Özge Sürer

Miami University   (312) 909-6737
Department of Information Systems and Analytics   surero@miamioh.edu
Oxford, OH 45056, USA   https://ozgesurer.github.io

Research Interests

Methodology: Statistical and Machine Learning, Computational Statistics, Predictive Models, Data Analytics
Applications: Recommender Systems, Public Health, Physical-Statistical Modeling

Education

Northwestern University — Evanston, IL
Ph.D. in Industrial Engineering and Management Sciences — August 2020

Advisors: Professors Daniel W. Apley, Edward C. Malthouse

Thesis: Predictive Models for Group-Structured Regression and Classification Problems

Major in *Applied Statistics & Statistical Learning*; Minors in *Analytics* and *Optimization*

Boğaziçi University — İstanbul, Turkey
M.S. in Industrial Engineering — January 2014

Advisor: Professor İ. Kuban Altinel

Thesis: Event and Clock-Based Representations of Time in Mathematical Optimization

İstanbul Technical University — İstanbul, Turkey
B.S. in Industrial Engineering — June 2011

Academic & Professional Experience

Miami University — Oxford, OH
Assistant Professor — August 2022 – Present

Department: Department of Information Systems and Analytics

Northwestern University — Evanston, IL
Postdoctoral Research Fellow — January 2021 – August 2022

Department: Northwestern Argonne Institute of Science and Engineering

Supervisors: Matthew Plumlee, Stefan M. Wild

Topics: Bayesian statistical methodology and its applications in machine learning including Gaussian processes, tree models, and dimension reduction, computational statistical inference including multi-model emulators, uncertainty quantification for parameters, model calibrators, and model mixing

Northwestern University — Evanston, IL
Postdoctoral Research Fellow — October 2020 – December 2020

Department: Industrial Engineering and Management Sciences

Supervisor: David P. Morton

Topics: COVID-19 response models, staged alert systems, vaccine allocation

United Airlines — Chicago, IL
Statistics and Operations Research Intern — June 2019 – September 2019

Topics: Spill & recapture model for predicting the future demand, benchmark studies through data analysis techniques and visualization, decomposition methods to more accurately and efficiently model spill and recapture

Northwestern University — Evanston, IL
Research Fellow, Spiegel Digital & Database Research Center — September 2016 – August 2020

Topics: Recommender systems in multisided platforms, data analytics

Teaching Experience

Miami University   Evanston, IL
Instructor, Information Systems & Analytics Department   Fall 2022
- ISA 291 Applied Regression Analysis (Undergraduate level)

Northwestern University   Evanston, IL
Instructor, Industrial Engineering and Management Sciences Department   Spring 2019
- IEMS 303 Statistics (Undergraduate level)

Teaching Assistant, Industrial Engineering and Management Sciences Department
- IEMS 202 Probability (Undergraduate level)   Winter 2017, Spring 2018
- IEMS 303 Statistics (Undergraduate level)   Fall 2016/2018, Winter 2019, Spring 2020

Teaching Assistant, Master of Science in Analytics
- MSIA 421 Data Mining   Winter 2018

Bootcamp Instructor, Industrial Engineering and Management Sciences Department
- Statistics (Ph.D. level)   Fall 2016

Peer-Reviewed Journal Publications

[1] **Özge Sürer**, Filomena M. Nunes, Matthew Plumlee, Stefan M. Wild. Uncertainty quantification in breakup reactions. *Physical Review C*, 106, 024607, 2022. (link)

[2] **Özge Sürer**, Daniel W. Apley, Edward C. Malthouse. Coefficient tree regression: fast, accurate and interpretable predictive modeling. *Machine Learning*, 1–38, 2021. (link)

[3] **Özge Sürer**, Daniel W. Apley, Edward C. Malthouse. Coefficient tree regression for generalized linear models. *Statistical Analysis and Data Mining: The ASA Data Science Journal*, 14, 407–429, 2021. (link)

[4] Haoxiang Yang, **Özge Sürer**, Daniel Duque, David P. Morton, Bismark Singh, Spencer Fox, Remy Pasco, Kelly Pierce, Paul Rathouz, Zhanwei Du, Michael Pignone, Mark E. Escott, Stephen I. Adler, S. Clairborne Johnston, Lauren Ancel Meyers. Design of COVID-19 staged alert systems to ensure healthcare capacity with minimal closures. *Nature Communications*, 12, 3767, 2021. (link)

