Cassidy K. Buhler

Ph.D. Candidate in Business Analytics

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Education

2019-2024 (expected) **Ph.D. Business Administration – Operations & Business Analytics Concentration, 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 reserve design in biodiversity conservation". 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. "Black-box optimization for reserve design in biodiversity conservation". 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". Presented 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

2023 Teck-Kah Lim Graduate Student Travel Subsidy Award, *Drexel University*

- Funding granted to graduate students presenting research at conferences which elevate Drexel's reputation and research enterprise

2023 Student Travel Award, *SIAM Conference on Optimization (OP23)*

- Selected as a graduate student funded by The National Science Foundation (NSF) to participate at a Society of Industrial and Applied Mathematics (SIAM) conference.

2022 Teaching Assistant Excellence Award, *Drexel University*

- Recognizes graduate students who exhibit exemplary commitment to student learning, based on nominations and evaluations from undergraduate students and faculty.

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

- Selected as a graduate student funded by The National Science Foundation (NSF) 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