

# ILGIN DOGAN

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EDUCATION	<b>University of California, Berkeley</b>	
	Ph.D. in Industrial Engineering and Operations Research	May, 2024 (expected)
	<i>Advisors:</i> Zuo-Jun Max Shen and Anil Aswani	
	M.S. in Industrial Engineering and Operations Research	2019
	<b>Middle East Technical University, Ankara, Turkiye</b>	
RESEARCH INTERESTS	M.S. in Industrial Engineering	2018
	B.S. in Industrial Engineering	2016
	My research designs stochastic data-driven models and computational algorithms for <i>operations management</i> involving <i>strategic agents</i> with <i>information asymmetries</i> , which manifest by <i>limitations in data</i> shared between parties. My work exploits methods from online sequential learning, statistics, artificial intelligence, optimization, and principal-agent theory.	
	I am particularly interested in exploring applications within the context of <b>(environmental) sustainability analytics</b> , where I specialize in formulating sustainable business operations that effectively mitigate the climate crisis. Moreover, my work holds wide practical relevance, extending to areas such as supply chain management and healthcare analytics.	
INDUSTRY EXPERIENCE	<b>Apple</b> Summer 2023	
	<i>Advanced Analytics Ph.D. Intern</i> , WW Business Process Reengineering, Sunnyvale, CA	
	<i>Project 1: iPhone Facility Layout Optimization</i>	
	<ul style="list-style-type: none"><li>Engineered an automated pipeline utilizing mixed-integer linear models to optimize spatial layouts, saving space utilization and reducing layout generation from days to minutes.</li></ul>	
	<i>Project 2: Parallel Optimization for AppleCare Supply Planning Solvers</i>	
	<ul style="list-style-type: none"><li>Employed graph decomposition methods to divide the bill of materials into distinct groups for parallel optimization, balancing resource allocation and saving run-time over 15%.</li></ul>	
	<b>Meta</b> Summer 2022	
	<i>Research Data Scientist Intern</i> , Infrastructure Strategy Data Science, Menlo Park, CA	
	<i>Project: Targeting Viewers and Broadcasters for Ultra-Low End-to-End Live Stream Latency</i>	
	<ul style="list-style-type: none"><li>Developed an ML framework, from data analysis to model productionization, attaining 70% precision, 63% recall, and 91% coverage of latency-sensitive broadcast watch time.</li></ul>	
	<b>Robert Bosch GmbH</b> Summer 2015	
	<i>Service Operations Intern</i> , Business Excellence Deployment, Bursa, Turkiye	
	<ul style="list-style-type: none"><li>Developed statistical quality control models to enhance the deployment of Kaizen (continuous improvement) methodology and lean manufacturing at the enterprise level.</li></ul>	
TEACHING EXPERIENCE	<b>Industrial Engineering &amp; Operations Research, University of California, Berkeley</b>	
	<i>Course Instructor</i>	
	<ul style="list-style-type: none"><li>INDENG 151 - Service Operations Design and Analysis</li></ul>	Fall 2022
	Teaching effectiveness evaluation: 6.72/7.00 (Department mean: 6.03)	
	<i>Teaching Assistant</i>	
	<ul style="list-style-type: none"><li>INDENG 151 - Service Operations Design and Analysis</li></ul>	Fall 2019, Fall 2020
	Teaching effectiveness evaluation: 4.60/5.00 (Department mean: 4.27)	
	<ul style="list-style-type: none"><li>INDENG 165 - Engineering Statistics, Quality Control, and Forecasting</li></ul>	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**

*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.

**JOURNAL  
PAPERS**

[Estimating and Incentivizing Imperfect-Knowledge Agents with Hidden Rewards.](#)

**Ilgin Dogan**, Zuo-Jun Max Shen, and Anil Aswani.

*Under review at **Operations Research**.*

[Repeated Principal-Agent Games with Unobserved Agent Rewards and Perfect-Knowledge Agents.](#)

**Ilgin Dogan**, Zuo-Jun Max Shen, and Anil Aswani.

*Under review at **Operations Research**.*

[Regret Analysis of Learning-Based MPC with Partially-Unknown Cost Function.](#)

**Ilgin Dogan**, Zuo-Jun Max Shen, and Anil Aswani.

*Forthcoming, **IEEE Transactions on Automatic Control**.*

[Representing the Nondominated Set in Multi-objective Mixed-integer Programs.](#)

**Ilgin Dogan**, Banu Lokman, and Murat Koksalan.

**European Journal of Operational Research** (2022), Vol. 296 (3), pp. 804-818.

**WORKING  
PAPERS**

Strategies for Climate Resilience: Mitigating Flooding Risks in Location Planning.

