Allocation Considerations
9. Bayram, V. Constrained System Optimal Traffic Assignment with Autonomous Vehicle Considerations
10. Bayram, V., B.C. Tansel and I. Akgun. Exact and Heuristic Solution Methodologies for Multicommodity Flow Based P-Median Problem.

*Planned Work*

11. Bayram, V. Hub Location Decisions from a Dual Perspective: Network Owners and Network Users
12. Bayram, V. Dynamic Hub Location Decisions under Changing Demand Conditions
13. Bayram, V. Data-Driven Order Batching Decisions under Congestion Effect
14. Bayram, V. Data-Driven Order Batching Decisions: Heuristic Solutions for Practical Instances
15. Bayram, V., B. Yildiz. Transportation and Logistics with Autonomous Vehicles
16. Bayram, V., B. Yildiz. Data-Driven Smart City Logistics
17. Bayram, V. A Game Theoretic Approach to Shelter Location and Evacuation Planning
18. Bayram, V. Strategic Evacuation Network Design Problem
19. Bayram, V. Mass Transit Evacuation with Pick-up Location and Shelter Location Decisions

*Technical Reports*

20. Bayram, V., A. Sen and B. Yildiz, S. Genc, E. Olcaytu (2015). A Markov Chains based projection and LP based recruitment optimization tool for Manpower Planning in Turkish Armed Forces.
21. Bayram, V., A. Sen and B. Yildiz (2015). A Game Theoretic Approach to Force Structure Planning of Turkish Armed Forces.
22. Bayram, V., E. Olcaytu and M. Sonmez (2015). Optimizing the Base Realignment and Closure Decisions of Turkish Armed Forces.
23. Demir, H., B. Yildiz, A. Sen and V. Bayram (2014). A Cluster Analysis for Reorganization of Turkish General Staff HQ.
24. Bayram, V. (2013). Developing a Scientific and Fair Inspection Methodology to Measure the Efficiency of Military Units in Turkish Armed Forces.
25. Kurt, M., and V. Bayram (2013). Prediction and Prevention Methods for Events Realized with Improvised Explosive Devices.
26. Bayram, V. (2012). Determining the optimal economical life cycle of service vehicles in Turkish General Staff HQ.
27. Bayram, V., and H. Kudak (2012). Analyzing the Need for and Determining the Optimal Number of Target Aircrafts for Turkish Air Forces.
28. Bayram, V., and S. Yasar (2011). Determining the Optimal Number of Small Helicopters for Military Operations on Urban Terrain for Turkish Special Forces.
29. Bayram, V., I. Akgun and M. Sonmez (2010). Determining the Optimal Number of Initial Training Aircraft Requirements for Turkish Air Forces.

**Grants, Fellowships**

Bayram, V. Hub Location under Congestion and Capacity Considerations, Principal Investigator, 218M520, 2019–2021. The Scientific and Technological Research Council of Turkey (TUBITAK), 3501 – Career Development Program (CAREER), 231,106 TL.

Postdoctoral Research Fellowship, sponsored by Samir Elhedhli and Fatma Gzara, Faculty of Engineering, Department of Management Sciences, University of Waterloo, CANADA.

Bayram, V. and H. Yaman. Nonlinear Mixed Integer Programming Models for Evacuation Planning, Researcher, MAG 213M434, 2014–2016. The Scientific and Technological Research Council of Turkey (TUBITAK), 1001 – The Support Programme for Scientific and Technological Research Projects Grant. 87,500 TL.

Full Tuition Fee Waiver for PhD Studies, Bilkent University, 2009 - 2015  
 Full Scholarship for MS Studies, Turkish Land Forces, 2000 - 2002  
 Full Scholarship for BS Studies, Turkish Land Forces, 1993 - 1997  
 Full Scholarship for Military High School, Turkish Armed Forces, 1989 - 1993

## Conference, Seminar Presentations and Talks

### Invited Seminars

Data Driven Robust Order Batching Decisions for Warehouse Management: A Data Analytics and Branch and Price Approach, Euro Conference, Valencia, Spain, July 11, 2018.  
 Models and Algorithms for Large Scale Evacuation Planning, Bogazici University, Istanbul, Turkey, March 9, 2018.  
 Data Driven Robust Order Batching Decisions for Warehouse Management: A Data Analytics and Branch and Price Approach, INFORMS Conference, Houston, TX, USA, October 24, 2017.  
 Models and Algorithms for Large Scale Evacuation Planning, TED University, Ankara, Turkey, April 5, 2016.  
 Models and Algorithms for Large Scale Evacuation Planning, TOBB University, Ankara, Turkey, March 5, 2016.  
 Models and Algorithms for Large Scale Evacuation Planning, Sabanci University, Istanbul, Turkey, January 5, 2016.  
 A Benders Decomposition Approach for Shelter Location and Evacuation Planning under Uncertainty, Operations Research and Industrial Engineering (YAEM) Conference, Middle East Technical University, Ankara, Turkey, September 10, 2015.  
 Compromising System and User Interests in Shelter Location and Evacuation Planning, Barbaros Tansel Memorial Lecture Series (Invited), Bilkent University, Ankara, Turkey, May 8, 2015.  
 Compromising System and User Interests in Shelter Location and Evacuation Planning, INFORMS Conference, San Francisco, CA, USA, November 10, 2014.  
 Compromising System and User Interests in Shelter Location and Evacuation Planning, Operations Research and Industrial Engineering (YAEM) Conference, Uludag University, Bursa, Turkey, June 25, 2014.