[5] Seda Yanik, **Özge Sürer**, Başar Öztayşi. Designing sustainable energy regions using genetic algorithms and location-allocation approach. *Energy*, 161–172, 2016. (link)

Peer-Reviewed Conference Proceedings

[5] **Özge Sürer**, Matthew Plumlee. Calibration using emulation of filtered simulation results. *Winter Simulation Conference*, 2021. (link)

[6] **Özge Sürer**, Robin Burke, Edward C. Malthouse. Multistakeholder recommendation with provider constraints. *Proceedings of the 12th ACM Conference on Recommender Systems*, 54–62, 2018. (link)

[7] **Özge Sürer**. Improving similarity measures using ontological data. *Proceedings of the 11th ACM Conference on Recommender Systems*, 416–420, 2017. (link)

Technical Reports

[1] Paul J. Rathouz, Victoria Valencia, Patrick Chang, David P. Morton, Haoxiang Yang, **Özge Sürer**, Spencer J. Fox, Elizabeth C. Matsui, Alex B. Haynes, Lauren A. Meyers. Survival analysis methods for analysis of hospitalization data: Application to COVID-19 patient hospitalization experience. Technical Report, 2021. (link)

[2] Nazlican Arslan, **Özge Sürer**, David P. Morton, Haoxiang Yang, Michael Lachmann, Spencer Woody, Spencer J. Fox, Lauren Ancel Meyers. COVID-19 alert stages, healthcare projections and mortality patterns in Austin, Texas. Technical Report, 2021. (link)

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[1]Available upon request.

[3] Haoxiang Yang, Michael Lachmann, **Özge Sürer**, Spencer J. Fox, David P. Morton, Lauren Ancel Meyers. Projecting need for a COVID-19 alternate care site (ACS) in Austin. Technical Report, 2021. (link)

[4] Haoxiang Yang, Daniel Duque, **Özge Sürer**, David P. Morton, Remy Pasco, Kelly Pierce, Spencer Fox, Lauren Ancel Meyers. Staged strategy to avoid hospital surge and preventable mortality, while reducing the economic burden of social distancing measures. Technical Report, 2020. (link)

BOOK CHAPTERS

[1] **Özge Sürer**, Sezi Çevik Onar, İlker Topçu. Innovation strategy evaluation process using fuzzy cognitive mapping. *Intelligent Techniques in Engineering Management*, 107–128, 2015. (link)

[2] Başar Öztayşi, **Özge Sürer**. Supply chain performance measurement using a SCOR based fuzzy VIKOR approach. *Supply Chain Management Under Fuzziness*, 199–224, 2014. (link)

PRESENTATIONS & INVITED TALKS

[1] SIAM Conference on Uncertainty Quantification, Atlanta, GA (April, 2022). *A sequential approach to calibration of a computationally intensive model.*

[2] SIAM Conference on Parallel Processing for Scientific Computing, Seattle, WA (February, 2022). *Calibration of a computationally intensive model with parallel computing aspects.*

[3] Winter Simulation Conference, Phoenix, AZ (December, 2021). *Calibration using emulation of filtered simulation results.*

[4] INFORMS Annual Meeting, Anaheim, CA (October, 2021). *Calibration using emulation of filtered simulation results.*

[5] INFORMS Workshop on Data Mining and Decision Analytics, Anaheim, CA (October, 2021). *Discovering group structure in longitudinal data.*

[6] INFORMS Annual Meeting, Seattle, WA (October, 2019). *Coefficient tree regression for discovering structure in generalized linear models.*

[7] INFORMS Annual Meeting, Seattle, WA (October, 2019). *Discovering structure in longitudinal data via coefficient tree regression.*

[8] INFORMS Annual Meeting, Phoenix, AZ (November, 2018). *Coefficient tree regression for discovering hidden structure.*

[9] The 12th ACM Conference on Recommender Systems, Vancouver, Canada (October, 2018). *Multistakeholder recommendation with provider constraints.*

[10] The Midwest Machine Learning Symposium, Chicago, IL (June, 2018). *Coefficient tree regression for discovering hidden structure.*

