RACHEL MOGLEN

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EDUCATION

University of Texas, Austin, TX
Ph.D. Operations Research and Industrial Engineering — Fall 2019 – Present

University of Maryland, College Park, MD
M.S. Mechanical Engineering — Fall 2017 – Spring 2019
B.S. Civil and Environmental Engineering *with Honors in Engineering* — Fall 2013 – Spring 2017

EIT Environmental Engineering, MD — June 2017

AWARDS

PEO Scholar Award, Philanthropic Educational Organization (PEO) Sisterhood — Spring 2023
- $20,000 merit-based award for women pursuing doctorates in the U.S. and Canada

Cockrell School of Engineering Fellow, University of Texas at Austin — Fall 2019 – Present
- Included full funding for one year of graduate school, and an additional $9,000 annually for 4 years

NSF INFEWS Fellow, University of Texas at Austin — Fall 2019 – Summer 2022
- Selected to participate in A National Science Foundation (NSF) Research Traineeship (NRT) focused on Innovations at the Nexus of Food-Energy-Water Systems (INFEWS)

Macro-Energy Systems Fellow, Stanford University — Fall 2020 – Fall 2021
- One of 4 selected fellows with a $1,500 honorarium

Professional Development Award, University of Texas at Austin — Fall 2020, Fall 2021, Fall 2022
- Included financial support to present at a conference

Dean's M.S. Research Award Competition Department Finalist, University of Maryland — Spring 2019
College of Engineering Most Outstanding Research Award, University of Maryland — Spring 2017
Engineering Honors Student, University of Maryland — Spring 2016 – Spring 2017
University Honors Student, University of Maryland — Fall 2013 – Spring 2017

RESEARCH AND PROFFESIONAL EXPERIENCE

University of Texas at Austin, Austin, TX — Fall 2019 – Present
Research Assistant for Dr. Benjamin Leibowicz — ***Python, Pyomo***
- Applying optimization techniques to improve the resilience of interdependent infrastructure systems
- Developing tools to support national security funded by the Defense Threat Reduction Agency (DTRA)

Argonne National Laboratory, Lemont, IL — Summer 2023
Graduate Intern for the Electricity Markets Team — ***Python, Julia***
- Developed supply and demand inputs to a disaster resilience simulation of extreme weather events

Sandia National Laboratory, Albuquerque, NM — Summer 2020, Summer 2021
Graduate Intern for the Energy and Water Systems Integration Department — ***Python, QGIS***
- Modeled water distribution system dynamics for disaster resilience studies

Washington Gas, Springfield Virginia — Summer 2019
Pipeline Risk Intern for the Distribution Integrity Management Team — ***R, ArcGIS***
- Developed ArcGIS-based risk model for natural threats to natural gas distribution pipelines
- Created scripts in for extracting relevant natural features

University of Maryland, College Park, MD — Fall 2017 – Spring 2019
Research Assistant for Dr. Steven Gabriel — ***R, Python***
- Applied Stochastic and Deterministic Optimization to the energy sector for improved flexibility
- Placed as the ***University of Maryland Dean's M.S. Research Award Competition Department Finalist***

University of Maryland, College Park, MD — Spring 2018, Spring 2019
Teaching Assistant for Simulation and Design of Experiments — ***R, MATLAB***

- Designed homeworks, held office hours, gave guest lectures, and helped design aspects of the course

Whisker Labs, Germantown, MD — Summer 2017
Research and Development Intern for Demand Response Team — ***Python, R, AWS***

- Coded and deployed tool on AWS Lambda to notify users of extreme energy prices in ERCOT

University of Maryland, College Park, MD — Fall 2016 – Spring 2017
Research Assistant for Dr. Kaye Brubaker — ***MATLAB***

- Developed life cycle predictive model of algae bloom probabilities on the Chesapeake Bay
- Earned the ***University of Maryland College of Engineering Most Outstanding Research Award***

LimnoTech, Washington, D.C. — Summer 2016
Engineering Intern for a Water Resources Consulting Firm — ***ArcGIS***

- Researched and documented data sources as part of a Harmful Algal Bloom (HAB) modeling project

STUDENT ORGANIZATIONS

Secretary, INFORMS Student Chapter, University of Texas at Austin — Fall 2021 – Present
Member, INFORMS Student Chapter, University of Texas at Austin — Fall 2019 – Present
Secretary, Mechanical Engineering Graduate Student Board, University of Texas at Austin — Fall 2021 – Present
Member, Mechanical Engineering Graduate Student Board, University of Texas at Austin — Fall 2019 – Present
President, INFORMS Student Chapter, University of Texas at Austin — Fall 2020 – Spring 2021
Department Representative, Graduate Student Assembly, University of Texas at Austin — Fall 2020 – Spring 2021

