Oguz Toragay

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Education

Ph.D. in Industrial and Systems Engineering **2018–2022**
Auburn University *GPA: 4.00/4.00*
- Adviser: Dr. Daniel F. Silva
- Area of study: Operations Research, Additive Manufacturing and Topology Optimization

M.Eng. in Industrial and Systems Engineering **2016–2018**
Auburn University *GPA: 4.00/4.00*
- Adviser: Dr. Daniel F. Silva
- Area of study: Queueing Theory and Markov Decision Processes

M.Sc. in Industrial Engineering **2007–2011**
Gazi University *GPA: 3.28/4.00*
- Adviser: Dr. Murat Arikan
- Area of study: Multi-Objective Optimization and Multi-Attribute Decision Making

B.Sc. in Applied Mathematics **2000–2004**
Khayyam University *GPA: 3.07/4.00*
- Adviser: Dr. Alireza Salemkar
- Area of study: Group Theory & Rings Algebra

Professional Experience

Lawrence Technological University (LTU)
Assistant Professor, The A. Leon Linton Department of Mechanical, Robotics, and Industrial Engineering *2022–Present*

Auburn University
Graduate Research Assistant, Funded by FAA *2018–2022*
- Topic: Topology Optimization of Lightweight Structures for Additive Manufacturing.
- Tools: MATLAB, PYTHON, PYOMO, AMPL & ABAQUS

Auburn University
Graduate Research Assistant *2017–2018*
- Topic: Applications of Queueing models and Markov Decision Processes in Secure Networks.
- Tools: Parallel computing in MATLAB & MDP TOOLBOX.

United Nations High Commissioner for Refugees (UNHCR)
RSD Scheduling Assistant *2009–2015*
- Responsibilities: Leading a team of four employees who prepared the weekly schedule for Refugee Status Determination and Protection interviews of the asylum-seekers/refugees in Turkey.
- Supervisor: Mr. Resit Akif Atli

Teaching Experience

Statistical methods for process improvement (evaluations: 4.72/5) *F23, LTU*
Advanced Optimization Techniques (Graduate level) (evaluations: 4.38/5, 4.58/5) *S23, S24, LTU*
Simulation in Systems Design (evaluations: 3.70/5, 4.83/5) *S23, S24, LTU*
Plant Layout (evaluations: 4.30/5, 4.63/5) *S23, S24, LTU*
Applied Stochastic Optimization (Graduate level) (evaluations: 4.69/5, 4.57/5) *F22, F23, LTU*
Production Planning and Control (evaluations: 4.72/5) *F22, LTU*
Manufacturing Systems I – Instructor of record (evaluations: 5/6) *F20, AU*

Research Interests

- Operations Research
- Data Analytics
- Queueing theory
- Markov Decision Processes
- Metaheuristic Optimization
- Additive Manufacturing
- Scheduling & sequencing
- Supply chain and Logistics
- Cyber security

Journal Papers

- **Toragay, O.**, Silva, D. F., Vinel, A., "On optimization of lightweight planar frame structures: an evolving ground structure approach", Struct and Multidisc Optim 67, 5 (2024). https://doi.org/10.1007/s00158-024-03796-w
- Pouya, S., **Toragay, O.**, and Mohammadi, M., "Predicting the Solution Time for Optimization Problems Using Machine Learning." In International Conference on Optimization, Learning Algorithms and Applications, pp. 450-465. Springer, Cham, (2024). https://doi.org/10.1007/978-3-031-53025-8_31
- Mohanta, K. K., **Toragay, O.**, "Enhanced performance evaluation through neutrosophic data envelopment analysis leveraging pentagonal neutrosophic numbers." J. Oper. Strateg Anal 1, no. 2 (2023): 70-80.
- **Toragay, O.**, Pouya, S, "A Monte Carlo simulation approach to the gap-time relationship in solving scheduling problem." Journal of Turkish Operations Management 7, no. 1 (2023): 1579-1590.
- **Toragay, O.**, Silva, D. F., Vinel, A., Shamsaei N., "Exact Global Optimization of Frame Structures for Additive Manufacturing", Struct Multidisc Optim 65, 97 (2022). https://doi.org/10.1007/s00158-022-03178-0
- **Toragay, O.**, Silva, D. F., "Fast Heuristic Approach for Control of Complex Authentication Systems", Applied Stochastic Models in Business and Industry, Vol: 37, Issue: 4, 2021
- **Toragay, O.**, Arikan, M., "Performance Evaluation of Faculty Departments by a Delphi Method Based on 2-Tuple fuzzy Linguistic Representation Model and TOPSIS", International Journal of Basic and Applied Sciences IJBAS-IJENS, Vol: 15, No: 05, 2015.
- **Toragay, O.**, Arikan, M., "Performance Evaluation of the Departments in Engineering College of a University by Utilizing TOPSIS and Fuzzy Delphi", Journal of Economics and Administrative Sciences, Vol: 16, No: 02, 2015.(Language: Turkish)

