Katherine B. Adams

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Academic Appointment

Postdoctoral Fellow in Operations and Analytics   **August 2024 – Present**
University of Texas at San Antonio – San Antonio, Texas
Research topic: Development of fair and efficient resource planning models in healthcare
Principal investigator: Dr. Arkajyoti Roy

Education

Ph.D. in Industrial and Systems Engineering   **August 2024**
University of Wisconsin-Madison − Madison, Wisconsin
Research topic: Designing optimization approaches for diabetes care in developing countries
Research advisors: Dr. Justin J. Boutilier and Dr. Yonatan Mintz

M.S. in Industrial Engineering   **May 2019**
Arizona State University − Tempe, Arizona
Research topic: Extensions of the dual-resource constrained flexible job-shop scheduling problem
Research advisors: Dr. Jorge A. Sefair and Dr. Ronald Askin

B.S. in Industrial Engineering, *Summa Cum Laude*   **May 2018**
Arizona State University − Tempe, Arizona
Honors: Dean's List (eight semesters), Tau Beta Pi Engineering Honor Society

Funding and Awards

Bridge to Faculty Program   **August 2025 – August 2027**
University of Texas at San Antonio − San Antonio, TX
- The BTF Program is a part of the Provost's Strategic Hiring Initiative at UTSA
- Awarded to promising postdoctoral fellows, this initiative establishes support and conditions to transition into a tenure-track faculty position

Postdoctoral Fellowship Travel Award   **Spring 2025**
University of Texas at San Antonio − San Antonio, TX
- Provides support for postdoctoral fellows to present their research at professional meetings

Student Research Grants Competition – Conference Presentation Award   **2023**
University of Wisconsin-Madison − Madison, WI
- Awarded to assist graduate students who are presenting their research with conference travels

Bonder Scholarship for Applied Operations Research in Health Services   **2022**
Institute for Operations Research and the Management Sciences (INFORMS)
- Awarded to PhD students conducting research on operations research/operations management applied to healthcare design, delivery, and operations
- Recipients must have demonstrated strong academic rigor and practical relevance

Rea C. & David H. Gustafson Scholarship   **Fall 2022 – Spring 2023**
University of Wisconsin-Madison − Madison, WI

- Awarded to Industrial and Systems Engineering (ISyE) students with demonstrated passion for health and health care issues
- Recipients must have demonstrated they have a definite plan for how to use funds to advance development and application of ISyE to improve health systems

CIBM Traineeship (supported by National Library of Medicine grant)   **Summer 2020**
University of Wisconsin-Madison − Madison, WI
- Awarded for recruitment of individuals from diverse backgrounds and women
- Offered to students with an interest in a career in biomedical informatics or data science

Chancellor's Opportunity Award   **Fall 2019**
University of Wisconsin-Madison − Madison, WI
- Awarded to incoming students based on academic merit and expected contributions

Dean's Fellowship Award (Declined)   **Fall 2019 – Spring 2020**
Arizona State University − Tempe, AZ
- Award for incoming PhD students in recognition of excellent academic accomplishments
- Full tuition, health insurance and stipend for full-time Research Assistant appointment
- Renewable for up to 4 years

Georgia Tech Focus Scholar   **2019**
Georgia Institute of Technology − Atlanta, GA
- Graduate recruitment program for highly skilled students from backgrounds that are underrepresented in higher education
- Participants are reimbursed for travel, accommodation, and meals

Engineering Graduate Fellowship   **Spring 2019**
Arizona State University − Tempe, AZ

Fulton Undergraduate Research Initiative   **Fall 2017 – Spring 2018**
Arizona State University − Tempe, AZ
- Funding for undergraduate students to conduct research under the mentorship of Fulton Engineering faculty members

Summer Research Opportunity Program   **Summer 2016**
University of Michigan − Ann Arbor, MI
- Stipend, university housing, reimbursement for travel expenses, and GRE preparation course

New American University Scholarship   **Fall 2014 – Spring 2015**
Arizona State University − Tempe, AZ
- Award offered to outstanding first-year students

Publications

- **Adams, K.**; Sawetpiyakul, P.; Garcia, G.; Roy, A.; Ahuja, V.; Chung, D. (2025). *Learning from Familiarity: Reducing Scheduling Uncertainty in Pediatric Operating Rooms*. Paper in progress.

- **Adams, K.**; Dravenstott, R.; Roy, A.; Ahuja, V.; Gandhi, S.; Eckmann, M. (2025). *Latent Preference Learning for Anesthesiology Scheduling Using Hybrid Recommendation Systems*. Paper in progress.