**Ilgin Dogan**, Anil Aswani, Ho-Yin Mak, and Zuo-Jun Max Shen.

*Working paper.*

Incorporating Fairness into Incentive Design in Principal-Agent Models with Adverse Selection and Moral Hazard.

Yoon Lee, **Ilgin Dogan**, Anil Aswani, and Zuo-Jun Max Shen.

*In preparation for submission.*

**HONORS,  
FELLOWSHIPS,  
AND AWARDS**

**IEOR Faculty Fellowship**, UC Berkeley, 2021.

“This fellowship stands as the top graduate student award within the department. It is an annual recognition 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.S.**, 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.

<b>OTHER RESEARCH EXPERIENCE</b>	<b>University of California, Berkeley</b>	2019 - present
	<i>Graduate Student Researcher</i> - Department of Industrial Engineering & Operations Research	
	<b>Turkish Scientific and Technological Research Council (<i>NSF-equivalent</i>)</b>	2016 - 2018
	<i>Research Scholar</i>	
	<i>Project: Nondominated Points of Multi-Objective Integer Programs: Approaches &amp; Applications</i>	
	<ul style="list-style-type: none"> <li>Devised algorithms producing a small set of representative nondominated points (up to 50% fewer than existing work) for a given coverage gap in combinatorial mixed-integer models.</li> <li>Conducted extensive simulation experiments in C using CPLEX for mixed-integer knapsack and assignment problems with up to 5 objectives.</li> </ul>	
	<b>Middle East Technical University (METU)</b>	2015 - 2016
	<i>System Design Project Analyst</i>	
	<i>Project: Designing Sustainable &amp; Data-Driven In-Campus Transportation System</i>	
	<ul style="list-style-type: none"> <li>Formulated a multi-objective optimization model to address diverse stakeholder goals within the expansive METU, Ankara campus (11,100 acres).</li> <li>Employed Arena simulations for empirical analyses, achieving 15% reduction in shuttle travel distances (due to increased non-motorized trips and bike-share services).</li> </ul>	
<b>INVITED TALKS</b>	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.	
	<ul style="list-style-type: none"> <li>2019, INFORMS Annual Meeting, Seattle, WA.</li> <li>2018, INFORMS Annual Meeting, Phoenix, AZ.</li> <li>2017, International Conference on MCDM, Ottawa, Canada.</li> </ul>	
<b>SERVICE</b>	<b>Mentor</b>	
	<ul style="list-style-type: none"> <li>UC Berkeley Engineering Summer Undergraduate Research Program (<a href="#">BESURE</a>), 2023.</li> <li>UC Berkeley Graduate Division Getting into Graduate School (<a href="#">GiGS</a>), 2021.</li> </ul>	
	<b>Session Chair</b>	
	<ul style="list-style-type: none"> <li>“Responding Climate Crisis with Data-Driven OM”, 2023 INFORMS Annual Meeting.</li> <li>“Stochastic Approaches to Healthcare Analytics”, 2023 INFORMS Annual Meeting.</li> <li>“Incorporating AI into Healthcare Delivery”, 2022 INFORMS Annual Meeting.</li> <li>“ML for Healthcare Applications”, 2022 INFORMS Annual Meeting.</li> </ul>	
	<b>Reviewer</b>	
	<ul style="list-style-type: none"> <li>INFORMS Journal on Data Science.</li> <li>IEEE Transactions on Automatic Control.</li> <li>European Journal of Operational Research.</li> </ul>	
	<b>Panelist</b>	
	<ul style="list-style-type: none"> <li>UC Berkeley IEOR Info Session for Prospective M.S. and Ph.D. Students, 2021 &amp; 2022.</li> </ul>	

### **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.

### **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).

### **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).