RACHEL MOGLEN

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EDUCATION

University of Maryland, College Park, MD
    M.S. Mechanical Engineering, GPA: 3.78   Fall 2017 – Spring 2019
    B.S. Civil and Environmental Engineering, GPA: 3.68   Fall 2013 – Spring 2017

WORK EXPERIENCE

University of Maryland, College Park, MD   Fall 2017 – Present
Research Assistant for Dr. Steven Gabriel   *R, Python*
- Optimally scheduling residential demand response events using Stochastic Dynamic Programming (SDP)
- Calibrating Recurrent Neural Networks to predict energy price spikes for real-time decision making

University of Maryland, College Park, MD   Spring 2018
Teaching Assistant for Simulation and Design of Experiments   *R, MATLAB*
- Aided students with course material of simulation of discrete and continuous engineering systems
- Held office hours, wrote and graded homework, and gave two lectures on simulation in R

University of Maryland, College Park, MD   Spring 2018
Teaching Assistant for Keystone Program
- Taught bi-weekly demonstrations with physical specimens to show the physics of failure
- Supervised the construction workshop as students built their Capstone Projects

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 on in ERCOT
- Created web scraping script to download millions of daily files for future analysis
- Tested Demand Response simulation under perturbed conditions to verify its veracity

University of Maryland, College Park, MD   Fall 2016 – Spring 2017
Research Assistant for Dr. Kaye Brubaker   *MATLAB*
- Developed life cycle model of algae bloom probabilities on the Chesapeake Bay
- Trained and validated model using cell abundances provided by MD Department of Natural Resources

LimnoTech, Washington, D.C.   Summer 2016
Engineering Intern for a Water Resources Consulting Firm   *ArcGIS, Excel*
- Researched and documented data as part of a Harmful Algal Bloom modeling project
- Analyzed site drawings, extracted data, and expanded BMP database in support of MDE regulations

University of Maryland, College Park, MD   Fall 2015 – Spring 2016
Research Assistant for Dr. Kaye Brubaker   *ArcGIS, EPA SWMM 5.1*
- Helped produce interactive stormwater model of the University of Maryland campus
- Performed map calculations in ArcGIS, input parameters and calibrated model in EPA SWMM 5.1

DC Water, Washington, D.C.   Summer 2015
Engineering Intern, Department of Engineering and Technical Services   *VBA, ArcGIS*
- Led Phase II of the Partnership for Safe Water, a multi-year effort to optimize DC's distribution system
- Prepared PSW data for final submission to the American Water Works Association

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PROJECTS

Predicting Electricity Market Volatility in Texas   Fall 2017
    Calibrated Recurrent Neural Networks to predict energy price spikes for decision making   *Python*

Parameter Estimation using the EKF and EnKF for temporal soil moisture variations   Fall 2016
     Compared the performance of Kalman Filter variants in modeling soil infiltration   *MATLAB*

Modeling Particulate Matter Dispersion from an Industrial Farm   Fall 2016
     Calibrated a modified Gaussian Plume Model (GPM) to aid in design considerations   *MATLAB*

Optimizing Road Salting Routes: A Linear Programming Problem   Fall 2015
     Designed 5,500 constraints of 4,000 variables to optimally distribute materials along a network   *XPress*

PRESENTATIONS

Computational Management Conference   May 2018
Norwegian University of Science and Technology, Trondheim, NO   *R*
- Presented research on using DP for optimal residential demand response scheduling in real time
- Discussed modeling of risk due to price volatility using Stochastic DP

Demand Response Workshop   May 2018
Norwegian University of Science and Technology, Trondheim, NO   *R*
- Presented thesis research on optimally scheduling residential demand response using DP
- Participated in discussion about demand response in an international context

Distribution Fitting in R, Simulation and Design of Experiments   March 2018
University of Maryland, College Park, MD   *R*
- Introduced students to data science practices: data visualization and exploration, programming style
- Exposed students to fitdistrplus() including distribution selection, fitting, and goodness-of-fit evaluation

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COURSEWORK

Applied Machine Learning for Engineering and Design   *Python*
Operations Research Models in Engineering (Linear and Nonlinear Programming)   *GAMS*
Data Assimilation and Data Analytics   *MATLAB*
Simulation and Design of Experiments (Monte Carlo Methods)   *MATLAB*
Multivariate Statistical Analysis   *R*

PUBLICATIONS

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

Moglen R. L., Chanpiwat P., Gabriel S. A., Blohm A. (2018). A Dynamic Programming Approach to Optimal Residential Demand Response Scheduling in Near Real-Time: Application for Electricity Retailers in ERCOT Power Markets. (in review)

Blohm, A., Crawford, J., Gabriel, S. A., Moglen, R. L., Wood, D. (2018). An Analysis of Optimal Demand Response Decision Rules for Retail Electric Power Providers: Case Study for the Texas Retail Power Market. (in preparation)

HONORS AND AWARDS

Engineering Honors Student   Spring 2016 – Spring 2017
- A program focused on experimental inquiry, culminating in an independent research project
- Earned the **Most Outstanding Research Award**   Spring 2017

Banneker Key Scholar   2013 – Spring 2017
- Most prestigious merit scholarship at the University of Maryland

University of Maryland Honors College Citation   Fall 2015