[11] The 11th ACM Conference on Recommender Systems, Como, Italy (August, 2017). *Improving similarity measures using ontological data.*

[12] The 34th National Conference for Operations Research and Industrial Engineering, Bursa, Turkey (June, 2014). *Event and clock-based representations in mathematical optimization.*

[13] The 26th European Conference on Operational Research, Rome, Italy (July, 2013). *Simulated annealing algorithm with variable cluster number and comparison with k-means algorithm.*

[14] The 25th European Conference on Operational Research, Vilnius, Lithuania (July, 2012). *A multi-criteria based evaluation of innovation strategy selection.*

RESEARCH FUNDING

Bayesian Analysis of Nuclear Dynamics (BAND)
under grant OAC-2004601 (link)
- Source: NSF Cyberinfrastructure for Sustained Scientific Innovation (CSSI) program
- Effective: September 1, 2022 until June 30, 2025 (Estimated)
- Senior Personnel (11 PI, co-PI and Senior Personnel)
- Budget: $3,716,619 (total); $181,771 (Miami University)

Mentoring Experience

Doctoral student
Bayesian Analysis of Nuclear Dynamics Collaboration, Summer Fellow

- Yuriy Volkotrub   June–September 2021

  Building a statistical method for quantifying the uncertainty in a physics model

Undergraduate students
Northwestern University, Industrial Engineering and Management Sciences Department

- Justin Chen   June–September 2021

  Integration of visualization and diagnostics modules to the Python package `surmise`

- Huangda Shang (co-supervised with D. Morton)   September 2020–March 2021

  Alternative solutions of COVID-19 staged alert systems via derivative-free optimization methods

- Aneesh Kudaravalli, Katherine Johns, Margot Dupeyroux,
  Robert Wong, Yun Hwan Choi (co-supervised with D. Morton)   September–December 2020

  Investigation of different trigger metrics for COVID-19 staged alert systems

- Achyut Kasi, Cindy Sanchez (co-supervised with D. Morton)   June–September 2020

  Development of a module to produce graphs and reports automatically for the COVID-19 staged alert system

Awards & Honors

- Walter P. Murphy Fellowship for outstanding first year Ph.D. students at Northwestern, Evanston, IL   2015–2016
- Scientific and Technological Research Council of Turkey Scholarship, Turkey   2011–2015
- Council of Higher Education Undergraduate Scholarship, Turkey   2006–2011

Service & Professional Activities

- **Organizer**, SIAM Conference on Parallel Processing for Scientific Computing,
  Workshop, Seattle, WA   February, 2022

  Statistical Methods for Uncertainty Quantification and Parallel Computing

- **Session chair**, INFORMS Annual Meeting, Anaheim, CA   October, 2021

  Data-driven Modeling in Uncertainty Quantification

- **Session chair**, INFORMS Annual Meeting, Seattle, WA   October, 2019

  Interpretable Predictive Models

- **Session chair**, INFORMS Annual Meeting, Phoenix, AZ   November, 2018

  Intriguing Tweaks in Data Science I

- **Participant**, INFORMS Doctoral Student Colloquium, Houston, TX   October, 2017

- **Participant**, ACM Summer School on Recommender Systems, Como, Italy   August, 2017

- **Organizer**, Global Conference on Engineering and Technology Management, İstanbul, Turkey   June, 2014

- **Session chair**, Global Conference on Healthcare Systems Engineering, İstanbul, Turkey   August, 2014

  Health Economics

- **Session chair**, European Conference on Operational Research, Rome, Italy   July, 2013

  Artificial Intelligence–Fuzzy Systems

Editorial Activities

- **Reviewer**, INFORMS Journal on Computing

- **Reviewer**, IISE Transactions

- **Reviewer**, Machine Learning

- **Reviewer**, Information Systems

Open-Source Software

- `surmise`, v0.1.1 released July 2021   read the docs, project page

  Python package designed to provide a surrogate model interface for calibration, uncertainty quantification, and sensitivity analysis.

- `CTR`, released September 2020   vignette, project page

  R package for the application of coefficient tree regression (CTR).

- `COVID-19 Staged Alert System`, released May 2020   project page

  Python code for finding the best COVID-19 staged strategy.