- **Adams, K.**; Yang, Y.; Leong, X.; Garcia, G.; Roy, A.; Ahuja, V.; Chung, D. (2025). *Predicting Pediatric Surgical Case Duration Using Machine Learning: Leveraging Team Dynamics and Operational Features*. Accepted for presentation at the Southern Surgical Association meeting in

December, 2025.

- **Adams, K.**; Boutilier, J.; Deo, S.; Mintz, Y. (2025). *Finite-Time Guarantees for Multi-Agent Combinatorial Bandits with Nonstationary Rewards*. Submitted to Operations Research.

- **Adams, K.**; Boutilier, J.; Deo, S.; Mintz, Y. (2023). *Planning a community approach to diabetes care in low- and middle-income countries using optimization*. Under minor revision at Operations Research, August 2025.

- Zhang, R.; Lu, Y.; **Adams, K.**; Sefair, J.; Mellin, H.; Acevedo, M.; Maciejewski, R. (2021). *A visual analytics framework for conservation planning optimization*. Environmental Modelling and Software, 145, 105178.

Peer Review Contributions

- Information Systems and Operational Research (INFOR)
- Health Care Management Science (HCMS)

Student Research Experience

Graduate Research Assistant   **September 2019 – August 2024**
University of Wisconsin-Madison – Madison, WI

Chronic disease screening and management in low- and middle-income countries (LMICs)
Full information case:
- Developed an optimization model to design visit plans for Community Health Workers
- Model incorporates tradeoff between offering screening and follow-up visits
- Formulated parameter estimation problem to leverage data and predict disease progression
- Formulated bi-level provider problem to maximize glycemic control at a community-level whilst accounting for patient enrollment decisions
- Developed scalable solution approaches using approximate dynamic programming
- Conducted simulation experiments and created plots to assess our heuristics' performance
Partial information case:
- Extended full information framework to incorporate the tradeoff between visit provision and information gathering to allow better decision-making (exploration-exploitation tradeoff)
- Accounted for nonstationary reward distributions, which are based on shifting health and motivational statuses of program participants
- Developed upper confidence bound algorithms based on multi-armed bandit frameworks

Graduate Research Assistant   **August 2018 – May 2019**
Arizona State University – Tempe, AZ

Cross-Training Analysis for Job-Shop Scheduling
- Developed a scheduling model for high-mix manufacturing environments in which a skilled workforce is required to execute a variety of operations
- The model allows to conduct a Pareto analysis regarding the time required to complete the set of jobs (makespan) for different levels of cross-training
- The model provides training recommendations for specific workers/operations subject to the time-constraints

Undergraduate Research Assistant   **May 2017 – May 2018**
Arizona State University – Tempe, AZ

Development of Optimization Tool for Conservation Planning
- Conducted a literature review regarding optimization methods and tools used in systematic

conservation planning
- Developed a landscape planning model which identifies optimal conservation reserves given a set of patch attributes and representation targets chosen by the user
- Implemented the model in Python including a preprocessing stage with a ranking-based filter and an optimization stage using GLPK solver

Undergraduate Student Researcher   **June 2016 – August 2016**
University of Michigan – Ann Arbor, MI
Development of Scheduling Tool for Dermatology Residents

- Collaborated in an interdisciplinary team of students to interpret scheduling needs from the residents working in the Dermatology Department of University of Michigan Health System
- Formulated a mathematical model to create an automated scheduling tool

Teaching Experience

Graduate Teaching Assistant   **August 2021 – December 2023**
University of Wisconsin-Madison – Madison, WI
Introduction to Industrial Statistics (new course first taught in Fall 2021)

- In Spring of 2023, I began leading two weekly discussion sections. I created/selected questions to solve with students and provided typed solutions that they could review later
- Created dozens of new practice, homework, and exam questions
- Held biweekly office hours and replied to questions posted to online platform (Piazza)
- Held review sessions before exams
- Graded and provided feedback on group projects where students applied concepts learned in class to real-world data
- Added new questions and written solutions to selected practice problems
- Approximate enrollment per term: Spring '23 (37), Fall '22 (67), Spring '22 (59), Fall '21 (99)

Graduate Teaching Assistant   **January 2023 – May 2023**
University of Wisconsin-Madison – Madison, WI
Introduction to Human Factors Engineering

