

DUYGU SOYLEMEZ

University of Chicago Booth School of Business

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RESEARCH INTERESTS

My research focuses on data-driven optimization and algorithm design for healthcare operations and online retailing. In healthcare, I study outpatient access and capacity planning, using patient visit histories to characterize care trajectories and inform scheduling decisions under incomplete data. In online retailing, I study assortment planning, order fulfillment, and network design, developing approximation algorithms that exploit problem structure. Across these settings, I combine mathematical optimization, probabilistic modeling, and empirical analysis to support operational decisions under resource constraints.

EDUCATION

PhD in Management Science and Operations Management & MBA,

University of Chicago Booth School of Business, Chicago

September 2021 – Present

MS in Industrial Engineering,

Ihsan Dogramaci Bilkent University, Ankara

2021

Overall GPA: 3.83/4.0

BS in Industrial Engineering,

Ihsan Dogramaci Bilkent University, Ankara

2019

Overall GPA: 3.91/4.0

Ranking: 2 out of 162

Erasmus Student,

Vienna University of Technology, Vienna

March 2018 – June 2018

High School Graduate,

Ankara Science High School, Ankara

2014

WORKING PAPERS

DeValve, L., D. Soylomez. (2026). *Local and Global (Approximate) Submodularity in Network Design*. Submitted to *Management Science*.

Soylomez, D., D. Adelman. *Estimating Provider Episodes as Operational Units of Outpatient Access*. In preparation.

RELEVANT COURSEWORK

Optimization

Mathematical Programming, Discrete Optimization, Modeling and Optimization of Energy Systems, Advanced Logistics Modeling and Optimization, Linear Programming, Online Optimization, Dynamic Programming and Markov Decision Processes, Stochastic Optimization, Supply Chain Foundations and Theory, Convex Optimization

Probability

Probabilistic Analysis, Stochastic and Risk-Sensitive Optimization, Stochastic Processes, Queueing Theory, Probability and Statistics, Statistical Inference

Economics

Advanced Microeconomic Analysis, Price Theory II - III, Topics Information Economics, Investments, Financial Accounting

RESEARCH EXPERIENCE

Graduate Researcher

University of Chicago Booth School of Business, Chicago

June 2024 – Present

- Advised by Prof. Dan Adelman
- Collaborating with UChicago Medicine to analyze outpatient clinic data from 80+ raw datasets (250 GB).
- Constructing new operational structures—Provider Episode and Specialty Episode—to trace patient visit patterns and analyze access, cancellations, and continuity of care.
- Building a simulation model to assess a new alternative scheduling system aimed at improving new patient throughput and waiting times without compromising return-patient service, to be piloted.
- Developed a data-driven optimization model for outpatient clinic capacity planning to maximize new patient throughput under visit-pattern and capacity constraints.
- Performing large-scale data cleaning and processing to construct 1.27M provider episodes from 4.8M outpatient encounters.
- Developed a method combining survival analysis and importance sampling to estimate provider-episode duration distributions from incomplete patient visit histories.

Graduate Researcher

University of Chicago Booth School of Business, Chicago

February 2023 – Present

- Advised by Assist. Prof. Dr. Levi DeValve
- A constant approximation framework for multi-item order fulfillment problems has been developed.

Graduate Researcher

University of Chicago Booth School of Business, Chicago

February 2022 – May 2024

- Advised by Assoc. Prof. Dr. Linwei Xin and Assoc. Prof. Dr. Yuan Zhong
- The aim is to come up with a matching policy for a well-known retailer to determine to which drivers each online order should be sent to in each time period until a predetermined deadline so that the expected profit is maximized. Optimal solution is characterized for some corner cases.

Graduate Researcher

Ihsan Dogramaci Bilkent University, Ankara

July 2019 – September 2021

- Advised by Prof. Dr. Oya Karasan and Assoc. Prof. Dr. Alper Sen
- Extension of the undergraduate research: It is proved that the optimal solution of the LP relaxation of the split order problem has a special structure. An algorithm is offered to find this solution.

Undergraduate Researcher

Ihsan Dogramaci Bilkent University, Ankara

August 2018 – June 2019

- Advised by Prof. Dr. Oya Karasan and Assoc. Prof. Dr. Alper Sen
- Split order problem is studied.
- The motivation of the study is to reduce costs and delays in the delivery stemming from the split orders through assortment planning. Alternative optimization models and heuristic algorithms are offered.

TEACHING EXPERIENCE

Teaching Assistant

University of Chicago Booth School of Business, Chicago

January 2026 - March 2026

- Assisted BUSN 40721-01 - Healthcare Analytics Lab (MBA course) and BUSN 40206-81,01 (MBA course)
- Responsible for holding office hours, grading, answering students' questions, and mentoring them

Teaching Assistant

University of Chicago Booth School of Business, Chicago/ HK/ London January 2025 - April 2025

- Assisting BUSN 40801 - Operations Management (EMBA course) in Hong Kong and London and BUSN 40721 - Healthcare Analytics Lab (MBA course) in Chicago
- Responsible for holding review sessions, grading, answering students' questions, and mentoring them

Teaching Assistant

University of Chicago Booth School of Business, Chicago January 2024 - April 2024

