

# Oguz Toragay

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## Education

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### Auburn University

2018–2022

*Ph.D. in Industrial and Systems Engineering*

GPA: 4.00/4.00

- Adviser: Dr. Daniel F. Silva
- Area of study: Operations Research, Additive Manufacturing & Topology Optimization

### Auburn University

2016–2018

*M.Eng. in Industrial and Systems Engineering*

GPA: 4.00/4.00

- Adviser: Dr. Daniel F. Silva
- Area of study: Queueing Theory and Markov Decision Processes

### Gazi University

2007–2011

*M.Sc. in Industrial Engineering, Turkey/Ankara*

GPA: 3.28/4.00

- Adviser: Dr. Murat Arikan
- Area of study: Multi-Objective Optimization and Multi-Attribute Decision Making

### Khayyam University

2000–2004

*B.Sc. in Applied Mathematics, Iran/Mashhad*

GPA: 3.07/4.00

- Adviser: Dr. Alireza Salemkar
- Area of study: Group Theory & Rings Algebra

## Research Interests

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- Operations Research
- Mathematical Modeling
- Queueing theory
- Markov Decision Processes
- Metaheuristic Optimization
- Multi Attribute Decision Making
- Additive Manufacturing
- Topology Optimization
- Cyber security

## Journal Papers

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- 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., “A Hybrid Genetic Algorithm Approach for the Topology Optimization of Additively Manufactured Structures”, *In preparation for the Optimization and Engineering Journal*
- **Toragay, O.**, Silva, D. F., Vinel, A., “On optimization of lightweight planar frame structures: an evolving ground structure approach”, *Under review with Structural and Multidisciplinary Optimization Journal*
- **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

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- Pouya, S., **Toragay, O.**, Mohammadi, M., “Predicting the Solution Time for Optimization Problems Using Machine Learning Case of Job Shop Scheduling Problem”, 3<sup>rd</sup> International Conference on Optimization, Learning Algorithms and Applications (OL2A 2023), Ponta Delgada, Portugal.
- **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<sup>th</sup> 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.

## Professional Experience

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### Lawrence Technological University (LTU)

Assistant Professor, The A. Leon Linton Department of Mechanical, Robotics, and Industrial Engineering

USA

Fall 2022

### Auburn University (AU)

Graduate Research Assistant, Funded by FAA

USA

2018–2022

- **Topic:** Topology Optimization of Lightweight Structures for Additive Manufacturing.

- **Tools:** MATLAB, PYTHON, PYOMO, AMPL & ABAQUS

### Auburn University

Graduate Research Assistant

USA

2017–2018

- **Topic:** Applications of Queuing 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

Turkey

2009–2015

- **Job Description:** Leading a team of four employees who prepared the weekly schedule for Refugee Status Determination and Protection interviews of the asylum-seekers in Turkey.

- **Supervisor:** Mr. Resit Akif Atli

## Teaching Experience

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Advanced Optimization Techniques (Graduate level) (evaluations: 4.38/5)

Spring 2023, LTU

Simulation in Systems Design (evaluations: 3.70/5)

Spring 2023, LTU

Plant Layout (evaluations: 4.30/5)

Spring 2023, LTU

Applied Stochastic Optimization (Graduate level) (evaluations: 4.69/5)

Fall 2022, LTU

Production Planning and Control (evaluations: 4.72/5)

Fall 2022, LTU

Manufacturing Systems I – **Instructor of record** (evaluations: 5/6)

Fall 2020, AU

Manufacturing Systems I – Teaching Assistant & Lab Instructor

2018 – 2021, AU

Manufacturing Systems II – Teaching Assistant

Fall 2017, AU

Dynamic Programming – Teaching Assistant (Graduate Level)

Spring 2017, AU

Stochastic Optimization – Teaching Assistant (Graduate Level)

Fall 2016, AU

Probability and statistics – Teaching Assistant

Spring 2016, AU

## Honors & Awards

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**2022-2024:** Undergraduate Simulation teaching grant (Simio licenses worth \$96000), Simio LLC

**2022-2023:** SEED research grant (\$5000), Lawrence Technological University

**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

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**Programming:** MATLAB, PYTHON (NUMPY, PANDAS, OOP), LINUX VM

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

## Certificates

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

## Selected Graduate Level Courses

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- 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

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### **Dr. Daniel F. Silva**

*Associate Professor, Department of Industrial and Systems Engineering, Auburn University*

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*Graduate Advisor*

### **Dr. Alexander Vinel**

*Associate Professor, Department of Industrial and Systems Engineering, Auburn University*

E-mail: azv0019@auburn.edu

Phone: +1-334-844-1425

*Graduate Co-Advisor*

### **Dr. Nima Shamsaei**

*Professor, Department of Mechanical Engineering, Auburn University*

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Phone: +1-334-844-4839

*Graduate Co-Advisor*

### **Dr. Babek Erdebili**

*Associate Professor, Department of Industrial Engineering, Ankara Yildirim Beyazit University*

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### **Dr. Richard Garnett**

*Lecturer, Department of Industrial and Systems Engineering, Auburn University*

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*Teaching Mentor*