

- 1. Name Surname** : Demet Özgür Ünlüakın  
**2. Institution** : Işık University  
**3. Title** : Assist. Prof.  
**4. Education:**



Degree	Department	Institution	Year
B.S.	Industrial Engineering	Boğaziçi University	1995
M.S.	Industrial Engineering	Boğaziçi University	1997
Ph.D.	Industrial Engineering	Boğaziçi University	2008

#### 5. Academic Degrees:

Assist. Prof. Industrial Engineering 2009

#### 6. M.S. and Ph.D. Theses Supervised

##### 6.1. M.S. Theses

Busenur Türkali, 2020. “Evaluation of alternative maintenance strategies on a complex system in thermal power systems Işık University, Industrial Engineering Graduate Program.

İpek Kıvanç, 2020. “Maintenance optimization of multiple component systems using probabilistic graphical models”. Co-Advisor, Boğaziçi University, Industrial Engineering Graduate Program.

Ayşe Karacaörenli, 2019. “Analysis of Different Maintenance Policies on a Multi-Component System using Dynamic Bayesian Networks”. Işık University, Industrial Engineering Graduate Program.

Mustafa Burak Aktel, 2018. “Maintenance Policy Analysis of Gate Systems in Hydroelectric Power Plants”. Bahçeşehir University, Industrial Engineering Graduate Program.

Umut Küçükdurmaz, 2014. “Effects of Recent IVR Applications on Call Center Performance in Banking Sector”. Bahçeşehir University, Industrial Engineering Graduate Program.

Mo'tasem Hamdi Yacoub Abushanap, 2013 “Proactive Maintenance of Thermal Power Plants under Limited Observations”. Bahçeşehir University, Industrial Engineering Graduate Program.

Elif Anılğan, 2011. “Statistical Analysis and Capacity Planning of a Third Level Neonatal Unit”. Bahçeşehir University, Industrial Engineering Graduate Program.

##### 6.2. Ph.D. Theses

#### 7. Publications

##### 7.1. Publications in refereed international journals (SCI / SCIE)

Kıvanç, İ., Özgür-Ünlüakın, D., & Bilgiç, T. (2022). Maintenance policy analysis of the regenerative air heater system using factored POMDPs. *Reliability Engineering & System Safety*, 219, 108195.

Özgür-Ünlüakın, D., & Türkali, B. (2021). Evaluation of proactive maintenance policies on a stochastically dependent hidden multi-component system using DBNs. *Reliability Engineering & System Safety*, 211, 107559.

Özgür-Ünlüakın, D., Türkali, B., & Aksezer, S. Ç. (2021). Cost-effective fault diagnosis of a multi-component dynamic system under corrective maintenance. *Applied Soft Computing*, 102, 107092.

Özgür-Ünlüakın, D., Türkali, B., Karacaörenli, A., & Aksezer, S. Ç. (2019). A DBN based reactive maintenance model for a complex system in thermal power plants. *Reliability Engineering & System Safety*, 190, 106505.

Özgür-Ünlüakın, D., & Bilgiç, T. (2017). Performance analysis of an aggregation and disaggregation solution procedure to obtain a maintenance plan for a partially observable multi-component system. *Reliability Engineering & System Safety*, 167, 652-662.

Demet Özgür-Ünlüakın and Taner Bilgiç (2014). Replacement policies for a complex system with unobservable components using dynamic Bayesian networks. *International Journal of Computational Intelligence Systems*, Volume: 7, Pages: 68-83, Supplement: 1, DOI: 10.1080/18756891.2014.853933, Jan 1 2014

Gülay Barbarosoğlu and Demet Özgür (1999). Hierarchical design of an integrated production and 2-echelon distribution system. *European Journal of Operational Research*, Volume 118, Issue 31, November 1999, pp. 464-484

Gülay Barbarosoğlu and Demet Özgür (1999). A tabu search algorithm for the vehicle routing problem. *Computers & Operations Research*, Volume 26, Issue 3, March 1999, pp. 255-270

## **7.2. Publications in other refereed international journals**

### **7.3. International conference publications (in Proceedings)**

Demet Özgür-Ünlüakın & Busenur Türkali (2019, September). Karmaşık Sistemlerin Bakım Kararlarında Olasılıklı Grafiksel Modellerin Kullanımı. *IXth International Maintenance Technologies Congress and Exhibition*, Pamukkale University, Denizli, Turkey.

