STEPHANIE A. ALLEN
College Park, MD
Google Scholar ◇ LinkedIn ◇ https://sallen7.github.io/

EDUCATION

Ph.D. Applied Mathematics, Statistics, and Scientific Computation, University of Maryland, College Park
Scientific Computing Track, Expected Fall 2022
GPA: 4.0/4.0

M.S. Applied Mathematics, Statistics, and Scientific Computation, University of Maryland, College Park
August 2017 - May 2020
GPA: 4.0/4.0

B.A., State University of New York (SUNY) Geneseo
Majors: Mathematics and Economics
Minor: Edgar Fellows Honors Program
August 2013 - May 2017
GPA: 4.0/4.0, *Summa cum laude*

SKILLS

Technical Skills	Optimization, Operations Research, Scientific Computation, Statistics
Computing Languages	Python & MATLAB (Intermediate)
Software & Tools	LaTeX (Intermediate), Excel (Beginner)

PAPERS/PUBLICATIONS

Allen, Stephanie, Steven A. Gabriel, and John P. Dickerson. "Using inverse optimization to learn cost functions in generalized Nash games." *Computers & Operations Research* (2022): 105721.

Allen, Stephanie, John P. Dickerson, and Steven A. Gabriel. "Centralized vs Individual Models for Decision Making in Interconnected Infrastructure." *ICML 2022 2nd AI for Science Workshop.* 2022.

Allen, Stephanie, Daria Terekhov, and Steven A. Gabriel. "A Hybrid Inverse Optimization-Stochastic Programming Framework for Network Protection." *arXiv preprint arXiv:2110.00488* (2021).

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

Allen, Stephanie, David Madras, Ye Ye, and Greg Zanotti. "Change-point detection methods for body-worn video." *SIAM Undergraduate Research Online (SIURO)* (2016).

SELECTED PRESENTATIONS

"Centralized vs Individual Models for Decision Making in Interconnected Infrastructure," ICML 2022 2nd AI for Science Workshop, July 2022.

"Using Inverse Optimization to Learn Cost Functions in Generalized Nash Games," INFORMS 2021, October 2021.

"A Hybrid Inverse Optimization-Stochastic Programming Framework for Network Protection," INFORMS 2020, November 2020.

"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.

RESEARCH EXPERIENCE

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

· Worked on problems involving data fusion and modeling
· Responsible for developing new algorithms and models for Lab problems
· Written technical reports for the Lab about research
· Supervised a college student on a statistics project during Summer 2018

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)

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"

RESEARCH PROJECTS

Dissertation Project 1 January 2020 - February 2021
Using Inverse Optimization to Learn Cost Functions in Generalized Nash Games

- Extended a method in the inverse optimization literature to the case of generalized Nash equilibrium games
- Wrote extensive code for transportation problem numerical experiments to demonstrate the framework. Code can be found here: https://github.com/sallen7/IO_GNEP
- Research is now published in *Computers & Operations Research.*

Dissertation Project 2 November 2019 - May 2021
A Hybrid Inverse Optimization-Stochastic Programming Framework for Network Protection

- Proposed that inverse optimization can be used to parameterize cost functions in multi-stage stochastic programs for disaster management and can be used in disaster support systems
- Undertook computational experiments with two different cost functions and two different road networks to illustrate this hybrid inverse optimization-stochastic programming framework
- The arXiv paper can be found here: https://arxiv.org/abs/2110.00488

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

- Undertook as a two-semester long research project at UMD, College Park that examined inverse optimization methods
- Implemented state-of-the-art inverse optimization methods in Python
- To view the code for this coursework sequence, see https://github.com/sallen7/inverse_optimization

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

- Examined vehicle routing over the course of a two-semester senior thesis project at SUNY Geneseo
- 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 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

LEADERSHIP & SERVICE

Women in Mathematics (AWM Chapter at UMD, College Park) August 2018 - May 2021
President, Vice-President, & Secretary

- Role as President (2020-2021): Manage all of the events undertaken by the organization including speaker, professional development, and social events
- Role as Vice President (2019-2020): Assisted the President with the logistics and planning for some of the speaker, professional development, and social events undertaken by the organization

· Role as Secretary (2018-2019): Took notes during meetings and contributed ideas regarding events

AMSC Program, UMD, College Park September 2021 - May 2022
AMSC Student Council (ASC) Treasurer

· Assisted in the planning and execution of AMSC Student Council events
· Kept a spreadsheet regarding AMSC Student Council finances

AMSC Program, UMD, College Park August 2019 - May 2022
New Student Mentor

· Served as a resource for 1-3 first year students in the AMSC Ph.D. program
· Attended events associated with the New Student Mentor program and provided advice to the students

University Senate, UMD, College Park September 2019 - April 2020
Graduate Student Senator

· Reviewed and voted on new policies up for consideration in front of the University Senate

Food Security Advocates (FSA), SUNY Geneseo September 2014 - May 2017
Co-Founder/President

· Oversaw all projects of FSA, a student organization focused on fighting hunger and food insecurity
· Developed partnerships and organized events with pertinent campus, non-profit, and government organizations
· Government Projects included coordinating and sustaining a Livingston County child nutrition program through administrative communications and end-of-semester food drives (six in total) and included running pre-screening clinics and outreach events for SNAP benefits
· Campus and non-profit events included assisting with the planning of the Geneseo Martin Luther King Day of Service, organizing and participating in speaker events regarding food insecurity, running a spice drive for a program that teaches cooking skills to low income individuals, running a cooking class with a youth program, and volunteer trips to a regional foodbank
· Served on the Martin Luther King Day of Service Committee and the Advisory Committee on Volunteer & Service Programs (which chooses recipients of service awards and discusses service on campus)

HONORS & AWARDS

AMSC Leadership Award	Spring 2021
Graduate Fellowship for STEM Diversity (GFSD)	Fall 2018 - Present
University of Maryland, College Park Flagship Fellowship	Fall 2017 - May 2022
Phi Beta Kappa	May 2016
SUNY Chancellor's Award for Student Excellence	Spring 2017
SUNY Geneseo Presidential Scholar	Fall 2016

PAPER REVIEWER

Economics and Computation 2021 (EC'21)	2021
Energy Systems	2020

CONFERENCE SESSION ORGANIZER

Learning and Equilibria Session INFORMS 2021