STEPHANIE ALLEN

University of Maryland-College Park ⋄ College Park, MD
https://sallen7.github.io/

EDUCATION

University of Maryland-College Park
Ph.D., Applied Mathematics, Statistics, and Scientific Computation
Scientific Computation Track: Began Fall 2017
GPA: 4.0/4.0
Honors: Graduate Fellowships for STEM Diversity & UMD-College Park Flagship Fellowship
Coursework: Probabilistic Optimization, Numerical Optimization, O.R. Models in Engineering, Equilibrium Modeling in Engineering, Advanced Linear Numerical Analysis, Scientific Computing I-II, Advanced Scientific Computing I-II, and Computer Organization and Programming for Scientific Computing

University of Maryland-College Park
Master of Science, Applied Mathematics, Statistics, and Scientific Computation, May 2020
GPA: 4.0/4.0

State University of New York (SUNY) Geneseo
Bachelor of Arts, Summa cum laude, May 2017
Majors: Mathematics and Economics
Minor: Edgar Fellows Honors Program
Overall GPA: 4.0/4.0
Honors: Phi Beta Kappa, Chancellor's Award for Student Excellence (0.5% of graduating class), Presidential Scholar (2% of graduating class), Pi Mu Epsilon Mathematics Honors Society
Relevant Coursework: Linear Programming & Operations Research, Probability, Statistics, Numerical Analysis I, Differential Equations

TECHNICAL STRENGTHS

Computing Languages	Python & MATLAB (Intermediate), R (Beginner)
Software & Tools	LaTeX (Intermediate), Excel (Beginner)

SELECTED PRESENTATIONS & PUBLICATIONS

"Working in Reverse: Inverse Optimization Methods for Pyomo in Online Settings," INFORMS 2019, October 2019

"Working in Reverse: Inverse Optimization in Pyomo," Joint Mathematics Meetings 2019, January 2019

"Solving a Stochastic Network Protection Problem with Complementarity Constraints using the Pyomo and PySP Open Source Packages," East Coast Optimization Meeting 2019, April 2019

A Two-Stage Vehicle Routing Algorithm Applied to Disaster Relief Logistics after the 2015 Nepal Earthquake, SIAM Undergraduate Research Online (SIURO), March 2018.

Change-point Detection Methods for Body-Worn Video, SIAM Undergraduate Research Online (SIURO), August 2017.

RESEARCH EXPERIENCE

Advanced Scientific Computing I-II September 2018 - May 2019
Working in Reverse: Inverse Optimization Methods for Pyomo in Static and Online Settings

- Implemented state-of-the-art inverse optimization methods in Python with the goal of providing additional functionality for the Pyomo optimization package
- To view the code for this coursework sequence, see https://github.com/sallen7/inverse_optimization
- Presented the first part of the project at the 2019 Joint Mathematics Meeting in Baltimore, MD
- Accepted to present the second part of the project at the 2019 INFORMS Annual Meeting

Johns Hopkins University Applied Physics Laboratory May 2018 - Present
Graduate Student Intern

Mathematics Honors Capstone and Edgar Fellows Honors Thesis Sept. 2016 - May 2017
A Two-Stage Vehicle Routing Algorithm Applied to Disaster Relief Logistics after the 2015 Nepal Earthquake

- Modeled the Himalayan Disaster Relief Volunteer Group's delivery of supplies after the 2015 Nepal Earthquake as a vehicle routing problem (VRP) using Fisher and Jaikumar's two-stage method, which allocates locations to vehicles via an integer program and then uses heuristics to route the vehicles
- Created scripts for data processing, graphics production, and LaTeX table production
- Results reiterated the open nature of the VRP and the computational necessity of heuristics
- Paper published in the SIAM Undergraduate Research Online (SIURO) journal
- Paper selected as a finalist for the 2017 INFORMS Undergraduate O.R. Prize Competition
- Presented at the Pi Mu Epsilon 2017 Conference and won the Mathematical Association of America Environmental Mathematics Special Interest Group Student Speaker Award

Institute for Pure and Applied Mathematics (IPAM) at UCLA June 2016 - August 2016
Research in Industrial Projects for Students (RIPS) LAPD Team Project Manager

- Collaborated on a two-stage framework to detect salient changes in LAPD body-worn video
- Developed and implemented via MATLAB statistical methods/algorithms to detect significant shifts in time series data
- Supervised team progress, represented the team in RIPS program meetings, and interfaced with LAPD sponsors as the team's Project Manager
- Published paper through SIAM Undergraduate Research Online (SIURO) entitled, "Change-point Detection Methods for Body-Worn Video"
- Presented at the 2017 Joint Mathematics Meetings and the 2017 Nebraska Conference for Undergraduate Women in Mathematics (NCUWM)

Independent Research Sept. 2015 - April 2016
Factors Influencing the Ratio of SNAP Participants to Poor People in US Counties

- Combined multiple data sets in R in order to carry out regression analysis regarding the factors that influence SNAP participation among impoverished people in the US
- Presented the research in April 2016 at the SUNY Undergraduate Research Conference (SURC), at the MAA Seaway Section Meeting, and at GREAT Day (SUNY Geneseos Research Day)

Social and Decision Analytics Laboratory at Virginia Tech May 2015 - August 2015
REU Summer Student Fellow

- Evaluated/contacted data sources and found literature for the Lab's Census Bureau Project

- Applied statistical methods via R and Excel to Census datasets with the research goal of identifying demographic groups overrepresented among the impoverished in Arlington County (dplyr and survey packages)
- Prepared working paper based on results from this independent research entitled, "Overrepresentation and Underrepresentation: Those in Need in Arlington County"
- Acknowledged as a contributor to the Lab's paper, "Leveraging External Data Sources to Enhance Official Statistics and Products"