Kıvanç, İ., & Özgür-Ünlüakın, D. (2019, September). An Effective Maintenance Policy for a Multi-component Dynamic System Using Factored POMDPs. *In the European Conference on Symbolic and Quantitative Approaches with Uncertainty*, Belgrade, Serbia, pp. 290-300, Springer, Cham.

Özgür-Ünlüakın, D., & Kıvanç, İ. (2019, July). Maintenance Policy Simulation for a Factored Partially Observable System. *Proceedings of the 2019 Summer Simulation Conference (SUMMERSIM '19)*, Berlin, Germany.

Özgür-Ünlüakın, D., & Karacaörenli, A. (2018, August). Analysis of Reactive Maintenance Strategies on a Multi-component System Using Dynamic Bayesian Networks. *In the International Symposium for Production Research*, Vienna, Austria, pp. 101-110, Springer, Cham.

Özgür-Ünlüakın, D., Kıvanç, İ., Türkali, B., & Aksezer, Ç. (2018, August). A DBN Based Prognosis Model for a Complex Dynamic System: A Case Study in a Thermal Power Plant. *In the International Symposium for Production Research*, Vienna, Austria, pp. 75-84, Springer, Cham.

Gülin Bahçıvan and Demet Özgür-Ünlüakın (2016). An Experimental Study To Analyze The Factors Affecting Weight Loss. *Proceedings of TMT16, 20th International Research/Expert Conference on "Trends in the development of Machinery and associated Technology"*, Mediterranean Sea Cruising, September 22-October 1, 2016.

Demet Özgür-Ünlüakın and Merve Akkaya (2015). Regression Analysis Of Authorized Service Complaints In Terms Of Equipment Complaints. *Proceedings of TMT15, 19th International Research/Expert Conference on "Trends in the development of Machinery and associated Technology"*, Barcelona, Spain, July 22-23, 2015, pp. 185-189.

Umut Küçükdurmaz and Demet Özgür-Ünlüakın (2014). Effects of "Recognize Caller by ANI" Application on Call Center Performance. *Proceedings of CIE'44 and IMSS'14, Joint International Symposium on "The Social Impacts of Developments in Information, Manufacturing and Service Systems*, Istanbul, Turkey, October 14-16, 2014, pp. 723-729.

Selim Gazel, Yıldız Arıkan and Demet Özgür-Ünlüakın (2014). Alternative Electricity Production Technologies for Turkey: Is There A Difference Between The Students' and Academics' Perceptions On Their Merits? *Proceedings of TMT14, 18th International Research/Expert Conference on "Trends in the development of Machinery and associated Technology"*, Budapest, Hungary, September 10-12, 2014, pp. 389-393.

Demet Özgür-Ünlüakın and Taner Bilgiç (2012). Replacement Decisions for Reliability Centered Maintenance. *Proceedings of the Tenth International FLINS Conference on Uncertainty Modeling in Knowledge Engineering and Decision Making*, Istanbul, Turkey, August 26-29, 2012, Volume 7, pp.64-69

Demet Özgür-Ünlüakın and Taner Bilgiç (2010). An Aggregation and Disaggregation Procedure for the Maintenance of a Dynamic System under Partial Observations. *Proceedings of the Fifth European Workshop on Probabilistic Graphical Models*, Petri Myllymaki, Teemu Roos and Tommi Jaakkola (Eds.), HIIT Publications 2010, Helsinki, Finland, September 13–15, 2010, pp. 217-224.

Demet Özgür-Ünlüakın and Taner Bilgiç (2006). Predictive Maintenance using Dynamic Probabilistic Networks. *Proceedings of the Third European Workshop on Probabilistic Graphical Models*, Milan Studený and Jirí Vomlel (Eds.), Prague, Czech Republic, September 12–15, 2006, pp. 239-246.

#### **7.4. International books or chapters in books**

#### **7.5. Publications in refereed national journals**

#### **7.6. National conference publications (in Proceedings)**

Elif Anılğan and Demet Özgür-Ünlüakın (2010). Yenidoğan Ünitelerinin Aileler Açısından Maliyet Analizi. *10. Ulusal Üretim Araştırmaları Sempozyumu (ÜAS 2010)*, September 2010.

