

# ILGIN DOGAN

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EDUCATION	<b>University of California, Berkeley</b>	
	Ph.D. in Industrial Engineering and Operations Research	May, 2024 (expected)
	M.Sc. in Industrial Engineering and Operations Research	2019
	<b>Middle East Technical University, Ankara, Turkiye</b>	
RESEARCH INTERESTS	M.Sc. in Industrial Engineering	2018
	B.Sc. in Industrial Engineering	2016
	<b>Methodologies:</b> Sequential and Data-driven Decision Making, Statistical Learning, Optimization Theory, Principal-Agent Theory, Multi-Objective Combinatorial Optimization.	
	<b>Applications:</b> Sustainability Analytics, Supply Chain Management, Healthcare Analytics.	
JOURNAL PAPERS	<a href="#">Estimating and Incentivizing Imperfect-Knowledge Agents with Hidden Rewards.</a>	
	<b>Ilgin Dogan</b> , Zuo-Jun Max Shen, and Anil Aswani.	
	<i>Submitted to <b>Operations Research</b>.</i>	
	<a href="#">Repeated Principal-Agent Games with Unobserved Agent Rewards and Perfect-Knowledge Agents.</a>	
	<b>Ilgin Dogan</b> , Zuo-Jun Max Shen, and Anil Aswani.	
	<i>Submitted to <b>Operations Research</b>.</i>	
	<a href="#">Regret Analysis of Learning-Based MPC with Partially-Unknown Cost Function.</a>	
	<b>Ilgin Dogan</b> , Zuo-Jun Max Shen, and Anil Aswani.	
	<i>Conditionally accepted to <b>IEEE Transactions on Automatic Control</b>.</i>	
	<a href="#">Representing the Nondominated Set in Multi-objective Mixed-integer Programs</a>	
SELECTED WORKING PAPERS	<b>Ilgin Dogan</b> , Banu Lokman, and Murat Koksalan.	
	<b>European Journal of Operational Research</b> (2022), Vol. 296 (3), pp. 804-818.	
	Climate Crisis Resilience: Rethinking Network Design for Mitigating Temporary Flooding Events	
	<b>Ilgin Dogan</b> , Ho-Yin Mak, Zuo-Jun Max Shen, and Anil Aswani.	
INVITED TALKS	Incorporating Fairness into Incentive Design in Principal-Agent Models with Adverse Selection and Moral Hazard.	
	Yoon Lee, <b>Ilgin Dogan</b> , Anil Aswani, and Zuo-Jun Max Shen.	
	Estimating and Incentivizing Imperfect-Knowledge Agents with Hidden Rewards.	
	<ul style="list-style-type: none"><li>• 2023, INFORMS Annual Meeting, Phoenix, AZ.</li><li>• 2023, Annual POMS Conference, Orlando, FL.</li></ul>	
	Repeated Principal-Agent Games with Unobserved Agent Rewards and Perfect-Knowledge Agents.	
	<ul style="list-style-type: none"><li>• 2023, Annual POMS Conference, Orlando, FL.</li><li>• 2022, INFORMS Annual Meeting, Indianapolis, IN.</li></ul>	
	Regret Analysis of Learning-Based MPC with Partially-Unknown Cost Function.	
	<ul style="list-style-type: none"><li>• 2021, INFORMS Annual Meeting, Anaheim, CA.</li><li>• 2020, INFORMS Annual Meeting, Virtual.</li></ul>	

Representing the Nondominated Set in Multi-objective Mixed-integer Programs.

- 2019, INFORMS Annual Meeting, Seattle, WA.
- 2018, INFORMS Annual Meeting, Phoenix, AZ.
- 2017, 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 mean: 6.03)

*Graduate Student Instructor (Teaching Assistant)*

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

**INDUSTRIAL EXPERIENCE**      **Apple** Summer 2023

*Advanced Analytics Ph.D. Intern*

WorldWide Business Process Re-engineering – Advanced Analytics, Sunnyvale, CA

*Project 1: iPhone Facility Layout Optimization*

- Engineered an automated pipeline for generating two-dimensional optimal facility layouts, with visualizations and utilization metrics, for iPhone production. Leveraged mixed-integer linear programming models and Gurobi optimization software.
- Validated models in close collaboration with business stakeholders, resulting in space utilization savings and reducing layout generation time substantially from days to minutes.

