

ILGIN DOGAN

ilgindogan@berkeley.edu • Berkeley, CA • Personal Website • LinkedIn

EDUCATION

University of California, Berkeley

Ph.D. in Industrial Engineering and Operations Research

May, 2024 (expected)

M.Sc. in Industrial Engineering and Operations Research

2019

Middle East Technical University, Ankara, Türkiye

M.Sc. in Industrial Engineering

2018

B.Sc. in Industrial Engineering

2016

RESEARCH INTERESTS

Sequential and data-driven decision-making; Statistical learning; Optimization theory and algorithms; Multi-objective combinatorial optimization.

RESEARCH PAPERS

Ilgin Dogan, Anil Aswani, and Zuo-Jun Max Shen. Data-Driven Incentives for Repeated Principal-Agent Models with Unobserved Rewards: Agent with Perfect Knowledge. *Preprint*.

Ilgin Dogan, Anil Aswani, and Zuo-Jun Max Shen. Data-Driven Incentives for Repeated Principal-Agent Models with Unobserved Rewards: Agent with Imperfect Knowledge. *Preprint*.

Yoon Lee, **Ilgin Dogan**, Anil Aswani, and Zuo-Jun Max Shen. Incorporating Fairness into Incentive Design in Principal-Agent Models with Adverse Selection and Moral Hazard. *Working paper*.

Ilgin Dogan, Zuo-Jun Max Shen, and Anil Aswani. Regret Analysis of Learning-Based MPC with Partially-Unknown Cost Function. *Under revision for IEEE Transactions on Automatic Control*.

Ilgin Dogan, Banu Lokman, and Murat Koksalan. (2022). Representing the Nondominated Set in Multi-objective Mixed-integer Programs, European Journal of Operational Research, Vol. 296 (3), pp. 804-818.

INVITED TALKS

Ilgin Dogan, Anil Aswani, and Zuo-Jun Max Shen. (2023). Data-Driven Incentives for Repeated Principal-Agent Models with Hidden Rewards: Oracle Agent. Annual POMS Conference, Orlando, FL.

Ilgin Dogan, Anil Aswani, and Zuo-Jun Max Shen. (2023). Data-Driven Incentives for Repeated Principal-Agent Models with Hidden Rewards: Stochastic Agent. Annual POMS Conference, Orlando, FL.

Ilgin Dogan, Anil Aswani, and Zuo-Jun Max Shen. (2022). Multi-Armed Bandits For Repeated Principal-Agent Models With Unobserved Agent Rewards. INFORMS Annual Meeting, Indianapolis, IN.

Ilgin Dogan, Zuo-Jun Max Shen, and Anil Aswani. (2021). Regret Analysis for Adaptive Model Predictive Control. INFORMS Annual Meeting, Anaheim, CA.

Ilgin Dogan, Anil Aswani, and Zuo-Jun Max Shen. (2020). Non-Myopic Policies for Restless Bandits. INFORMS Annual Meeting, Virtual.

Ilgin Dogan, Banu Lokman, and Murat Koksalan. (2019). Representing the Nondominated Set with a Small Subset in Multi-objective Mixed-integer Programs. INFORMS Annual Meeting, Seattle, WA.

Ilgin Dogan, Banu Lokman, and Murat Koksalan. (2018). Approaches for Multi-objective Combinatorial Optimization Problems. INFORMS Annual Meeting, Phoenix, AZ.

Ilgin Dogan, Banu Lokman, and Murat Koksalan. (2017). Representing the Nondominated Set for Multi-objective Integer Programs. 24th International Conference on MCDM, Ottawa, Canada.

TEACHING EXPERIENCE

Industrial Engineering & Operations Research, University of California, Berkeley

Instructor:

- INDENG 151 - Service Operations Design and Analysis

Fall 2022

Teaching effectiveness evaluation: 6.72 / 7.00 (Department average: 6.03)

Graduate Student Instructor:

- INDENG 151 - Service Operations Design and Analysis Fall 2019, Fall 2020
Teaching effectiveness evaluation: 4.60 / 5.00 (Department average: 4.27)
- INDENG 165 - Engineering Statistics, Quality Control, and Forecasting Spring 2020
Teaching effectiveness evaluation: 4.62 / 5.00 (Department average: 3.95)

Haas School of Business, University of California, Berkeley

Reader:

- UGBA 141 - Production and Operations Management Spring 2021

Department of Industrial Engineering, Middle East Technical University

Undergraduate and Graduate Teaching Assistant: 2015 - 2018

- Courses: Stochastic Optimization with Applications / Management Accounting / Engineering Economy / Engineering Statistics, Quality Planning and Control / Quality in Engineering Management / Special Topics in IE: Multi-objective Combinatorial Optimization.