Dilara Köseoğlu and Demet Özgür (2000). Eczacıbaşı Bilgi İletim (EBİ) Sonlu kapasite çizelgeleme çözümü. *Operations Research and Industrial Engineering Conference (YA/EM 2000)*, East Mediterranean University, NCTR, July 2000.

#### **7.7. Other publications**

##### **7.7.1. Conference presentations with abstracts published in international conferences**

Demet Özgür-Ünlüakın, Busenur Türkali, & Ayşe Karacaörenli (2019). Comparison Of Various Policies under Different Maintenance Strategies on a Multi-component System. *International Conference on Structural Safety and Reliability*, August 15-16, 2019, Barcelona, Spain.

Demet Özgür-Ünlüakın, Busenur Türkali, & Çağlar Aksezer (2019). Analyzing the Performance of Different Cost-Based Methods for the Corrective Maintenance of a System in Thermal Power Plants. *International Conference on Structural Safety and Reliability*, August 15-16, 2019, Barcelona, Spain.

İpek Kıvanç & Demet Özgür Ünlüakın (2019). Maintenance Optimization for a Multi-Component System Using Factored Partially Observable Markov Decision Processes. *International Conference on Structural Safety and Reliability*, August 15-16, 2019, Barcelona, Spain.

M. Burak Aktel & Demet Özgür Ünlüakın (2018). Developing an Effective Maintenance Policy for Control Gates in Hydroelectric Power Plants. *International Conference on Industrial Engineering and Operations Management (IEOM2018)*, Paris, France, July 2018.

Demet Özgür Ünlüakın & Mo'tasem Abushanap (2013). A Proactive Maintenance Methodology to Minimize Expected Total Number of Replacements in Thermal Power Plants. *European Conference on Operational Research (EURO2013)*, Rome, Italy, July 2013.

Selim Gazel, Yıldız Arıkan and Demet Özgür-Ünlüakın (2012). An AHP Application for Turkey's Electricity Supply Technology Assessment Problem. *Proceedings of the 3rd Annual Conference of the European Decision Sciences Institute*, Istanbul, Turkey, June 24-27, 2012

Gülây Barbarosoğlu and Demet Özgür (1997). Hierarchical management of an integrated production-logistics system. *Joint international meeting of the Institute of Operations Research and Management Sciences (INFORMS XXXIV) and the Association of European Operational Research Societies (EURO XV)*, Barcelona, Spain 1997

### 7.7.2. Conference presentations with abstracts published in national conferences

Demet Özgür-Ünlüakın, İpek Kıvanç, Busenur Türkali & S. Çağlar Aksezer (2018). Karmaşık Sistemlerin Dinamik Bayesçi Ağlar ile Bakım Modellemesi: Bir Vaka Çalışması. *Operations Research and Industrial Engineering Conference (YA/EM 2018)*, Eskişehir, June 2018

Ayşe Karacaörenli and Demet Özgür-Ünlüakın (2018). Çok-Bileşenli bir Sistem Üzerinde Dinamik Bayesçi Ağlar Kullanarak Farklı Bakım Politikalarının Analizi. *Operations Research and Industrial Engineering Conference (YA/EM 2018)*, Eskişehir, June 2018

Demet Özgür-Ünlüakın (2013). Proaktif ve Reaktif Bakımlarda Bir Planlama Ufku Boyunca Toplam Beklenen Maliyetlerin Karşılaştırılması. *Operations Research and Industrial Engineering Conference (YA/EM 2013)*, İstanbul, June 2013

Demet Özgür-Ünlüakın and Taner Bilgiç (2012). Güvenilirlik-Merkezli Bakım Problemlerinde Dinamik Bayes Ağları ile Yenileme Kararları. *Operations Research and Industrial Engineering Conference (YA/EM 2012)*, Doğu University, İstanbul, June 2012

Elif Anılğan and Demet Özgür-Ünlüakın (2012). Kaynak Ayrımı ve Ortak Kaynak Kullanımının Yenidoğan Yoğun Bakım Ünitelerinin Performansına Etkileri. *Operations Research and Industrial Engineering Conference (YA/EM 2012)*, Doğu University, İstanbul, June 2012

Özge Özyazar and Demet Özgür-Ünlüakın (2012). Yoğun Bakım Üniteleri için Etkin Kapasite Planlaması. *Operations Research and Industrial Engineering Conference (YA/EM 2012)*, Doğu University, İstanbul, June 2012

