

Ece Cigdem Karakoyun

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ACADEMIC APPOINTMENTS

2023 – present Assistant Professor, Erasmus University Rotterdam
Erasmus School of Economics, Department of Econometrics

EDUCATION

2017 – 2023 Ph.D. in Industrial Engineering, Bilkent University, Ankara, Turkey
Thesis: “Energy Operations Management for Renewable Power Producers in Electricity Markets”
 ◦ Received the ‘*Outstanding Scholarly Achievement Award in Ph.D.*’
Advisors: Assoc. Prof. Ayse Selin Kocaman, Asst. Prof. Emre Nadar

2015 – 2017 M.Sc. in Industrial Engineering, Bilkent University, Ankara, Turkey
Thesis: “A Newsvendor Approach to an Energy Imbalance Mechanism in a Day-Ahead Electricity Market”
Advisors: Assoc. Prof. Ayse Selin Kocaman, Assoc. Prof. Kemal Goler

2010 – 2015 B.Sc. in Industrial Engineering, Bilkent University, Ankara, Turkey

RESEARCH

Research Interests

- Operations of low-carbon emerging technologies (e.g., renewable energy sources, energy storage, and hybrid systems)
- Electricity markets
- Energy demand-side management
- Optimization under uncertainty
- Stochastic dynamic programming/Markov decision processes

Published Papers

- “Deviations from Commitments: Markov Decision Process Formulations for the Role of Energy Storage” with Harun Avci, Ayse Selin Kocaman, and Emre Nadar. 2022. *International Journal of Production Economics* [[link](#)]

Submitted Papers

- “Integration of Pumped Hydro Energy Storage and Wind Energy Generation: A Structural Analysis” with Harun Avci, Parinaz Toufani, Ayse Selin Kocaman, and Emre Nadar, 2022.
 - Major revision at *Manufacturing & Service Operations Management*
- “Optimization of Pumped Hydro Energy Storage under Uncertainty: A Review” with Parinaz Toufani, Emre Nadar, Olav B Fosso, Ayse Selin Kocaman, 2023.
 - Major revision at *Journal of Energy Storage*

Working Papers

- “Optimal Hour-Ahead Commitment and Storage Decisions of Wind Power Producers” with Harun Avci, Woonghee Tim Huh, Ayse Selin Kocaman, and Emre Nadar, 2023, to be submitted to *INFORMS Journal on Computing*
- “The Impact of an Energy Imbalance Penalty Mechanism on a Day-Ahead Electricity Market” with Ayse Selin Kocaman, Kemal Goler, and Emre Nadar.

Research in Progress

- “Optimal Day-Ahead Commitment Decisions of an Energy Storage Operator” with Stefan Minner, Ayse Selin Kocaman, and Emre Nadar.

Funded Research Projects

- “Markov Decision Process Approaches for the Profitability Analysis of Open-Loop and Closed-Loop Pumped Hydro Energy Storage Facilities,” The Scientific and Technological Research Council of Turkey - 3501 (TUBITAK - 3501), National Young Researchers Career Development Program (CAREER), Ph.D. scholarship holder, Researcher, 2021 – 2023.
 - *Contribution:* Methodology, Formal analysis, Software, Investigation, Writing
- “Markov Decision Processes and Multi-Stage Stochastic Programs for Energy Commitment Decisions of a Hybrid System with Pumped Hydro Storage,” The Scientific and Technological Research Council of Turkey - 1001 (TUBITAK - 1001), The Support Program for Scientific and Technological Research Projects, Ph.D. scholarship holder, Researcher, 2018 – 2020.
 - *Contribution:* Methodology, Formal analysis, Software, Investigation, Writing

Visiting Positions

- Visiting Researcher, Technical University of Munich, Chair of Logistics and Supply Chain Management, Germany, May 2022 – August 2022