**RESEARCH
EXPERIENCE**

University of California, Berkeley 2019 - present

Graduate Student Researcher - Department of Industrial Engineering & Operations Research

Turkish Scientific and Technological Research Council (*NSF-equivalent*) 2016 - 2018

Research Scholar

Project: Nondominated Points of Multi-objective Integer Programs: Approaches and Applications

- Developed efficient algorithms that aim at producing a small number of representative nondominated points (up to 50% less than the existing approaches) while satisfying a prespecified coverage gap value for combinatorial multi-objective mixed-integer programs.
- Conducted extensive simulation experiments in C using CPLEX for mixed-integer knapsack and assignment problems with up to 5 objectives.

Middle East Technical University (METU) 2015 - 2016

System Design Project Analyst

Project: Designing a sustainable and data-driven in-campus transportation system (bike-share and shuttle services) for the METU, Ankara campus (11,100 acres).

- Collected and wrangled categorical and numerical data using SQL. Performed root-cause analysis.
- Developed a multi-objective optimization model considering the conflicting goals of different stakeholders in a large socio-technical system.
- Conducted empirical analyses on real data using a simulation model developed in Arena.
- Achieved a 15% decrease in total travel distances of the shuttles (due to the increase in the non-motorized trips) and a 5% decrease in the average travel time per person in the transportation network.

**INDUSTRIAL
EXPERIENCE**

Meta Summer 2022

Research Data Scientist Intern - Infrastructure Strategy Data Science, Menlo Park, CA

- Project: Targeting viewers and broadcasters for providing ultra-low end-to-end latency during live streams.
- Developed a framework that includes several components from implementing data analysis, building and maintaining data pipelines, developing and productionizing machine learning models.
- Achieved 70% precision and 63% recall with 91% coverage of total latency-sensitive broadcast watch time with the proposed classification model.

Robert BOSCH GmbH Summer 2015

Long-term Project Intern - Department of Deployment of Business Excellence, Bursa, Türkiye

- Project: Enhancing deployment of continuous improvement techniques in the organization by following the Kaizen and lean manufacturing methodologies.

- Developed statistical quality control models to facilitate process improvement in the organization.
- Experienced the company culture, attended weekly departmental meetings. Presented the project results to the executive management.

BAUER Casings

Summer 2014

Service Operations Intern - Department of Production Planning, Ankara, Türkiye

- Monitored and reported on daily data using company's ERP database system.
- Gained understanding of a complete flow of production and operational processes in the plant.
- Experienced the company culture, attended weekly departmental meetings.

HONORS, SCHOLARSHIPS, AND AWARDS

- IEOR Faculty Fellowship, University of California, Berkeley, 2021.
- Outstanding Graduate Student Instructor Award, University of California, Berkeley, 2021.
- Ph.D. First-year Fellowship, IEOR, University of California, Berkeley, 2018-2019.
- Graduate Research Fellowship, TUBITAK (*NSF-equivalent*), 2017-2018.
- Graduate Courses Performance Award, METU, 2018.
- Dean's High Honor List in B.Sc., Department of Industrial Engineering, METU, 2016.

COMPUTER SKILLS

- Programming Languages: C, Python, SQL, R
- ML Frameworks & Libraries: Scikit-Learn, SciPy, PyTorch, Pandas, NumPy, Matplotlib
- Statistical Softwares: RStudio, Minitab
- Optimization Softwares: Gurobi, CPLEX, GAMS
- Simulation Softwares: Arena (Siman)
- Tools: LaTeX, Microsoft Office

SERVICES AND SOCIETY ACTIVITIES

- **Session Chair:** Sessions on "Incorporating AI into Healthcare Delivery" and "ML for Healthcare Applications" in 2022 INFORMS Annual Meeting.
- **Reviewer:** INFORMS Journal on Data Science.
- **Participant:** INFORMS Doctoral Student Colloquium, 2020.
- **Participant:** Theory of Reinforcement Learning Boot Camp, Deep Reinforcement Learning Workshop, by The Simons Institute for the Theory of Computing, 2020.
- **Member:** INFORMS, POMS, MCDM.