Conference Proceedings

- Pouya, S., **Toragay, O.**, A Study on the Gap-Time Relationship in Solving Scheduling Problem, INFORMS Annual Meeting 2023, Phoenix, Arizona
- **Toragay, O.**, Silva, D. F., Vinel, A., Shamsaei, N., "Exact Size and Shape Optimization of Additively Manufactured Lightweight Planar Frame Structures with Manufacturability Constraints and Modern Global Optimization Methods", 14^{th} World Congress of Structural and Multidisciplinary Optimization 2021, Virtual Conference.
- **Toragay, O.**, Arikan, M., "Academic Performance Evaluation of the Departments in Engineering College by Utilizing TOPSIS and Fuzzy Delphi", International Symposium on the Analytic Hierarchy Process 2014, Washington D.C., USA.

Honors, Awards, Grants

2024-2025: Material and Processes for Additive Manufacturing at LTU (PI - DoD DURIP Grant $\$386,678$), (Pending)

2022-2024: Undergraduate Simulation teaching grant (PI - Simio LLCS, Simio software licenses worth $\$96000$)

2022-2023: SEED research grant (PI - LTU $\$5000$)

2021-2022: Outstanding PhD Student, Industrial and Systems Engineering Department, Auburn University

2016-2021: Full tuition scholarship, Auburn University

2017-2018: INFORMS Student Chapter Award at the level of Summa Cum Laude (*Position: Secretary*)

2016-2017: INFORMS Student Chapter Award at the level of Cum Laude (*Position: Webmaster*)

2007-2010: Full tuition scholarship, Gazi University, Provided by Turkish Education Ministry

Computer Skills

Programming: MATLAB, PYTHON, R

Optimization: AMPL, PYOMO, HEXALY, CPLEX, GUROBI, BARON, KNITRO, IPOPT, NEOS SERVER

Simulation: SIMIO

Certificates

ASTM: Additive Manufacturing General Personnel Certificate (ASTM E2659-18 compliant certificate)

Selected Graduate Level Courses

- Optimization (Linear, Network, Heuristic)
- Integer and Non-linear Programming
- Multi-Criteria Decision Making
- Advanced Engineering Statistics I
- Sequencing and Scheduling
- Fuzzy Set Theory
- Production Systems Planning
- Data Visualization
- Stochastic Operations Research
- Production Inventory Control
- Manufacturing and Production Economy
- Information Technology for Operations

Professional References

Dr. Daniel F. Silva
Associate Professor, Industrial and Systems Engineering, Auburn University *Graduate Advisor*
E-mail: dfs0008@auburn.edu
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Dr. Alexander Vinel
Associate Professor, Industrial and Systems Engineering, Auburn University *Graduate Co-Advisor*
E-mail: azv0019@auburn.edu
Phone: +1-334-844-1425

Dr. Nasrin Mohabbati
Assistant Professor, Information Systems, San Francisco State University
E-mail: mohabbati@sfsu.edu
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Dr. Babek Erdebilli
Professor, Industrial Engineering, Ankara Yildirim Beyazit University
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