- Assisting BUSN 40801 - Operations Management (EMBA course) and BUSN 40000 - Operations Management: Business Process Fundamentals (MBA course)
- Responsible for holding review sessions, grading, and answering students' questions

Teaching Assistant

Ihsan Dogramaci Bilkent University, Ankara September 2019 - June 2021

- Assisted IE376 – Production Information Systems course
- Responsible for homework & project preparation and grading

Undergraduate Tutor

Ihsan Dogramaci Bilkent University, Ankara February - June 2019

- Assisted IE202 – Introduction to Modeling and Optimization course
- Responsible for project preparation and grading

PROFESSIONAL EXPERIENCE

Senior Project Engineer

GlaxoSmithKline 5th October 2018-31th May 2019

- A group project was conducted to improve the forecasting and stock optimization policy.
- User-friendly interfaces were designed.

Candidate Engineer

Roketsan Missiles Inc. - Production Planning Department (Ankara) 20th March-30th May 2019

- Task: Issuing work orders

Intern

Sisecam Group – Overseas Sales Department (Istanbul) 31st July-25th August 2017

- Data related to the sales done by the competitors for the chemicals produced by Sisecam in was obtained through research. Benchmarking studies were done to report to managers.

ABB Group - Production Planning Department (Istanbul) 11th July-28th July 2017

- Task: Conducting time studies to standardize the production process of low voltage switchgears

ABB Group - Finance Department (Istanbul) 19th June-10th July 2017

- Task: Assigning the rates of customer firms based on their balance-sheets and income tables in the previous three years to determine their credit limits

Arcelik A.S. - Production Engineering Department (Ankara) 20th June-22nd July 2016

- Project: Different types of shelves were designed for work-in-process inventories of different workstations to increase the efficiency of production.

ACADEMIC ACHIEVEMENTS

- Merit Scholarship from The Scientific and Technological Research Council of Turkey (TUBITAK) for Master's studies (2019 - 2021)
- The second-highest-ranked graduate in a cohort of 162 students at Bilkent University (2019)
- High Honor Rewards from Bilkent University (2014-2019)
- Undergraduate Research Award from Bilkent University (2019)
- Second Place in Industrial Engineering Senior Project Competition at Bilkent University (2019)
- Comprehensive Scholarship from Bilkent University (2014-2019)
- Ranked 179th among over two million participants in Turkey's national university entrance exam
- Ranked 195th among over one million participants in Turkey's national high school entrance exam

CONFERENCES AND TALKS

INFORMS Healthcare Conference, 2026. Research presentation on outpatient access and capacity planning.

Soylemez, D.; Adelman, D.; Nunes, K. 2025. *Dynamic Capacity Planning to Improve Healthcare Access*. INFORMS Annual Meeting, 26th October, Atlanta, US.

Soylemez, D.; DeValve, L. 2024. *A Constant Approximation Framework for Online Retailing Item Placement Problem*. INFORMS Annual Meeting, 21st October, Seattle, US.

Soylemez, D.; Xin, L.; Zhong, Y. 2023. *Better Round-Robin Matching for Walmart Spark Drivers*. INFORMS Annual Meeting, 17th October, Phoenix, US.

DeValve, L.; Soylemez, D. 2023. *Approximate Submodularity in Network Optimization*. INFORMS Annual Meeting, 16th October, Phoenix, US.

Soylemez, D.; DeValve, L. 2023. *A Constant Approximation Framework for Online Retailing Item Placement Problem*. POMS Annual Meeting, 29th April, Minneapolis, US.

Soylemez, D.; Karasan, O.E.; Sen, A. 2022. *Assortment Planning Considering Split Orders*. INFORMS Annual Meeting, 16th October, Indianapolis, US.

Soylemez, D.; Karasan, O.E.; Sen, A. 2021. *Assortment Planning Considering Split Orders*. 40th National OR/IE Congress, 5th July, Istanbul, Turkey.

Sen, A.; Soylemez, D.; Karasan, O.E. 2019. *Assortment Planning Considering Split Orders*. INFORMS MSOM Conference, 2nd July, Singapore.

Soylemez, D.; Karasan, O.E.; Sen, A. 2019. *Assortment Planning for Minimizing the Number of Split Orders*. 39th National OR/IE Congress, 13th June, Ankara, Turkey.

EXAM RESULTS

TOEFL IBT (3rd Nov. 2020) - Total: 109/120, Reading: 28, Listening: 29, Speaking: 25, Writing: 27

TOEFL IBT (29th Sep. 2020) - Total: 109/120, Reading: 29, Listening: 28, Speaking: 22, Writing: 29

GRE (22nd Sep. 2020) - Verbal R.: 158/170, Quantitative R.: 168/170, Analytical Writing: 4.5/6

SKILLS

Computer Skills

- Programming: Python, MATLAB, JAVA, VBA, SQL
- Optimization: Xpress IVE, Gams, Excel Solver, CPLEX, Gurobi
- Design: Solid Works
- Simulation: ARENA
- Other: MS Office, L^AT_EX, Dataiku DSS

Languages

- Turkish (native)
- English (advanced)
- German (elementary)
- Spanish (beginner)

EXTRA-CURRICULAR ACTIVITIES

Bilkent University Civic Involvement Projects - Former Member