*Project 2: Parallel Optimization for AppleCare Supply Planning Solvers*

- Employed relevant graph decomposition techniques from network theory to efficiently break down the bill of materials into manageable planning groups for AppleCare supply planning solvers. Improved solver run-time by more than 15%.
- Conducted simulations to devise the best parallel optimization strategy by leveraging generated planning groups, balancing hardware resource allocation and run-time enhancements.

**Meta** Summer 2022

*Research Data Scientist Intern*

Infrastructure Strategy Data Science, Menlo Park, CA

*Project: Targeting Viewers and Broadcasters for Ultra-Low End-to-End Live Stream Latency*

- Developed a framework encompassing data analysis, data pipeline construction and maintenance, as well as the development and productionization of machine learning models.
- Attained a classification model precision of 70%, recall of 63%, and covered 91% of total latency-sensitive broadcast watch time.

**Robert BOSCH GmbH**

Summer 2015

*Service Operations Intern*

Business Excellence Deployment, Bursa, Turkiye

*Project: Deploying Kaizen Methodology*

- Developed statistical quality control models to enhance the deployment of Kaizen (continuous improvement) methodology and lean manufacturing techniques at the enterprise level.
- Actively participated in departmental meetings and delivered presentations to executive leadership.

**BAUER Casings**

Summer 2014

*Manufacturing Operations Intern*

Production Planning Operations, Ankara, Turkiye

- Utilized the company's ERP database system for daily data monitoring and reporting, contributing to informed decision-making in enhancing material flow, line balancing, and overall operational efficiency.
- Gained comprehensive insight into end-to-end manufacturing operations ecosystem and actively engaged in departmental meetings.

**OTHER  
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 non-dominated 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 Sustainable & Data-Driven In-Campus Transportation System*

- Formulated a multi-objective optimization model to address diverse stakeholder goals within the expansive METU, Ankara campus (11,100 acres).
- Utilized SQL to manage the categorical and numerical data collected from various sources. Conducted root-cause analysis.
- Employed a simulation model in Arena to perform empirical analyses on actual data. Achieved a 15% reduction in shuttle travel distances (attributed to increased non-motorized trips and bike-share services) and a 5% decrease in average travel time per person.

**HONORS,  
FELLOWSHIPS,  
AND AWARDS****IEOR Faculty Fellowship**, UC Berkeley, 2021.

"This fellowship stands as the top graduate student award within the department. This annual recognition is awarded to an outstanding graduate student, selected from a pool of graduate students who excel in academics and leadership, as nominated by the faculty."

**Outstanding Graduate Student Instructor Award**, UC Berkeley, 2021.

"This award honors UC Berkeley teaching assistants annually for exceptional teaching on campus, as nominated within their department."

**IEOR Ph.D. First-year Fellowship**, UC 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.

Graduation with **High Honor Degree and ranked in top 10**, Scientific Scholar Development Program, TED Ankara College Foundation Private High School, 2012.

**High School Scholarship** (top 1% ranking among 1 million students in the national high school entrance exam), TED Ankara College Foundation Private High School, 2009-2012.

**COMPUTER  
SKILLS**

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

**SERVICES  
AND SOCIETY  
ACTIVITIES**

**Graduate Mentor**

- UC Berkeley Engineering Summer Undergraduate Research Program (BESURE), 2023.
- UC Berkeley Graduate Division Getting into Graduate School (GiGS), 2021.

**Session Chair**

- "Responding Climate Crisis with Data-Driven OM", 2023 INFORMS Annual Meeting.
- "Stochastic Approaches to Healthcare Analytics", 2023 INFORMS Annual Meeting.
- "Incorporating AI into Healthcare Delivery", 2022 INFORMS Annual Meeting.
- "ML for Healthcare Applications", 2022 INFORMS Annual Meeting.

**Reviewer**

- INFORMS Journal on Data Science.
- IEEE Transactions on Automatic Control.

**Participant**

- POMS Doctoral Consortium, 2023.
- INFORMS Doctoral Student Colloquium, 2020.
- Theory of Reinforcement Learning Boot Camp, The Simons Institute for the Theory of Computing, 2020.
- Deep Reinforcement Learning Workshop, The Simons Institute for the Theory of Computing, 2020.

**Panelist**

- UC Berkeley IEOR Info Session for Prospective M.S. and Ph.D. Students, 2021 & 2022.

**Member**

- The Institute for Operations Research and the Management Sciences (INFORMS).
- The Production and Operations Management Society (POMS).
- International Society on Multiple Criteria Decision Making (MCDM).