SELECTED PRESENTATIONS

- “Optimal Hour-Ahead Commitment and Storage Decisions of Wind Power Producers”
 - EURO, Finland, July 2022
 - MSOM Annual Conference, Germany, June 2022
 - POMS Annual Conference, Virtual, April 2022
- “Deviations from Commitments: Markov Decision Process Formulations for the Role of Energy Storage”
 - INFORMS Annual Meeting, Virtual, October 2021
 - National Congress on Operations Research and Industrial Engineering, Turkey, July 2021
- “Integration of Pumped Hydro Energy Storage and Wind Energy Generation: A Structural Analysis”
 - MSOM Annual Conference, Virtual, June 2021
 - POMS Annual Conference, Virtual, May 2021
 - National Congress on Operations Research and Industrial Engineering, Turkey, June 2019
- “The Impact of an Energy Imbalance Penalty Mechanism on a Day-Ahead Electricity Market”
 - National Congress on Operations Research and Industrial Engineering, Turkey, June 2018
- “A Hybrid Approach to Forecast Wind Speed Time Series: Application to Real Data”
 - 1st International Engineering and Natural Sciences Student Congress - Innovation and Engineering, Turkey, April 2015

WORKSHOPS ATTENDED

- EURO Ph.D. Summer School in Sustainable Supply Chains, Virtual, July 2021
- Second Online Doctoral Workshop on Supply Chain Analytics, Rutgers Business School, Virtual, June 2021
- POMS Doctoral Consortium, Virtual, April 2021

TEACHING EXPERIENCES

- Lecturer, Engineering Economic Analysis, 2022 – 2023 Fall, Bilkent University, Ankara, Turkey
 - *Course description:* Analysis of engineering decisions; principles and methodology of comparing decision alternatives, such as various engineering designs, manufacturing equipment, or industrial projects. Dealing with uncertainty and risk; rational decision making when future outcomes are uncertain. Concepts of time value of money. Effects of depreciation, inflation, and taxation on economic decisions. Cost-benefit analysis of public projects. Replacement analysis. Introduction to financial engineering.
- Teaching Assistant, Introduction to Modelling and Optimization, 2019 – 2022, Bilkent University, Ankara, Turkey
 - Responsible for organizing recitations, holding office hours, preparing study sets, quizzes and homework, and grading
 - Received the ‘*Outstanding Teaching Assistance Award*’
- Teaching Assistant, Production System Design-Synthesis/Practice, 2015 – 2018, Bilkent University, Ankara, Turkey
 - Responsible for scheduling and coordinating meetings with industrial advisors, course coordinators, and students, advising five to seven groups on their projects, grading, and organizing the Project Fair and Competition
- Student Assistant, Engineering Economic Analysis, 2014 – 2015, Bilkent University, Ankara, Turkey (Undergraduate)
 - Responsible for holding office hours and grading
- Student Assistant, A Process Outlook for Industrial Engineering, 2014 – 2015, Bilkent University, Ankara, Turkey (Undergraduate)
 - Responsible for holding office hours and grading

SERVICE

Reviewer: IISE Transactions

COMPUTER SKILLS

Python, MATLAB, R, Mathematica, GAMS, CPLEX, FICO Xpress, Excel Solver

OTHER EXPERIENCES

- Mentor, Bilkent University Information Office for Prospective Students, 2015 – 2016, Bilkent University, Ankara, Turkey
 - Responsible for the training of guide student candidates
 - Member of the guide students’ selection committee

- Guide student, Bilkent University Information Office for Prospective Students, 2013 – 2016, Bilkent University, Ankara, Turkey
 - Guidance in campus tours to high school groups
 - Information service to prospective university students and their families during the selection period
 - Reached students via educational fairs and gave information about the university
- Intern, Department of Service Training and Quality Systems, VESTEL, Manisa, Turkey, 2014
- Intern, Department of Consumer Product Management, Interactive and Entertainment Services Team, TURKCELL, Istanbul, Turkey, 2014
- Intern, Department of Production Planning and Control, TAI (Turkish Aerospace Industries), Ankara, Turkey, 2013
- Member of Operational Research Club, 2010 – 2011, Bilkent University, Ankara, Turkey