

Cassidy K. Buhler

Ph.D. Candidate in Business Analytics

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Education

- 2019–2024 **Ph.D. Business Administration – Operations & Business Analytics Concentration,**
(expected) **Graduate Minor: Computational Data Science,**
Drexel University, Philadelphia, PA.
Advisor: Professor Hande Y. Benson
- 2015–2019 **B.S. Mathematics – Statistics Emphasis,**
University of Utah, Salt Lake City, UT.
Advisor: Professor Frederick R. Adler

Research

Nonlinear optimization, machine learning, computational sustainability, operations research

Papers

Publications in peer-reviewed journal

Cassidy K. Buhler, Rebecca S. Terry, Kathryn G. Link, Frederick R. Adler. “Do mechanisms matter? Comparing cancer treatment strategies across mathematical models and outcome objectives”. *Mathematical Biosciences and Engineering*, 2021, 18(5): 6305-6327. doi: 10.3934/mbe.2021315.

Publications in refereed proceedings

Buhler C. K., Benson H. Y. “Optimal land conservation decisions for multiple species”. *Proceedings of the Northeast Decision Sciences Institute Conference, Washington D.C., March 2023.*

Works in progress

Buhler C. K., Benson H. Y., Shanno D. F. (2021). “Regularized step directions in nonlinear conjugate gradient methods”. Under first round of review at *Mathematical Programming Computation*.

Buhler C. K., Benson H. Y. (2020). “Efficient solution of portfolio optimization problems via dimension reduction and sparsification”. In preparation. Targeted to *Computational Optimization & Applications*.

Buhler C. K., Benson H. Y. (2023). “Black-box optimization for biodiversity reserve design”. In preparation.

Buhler C. K., Benson H. Y. (2023). "Regularized nonlinear conjugate gradient methods for machine learning". In preparation.

Publications in non peer-reviewed journal

Buhler C. K., Terry R. S., Link K. G., Adler F. R. (2019). "Mathematical modeling of adaptive therapy in prostate cancer". *Undergraduate Research Journal*.

Presentations

- May 2023 SIAM Conference on Optimization. Buhler C. K., Benson H. Y. "Nonlinear Conjugate Gradient Methods for Machine Learning". Presenting in the *Nonlinear Optimization and Applications* minisymposium.
- March 2023 NEDSI Annual Conference. Buhler C. K., Benson H. Y. "Optimal land conservation decisions for multiple species". Presenting in *Land, Sand, and Plastic Management* session.
- Oct 2021 INFORMS Annual Meeting. Buhler C. K., Benson H. Y. Shanno D. F. "Regularized step directions in conjugate gradient minimization for machine learning". Presented in the *Nonlinear Optimization and Applications I* session.
- July 2021 SIAM Conference on Optimization. Buhler C. K., Benson H. Y. "Conjugate gradient methods for machine learning". Presented in the *Computational Optimization Methods for Machine Learning and Global Optimization* minisymposium.
- Nov 2020 INFORMS Annual Meeting. Buhler C. K., Benson H. Y. "Efficient solution of portfolio optimization problems via dimension reduction and sparsification". Presented in the *Nonlinear Optimization Methods and Software* session.
- Oct 2020 Drexel Computer Science Theory Reading Group. Buhler C. K. *Portfolio optimization*.
- April 2019 Undergraduate Research Symposium. Buhler C. K., Terry R. S., Link K. G., Adler F. R. *Mathematical modeling of adaptive therapy in prostate cancer*.

Teaching

- 2021-Present Instructor, *Drexel University*
Responsible for all lectures, course materials, and grading.
- BSAN 360: Programming for Data Analytics
 - Ph.D. Programming Bootcamp
 - 2-day programming workshop for incoming Business Ph.D. students.
- 2019-Present Recitation Instructor, *Drexel University*
Responsible for delivering a weekly 2-hour lecture, preparing lecture material, and grading. Similar to a lab section, the recitation section is focused on learning technical skills in the computer lab.
- MIS 200: Management Information Systems

2019-Present Teaching Assistant, *Drexel University*

Assists primary instructor with duties such as holding office hours, preparing assignments, and grading.