Elif Anılğan and Demet Özgür-Ünlüakın (2011). Bir Yenidoğan Yoğun Bakım Ünitesinin Kaynak Planlamasına İlişkin Çözüm Önerileri. *Operations Research and Industrial Engineering Conference (YA/EM 2011)*, Sakarya University, Sakarya, July 2011

Selim Gazel, Yıldız Arıkan and Demet Özgür-Ünlüakın (2011). Enerji Arz Seçeneği Olarak Nükleer Santraller: AHP Yaklaşımı. *Operations Research and Industrial Engineering Conference (YA/EM 2011)*, Sakarya University, Sakarya, July 2011

Salim Selçuk Erdinç and Demet Özgür-Ünlüakın (2010). Bir Lojistik Şirketinin Araç Rotalama Problemi İçin bir Matematiksel Model. *Operations Research and Industrial Engineering Conference (YA/EM 2010)*, Sabancı University, İstanbul, June 2010

Elif Anılğan and Demet Özgür-Ünlüakın (2010). Yenidoğan Ünitelerinin Markov Zincirleriyle Analizi. *Operations Research and Industrial Engineering Conference (YA/EM 2010)*, Sabancı University, İstanbul, June 2010

Demet Özgür-Ünlüakın and Taner Bilgiç (2008). Dinamik bir Sistemin Kısmi Gözlemler Altında Bakımı. *Operations Research and Industrial Engineering Conference (YA/EM 2008)*, Galatasaray University, İstanbul, June 2008

### 7.7.3. Other presentations

Demet Özgür and Dilara Köseoğlu (2000). CHIP as a CLP tool. Endüstri Mühendisliği, ODTÜ, İstanbul, April 2000

### 7.7.4. Theses

Maintenance of a multi-component dynamic system under partial observations (2008) (Ph.D)

Hierarchical management of an integrated production-logistics system (1997) (M.S.)

## 8. Projects

- BAP 22A203, “Opportunistic Maintenance of Complex Systems using Dynamic Bayesian Networks”, proje yürütücüsü, Işık Üniversitesi (Eylül 2022-Eylül 2024)
- TÜBİTAK 1001, “Development of Probabilistic Graphical Models in the Maintenance Optimization of Multi-Component Systems and Their Solutions”, Project principal investigator, (October 2017 – February 2020)
- Development of a production planning and scheduling solution with constraint programming (1999-2001)

- İpek Kağıt – Girişim : SAP entegration (2002)
- İpek Kağıt : SAP international and domestic transportation management implementation (2002, 2021)
- Vitra : SAP transportation management implementation (2001)
- Eczacıbaşı AVON: SAP SD module implementation –conceptual design (1998)

### 9. Administrative Experience

Head of Industrial Engineering Department	Işık University	2022 -
Inspection & Control Commission Member	Işık University	2018 - 2022
Faculty Erasmus and Exchange Coordinator	Bahçeşehir University	2011 - 2014

### 10. Scientific and Professional Affiliations

YAD – Yöneylem Araştırması Derneği

### 11. Research Interests

- Probabilistic graphical models (DBNs, MDPs, POMDPs)
- Decision making
- Maintenance
- Statistical analysis
- Operations research applications

### 12. Teaching Experience

- Engineering Statistics
- Operations Research III
- Quality Planning and Control
- Probability
- Production and Service Operations Planning
- Design and Analysis of Experiments
- Introduction to Decision Analysis
- Metaheuristics

### 13. Academic and Professional Experience

09/2016 -	Assist. Prof. Industrial Engineering Department, Işık University, İstanbul
09/2009 - 08/2016	Assist. Prof. Industrial Engineering Department, Bahçeşehir University, İstanbul
09/2008 - 08/2009	Instructor, Dr. Industrial Engineering Department, Bahçeşehir University, İstanbul
10/1997 - 11/2002	System Development Specialist Projects Department, Eczacıbaşı Bilişim (EBİ), İstanbul
08/1995 - 10/1997	Research Assistant Industrial Engineering Department, Boğaziçi University, İstanbul

### 14. Referee Activities

- Reliability Engineering & System Safety
- Annals of Operations Research
- IIE Transactions
- IEEE Transactions on Reliability
- International Journal of Computational Intelligence Systems
- Mathematical Problems in Engineering-Hindawi
- Politeknik Journal