SERVICE

Diversity, Equity, and Inclusion Committee Graduate Student Representative, Department of Mechanical Engineering, University of Texas at Austin — Fall 2022 – Present
Mentor, Department of Mechanical Engineering, University of Texas at Austin — Fall 2021
Society of Women in Engineering Mentor, University of Texas at Austin — Fall 2019 – Spring 2020
Scientific Committee Member, Trans-Atlantic Infraday Conference — Fall 2018, Fall 2019

- Helped organize an international conference with 30 presentations and approximately 80 attendees

RELEVANT COURSES

Energy Technology and Policy
Probability and Statistics
Simulation and Design of Experiments
Probabilistic Optimization
Multivariate Statistical Analysis
Applied Machine Learning
Optimization Under Uncertainty
Applied Multivariate Analysis
Microeconomics
Decision Analysis

CONFERENCE PRESENTATIONS

Workshop on Creating an Academic Website — Mar 2023
Texas Women in Mathematics Symposium, Austin, TX

Restoration of Power Infrastructure Following a Nuclear Detonation — Oct 2022
INFORMS Annual Meeting, Indianapolis, IN

Disaster Resilience Planning Under Uncertainty: A Nexus Approach — Nov 2021
Trans-Atlantic Infraday Conference, Espoo, Finland and Virtual

Disaster Resilience Planning Under Uncertainty: A Nexus Approach — Oct 2021
INFORMS Annual Meeting, Anaheim, CA and Virtual

Disaster Resilience Planning Under Uncertainty: A Nexus Approach — May 2021
IISE Annual Meeting and Expo, Virtual Conference

Water Infrastructure Resilience: A Case Study in the US Virgin Islands Nov 2020
INFORMS Annual Meeting, Virtual Conference

A Deterministic and Stochastic Dynamic Programming Approach to Demand Response Planning Nov 2018
Trans-Atlantic Infraday Conference, Washington, DC

Using Dynamic Programming for Real-Time Residential Demand Response Scheduling May 2018
Computational Management Science Conference**,** Trondheim, Norway

PEER-REVIEWED PUBLICATIONS

Moglen, R. L, Leibowicz, B.D., Kwasinski, A., Cruse, G. R. (2023). Optimal Restoration of Power Infrastructure Following a Disaster with Environmental Hazards. *In Review.*

Moglen, R. L, Chawla, K. P., Levi, P., Sun, Y., Phillips, O., Leibowicz, B. D., Jenkins, J., Grubert, E. (2023). The State of Macro-Energy Systems Research: Common Critiques, Current Progress, and Research Priorities. *iScience*. https://doi.org/10.1016/j.isci.2023.106325

Moglen, R. L., Barth, J., Gupta, S., Kawai, E., Klise, K., and Leibowicz, B. D. (2023). A Nexus Approach to Infrastructure Resilience Planning under Uncertainty. *Reliability Engineering & System Safety*, 230: 108931. https://doi.org/10.1016/j.ress.2022.108931

Klise, K., **Moglen, R. L.,** Hogge, J., Eisenberg, D., Haxton, T. (2022). Resilience Analysis of Potable Water Service after Power Outages in the U.S. Virgin Islands. *Journal of Water Resources Planning and Management,* 148(12): 05022010. https://doi.org/10.1061/(ASCE)WR.1943-5452.0001607

Moglen, R. L., Chanpiwat, P., Gabriel, S. A., & Blohm, A. (2020). Optimal Thermostatically-Controlled Residential Demand Response for Retail Electric Providers. *Energy Systems*, 21(1). https://doi.org/10.1007/s12667-020-00400-0

Chanpiwat, P., Gabriel, S. A., **Moglen, R. L.,** and Siemann, M. J. (2020). Using Cluster Analysis and Dynamic Programming for Demand Response Applied to Electricity Load in Residential Homes. *ASME Journal of Engineering for Sustainable Buildings and Cities*, 1(1): 011006. https://doi.org/10.1115/1.4045704

Moglen G. E., McCuen R. H., & **Moglen R. L.** (2018). Consequences of Changes to the NRCS Rainfall-Runoff Relations on Hydrologic Design. *Journal of Hydrologic Engineering*, 23(8): 04018032. https://doi.org/10.1061/(ASCE)HE.1943-5584.0001681