### Refereed Proceedings

A Benders Decomposition Approach for Shelter Location and Evacuation Planning under Uncertainty, International Network Optimization Conference, Warsaw Poland, May 19, 2015.

### Others

Compromising System and User Interests in Shelter Location and Evacuation Planning  
 OR and IE Doctoral Students Colloquium, Middle East Technical University, Ankara, Turkey, October 25, 2014.  
 Data Driven Robust Order Batching Decisions for Warehouse Management: A Data Analytics and Branch and Price Approach  
 INFORMS Conference, Nashville, TN, USA, November 16, 2016.  
 Operations Research and Industrial Engineering (YAEM) Conference, Anadolu University, Eskisehir, Turkey, June 28, 2018.

## Teaching

### *TED University*

IE 538 Discrete Optimization (M.S.): Spring 2017, Spring 2018, Spring 2019  
 IE 438 Discrete Optimization: Spring 2017, Spring 2018, Spring 2019  
 IE 466 Humanitarian Logistics: Spring 2017, Spring 2018, Spring 2019  
 IE 331 Mathematical Modeling & Optimization II: Fall 2017, Fall 2018  
 IE 491 Senior Project I: Fall 2017, Fall 2018  
 IE 492 Senior Project II: Spring 2018, Spring 2019

## Reviewer Activities

*European Journal of Operational Research* 2018 (3), 2019 (1)  
*INFORMS Journal on Computing* 2017 (2)  
*Transportation Research Part B* 2014 (1), 2016 (3), 2017 (1), 2018 (1)  
*Transportation Research Part E* 2015 (1), 2017 (1), 2018 (2), 2019 (1)  
*INFOR: Information Systems and Operational Research* 2016 (3), 2017 (1), 2019(1)  
*IISE Transactions* 2017 (2)  
*Computers and Operations Research* 2016 (1), 2017 (1)  
*OR Spectrum* 2019 (1)  
*RAIRO - Operations Research* 2015 (1)  
*Annals of Operations Research* 2017 (1)  
*Surveys in Operations Research and Management Science* 2016 (2)  
*International Journal of Disaster Risk Reduction* 2016 (1), 2018 (1)  
*Transportmetrica A: Transport Science* 2018 (1), 2019 (1)  
*ISCO2018* 2018 (1)  
*TED University Scientific Research Project* 2019 (1)  
*Springer*. Book Chapter, Industrial Engineering: Management, Tools, and Applications 2014 (1)

## Honors and Awards

Outstanding Contribution in Reviewing, *European Journal of Operational Research*, January 2018  
 Outstanding Contribution in Reviewing, *Computers and Operations Research*, December 2017  
 Outstanding Contribution in Reviewing, *Transportation Research Part E*, August 2017  
 Southeastern Europe Brigade (Constanta, Romania) Service Medal, 2007  
 Bulgarian Defense Ministry Service Medal, 2007  
 NATO Service (ISAF, Afghanistan) Medal, 2006  
 Multiple Army Ribbons, 1997 - 2016  
 Officer Basic Course, 3th place in 86 graduates, 1998  
 Turkish Army Academy, 7th place in 1009 graduates, 1997

Kuleli Military High School, 10th place in 500 graduates, 1993

## Computer Skills and Languages

*Programming Languages:* JAVA, GAMS, ILOG CPLEX CONCERT TECHNOLOGY, R, SQL, L<sup>A</sup>T<sub>E</sub>X, VBA, SIMKIT.

*Languages:* Turkish, English (Advanced, TOEFL IBT 115(2009)), German (Basic), Italian (Basic).

## References

Prof. Samir Elhedhli, Department of Management Sciences, University of Waterloo, <http://www.eng.uwaterloo.ca/elhedhli/>, Email: [elhedhli@uwaterloo.ca](mailto:elhedhli@uwaterloo.ca), Phone: +1 (519) 888 4567 ext. 35683

Assoc. Prof. Fatma Gzara, Department of Management Sciences, University of Waterloo, <https://uwaterloo.ca/management-sciences/about/people/fgzara>, Email: [fgzara@uwaterloo.ca](mailto:fgzara@uwaterloo.ca), Phone: +1 (519) 888 4567 ext. 38940

Prof. Hande Yaman Paternotte, Faculty of Economics and Business, KU Leuven, <https://feb.kuleuven.be/hande.yamanpaternotte>  
Email: [hande.yaman@kuleuven.be](mailto:hande.yaman@kuleuven.be), Phone: +3216377844

Prof. Gerald G. Brown, Distinguished Professor of Operations Research, National Academy of Engineering, Operations Research Department, Naval Postgraduate School, Monterey, California 93943, Email: [gbrown@nps.edu](mailto:gbrown@nps.edu), Phone: +1 (831) 656 2140

Prof. Robert F. Dell, Operations Research Department, Naval Postgraduate School, Monterey, California 93943, Email: [dell@nps.edu](mailto:dell@nps.edu), Phone: +1 (831) 656 2853

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