

# ILGIN DOGAN

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<b>ACADEMIC EMPLOYMENT</b>	<b>INSEAD</b> Assistant Professor of Technology and Operations Management 2024-present
<b>EDUCATION</b>	<b>University of California, Berkeley</b> <b>Ph.D.</b> in Industrial Engineering and Operations Research 2024 <i>Advisors:</i> Zuo-Jun Max Shen and Anil Aswani <b>M.S.</b> in Industrial Engineering and Operations Research 2019 <b>Middle East Technical University, Ankara, Turkiye</b> <b>M.S.</b> in Industrial Engineering 2018 <b>B.S.</b> in Industrial Engineering 2016
<b>RESEARCH INTERESTS</b>	<p>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.</p> <p>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.</p>
<b>INDUSTRY EXPERIENCE</b>	<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**

**INSEAD**

*Instructor*

- Process and Operations Management (MBA) Spring 2024

**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 avg: 6.03)

*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 avg: 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**

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

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

*Major Revision, Operations Research.*

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

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

*Under review, Operations Research.*

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

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

**IEEE Transactions on Automatic Control** (2024), Vol. 69 (5), pp. 3246-3253.

[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.

**OTHER  
RESEARCH  
EXPERIENCE**

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

*Project: Nondominated Points of Multi-Objective Integer Programs: Approaches & Applications*

- 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.
- 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).
- Employed Arena simulations for empirical analyses, achieving 15% reduction in shuttle travel distances (due to increased non-motorized trips and bike-share services).

**INVITED  
TALKS**

Estimating and Incentivizing Imperfect-Knowledge Agents with Hidden Rewards.

- 2024, INFORMS Annual Meeting, Seattle, WA.
- 2023, INFORMS Annual Meeting, Phoenix, AZ.
- 2023, Annual POMS Conference, Orlando, FL.

Repeated Principal-Agent Games with Unobserved Agent Rewards & Perfect-Knowledge Agents.

- 2023, Annual POMS Conference, Orlando, FL.
- 2022, INFORMS Annual Meeting, Indianapolis, IN.

Regret Analysis of Learning-Based MPC with Partially-Unknown Cost Function.

- 2021, INFORMS Annual Meeting, Anaheim, CA.
- 2020, INFORMS Annual Meeting, Virtual.

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.

**SERVICE****Mentor**

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

**Session Chair**

- “Operational and Data-Centric Perspectives on Sustainability”, 2024 INFORMS Annual Meeting.
- “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.
- European Journal of Operational Research.

**Panelist**

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

**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).