- BSAN 360: Programming for Data Analytics
- OPM 200: Operations Management
- OPM 341: Supply Chain Management
- OPM 344: Revenue Management
- OPR 320: Linear Models for Decision Making
- STAT 201: Intro to Business Statistics
- STAT 202: Business Statistics II
- STAT 205: Statistical Inference I
- STAT 206: Statistical Inference II
- STAT 642: Data Mining for Business Analytics

2018-2019 Computer Lab & Mathematics Teaching Assistant, *University of Utah*

Provided math and programming assistance at the T. Benny Rushing Mathematics Student Center.

- MATH 1010: Intermediate Algebra
- MATH 1050: College Algebra
- MATH 1210: Calculus I
- MATH 1220: Calculus II
- MATH 2210: Calculus III
- MATH 2270: Linear Algebra
- MATH 3070: Applied Statistics I
- MATH 3080: Applied Statistics II
- Languages: MATLAB, Python, & R

Grants & Awards

2022 Teaching Assistant Excellence Award, *Drexel University*

- For graduate students who “*exhibit exemplary commitment to student learning through reflective teaching practices, creative and innovative teaching methods, academic support, leadership and a commitment to their own professional growth and development as an educator.*”

2021 Student Travel Award, *SIAM Conference on Optimization (OP21)*

- Funding is provided by National Science Foundation (NSF) for graduate students to participate at a Society of Industrial and Applied Mathematics (SIAM) conference.

2021 Teaching Assistant Excellence Award (Highly Commended), *Drexel University*

- Nominees given close consideration by the review committee were given recognition as “highly commended” award finalists.

2019-2021 Modeling the Dynamics of Life Fund, *University of Utah*

- Research support provided by Professor Frederick R. Adler.

- 2019 Undergraduate Research Scholar Designation, *University of Utah*
 - Undergraduate students who have completed two semesters of research, presented in the Undergraduate Research Symposium, and published research in the Undergraduate Research Journal.
- 2019 Research Experience for Undergraduates (REU), *University of Utah*
 - Grant for undergraduate students conducting research with a faculty member from the mathematics department.
- 2015-2017 Honors at Entrance Scholarship, *University of Utah*
- 2015 Utah Centennial Scholarship for Early High School Graduation, *State of Utah*

Work Experience

- 2018 Computer Scientist Intern, *United States Air Force*
 - Conducted research related to improving software for US Air Force aircraft
 - Hired under the Premier College Intern Program (PCIP) and earned a position in the PALACE Acquire (PAQ) program.

Outreach & Service

- 2023 Session Organizer, "Nonlinear Optimization and Applications", *SIAM Conference on Optimization, Seattle, WA.*
- 2023 Session Chair, "Land, Sand, and Plastic Management", *NEDSI Annual Conference, Washington, D.C.*
- 2022 Panelist for Teaching Assistance Orientation Session, *Drexel University*
Provided feedback and answered arising questions from new graduate teaching assistants.
- 2019 Utah Prison Education Project Tutor, *Timpanogos Women's Correctional Facility*
Tutored students who are incarcerated in a Salt Lake Community College math course.
 - MATH 1030: Intro to Quantitative Reasoning

Organizations

- 2018-Present Society for Industrial and Applied Mathematics (SIAM)
Drexel University, University of Utah
- 2019-Present The Institute for Operations Research and the Management Sciences (INFORMS)
Drexel University
- 2018-2019 Association for Women in Mathematics (AWM)
University of Utah

Extracurricular

- 2019 Captain of Intramural Indoor Volleyball Team "No Games Scheduled", *University of Utah*
 - Ranked 1st
 - The team name *likely* impacted our ranking, due to opposing teams not showing up.
- 2019 Competitor in COMAP: The Mathematical Contest in Modeling, *University of Utah*
- 2018 Captain of Intramural Indoor Volleyball Team "Algebros", *University of Utah*
 - Ranked 3rd
- 2018 Captain of Intramural Sand Volleyball Team "Mathletes", *University of Utah*
 - Ranked 2nd