- Graded and gave feedback on case studies where students had to read about accidents, summarize facts, identify causes and events, propose design improvements, and connect the case study to course concepts
- Approximate enrollment: 98 students

Graduate Teaching Assistant   **January 2021 – May 2021**
University of Wisconsin-Madison – Madison, WI
Health Systems Engineering

- Course was taught fully online and included over 75 students
- Held weekly office hours remotely and replied to questions posted to online platform (Slack)
- Graded and provided feedback to students on homework assignments
- Developed practice quizzes to complement remote teaching and encourage students to review lecture notes

Graduate Teaching Assistant   **August 2018 – December 2018**
Arizona State University – Tempe, AZ
Probability and Statistics

- Held "Homework Help Sessions" to guide students regarding which formulas or statistical tests to utilize in each situation, how to interpret word problems, etc.

- Answered the students' questions during office hours and through an online platform (Piazza)

Undergraduate Teaching Assistant   **March 2018 – May 2018, March 2017 – May 2017**
Arizona State University – Tempe, AZ
Engineering Statistics and Probability
- Answered questions posted to online platform (Piazza)
- Met with students and gave study/organization tips to tackle a demanding course

Portuguese Grader   **January 2018 – March 2018**
Arizona State University – Tempe, AZ
Portuguese for Spanish Speakers
- Graded and provided feedback on written compositions and oral presentations
- Provided writing and pronunciation tips throughout the eight-week course

Presentations

- Adams, K.; Dravenstott, R.; Roy, A.; Ahuja, V. (2025). Personalized shift scheduling of anesthesiology providers. *Production and Operations Management Society Conference*, Atlanta, GA.

- Adams, K.; Boutilier, J.; Deo, S.; Mintz, Y. (2024). Designing a personalized community-based approach to diabetes care. *INFORMS OU Student Chapter ScholarsConnect Seminar*, University of Oklahoma, Norman, OK (virtual).

- Adams, K.; Boutilier, J.; Deo, S.; Mintz, Y. (2023). Planning a personalized community health worker intervention for diabetes care in low- and middle-income countries, *Research and Beyond in Industrial Engineering*, Guest Lecture, University of Wisconsin-Madison, Madison, WI.

- Adams, K.; Boutilier, J.; Deo, S.; Mintz, Y. (2023). Planning a personalized community health worker intervention for diabetes care in low- and middle-income countries, *Dynamic Programming and Associated Topics*, Guest Lecture, University of Wisconsin-Madison, Madison, WI.

- Adams, K.; Boutilier, J.; Deo, S.; Mintz, Y. (2023). Planning a personalized community health worker intervention for diabetes care in low- and middle-income countries, *INFORMS Annual Meeting*, Invited session, Phoenix, AZ.

- Adams, K.; Boutilier, J.; Deo, S.; Mintz, Y. (2023). Planning a personalized community health worker intervention for diabetes care in low- and middle-income countries, *INFORMS Healthcare*, Invited session, Toronto, Canada.

- Adams, K.; Boutilier, J.; Deo, S.; Mintz, Y. (2023). Designing a personalized community-based approach to diabetes care. *Computation and Informatics in Biology and Medicine (CIBM)*, Seminar, University of Wisconsin-Madison, Madison, WI.

- Adams, K.; Boutilier, J.; Deo, S.; Mintz, Y. (2023). Designing a personalized community-based approach to diabetes care. *Healthcare Systems Engineering*, Guest Lecture, University of Wisconsin-Madison, Madison, WI.

- Adams, K.; Boutilier, J.; Deo, S.; Mintz, Y. (2022). Designing a personalized community-based approach to diabetes care. *INFORMS Annual Meeting*, Invited session, Indianapolis, IN.

- Adams, K.; Boutilier, J.; Deo, S.; Mintz, Y. (2021). An optimization approach to plan a community health worker intervention for diabetes care in low- and middle-income countries.

INFORMS Annual Meeting, Invited session (virtual), Ananheim, CA.

- Adams, K.; Boutilier, J.; Deo, S.; Mintz, Y. (2021). An optimization approach to plan a community health worker intervention for diabetes care in low- and middle-income countries *INFORMS Healthcare*, Invited session (virtual).

- Adams, K.; Sefair, J. (2018). An optimization-based tool to assist conservation planning decisions. *Fulton Undergraduate Research Initiative Symposium*, Poster presentation, Arizona State University, Tempe, AZ.

- Adams, K.; Sefair, J. (2017). Development of tool to assist conservation planning decisions. *Fulton Undergraduate Research Initiative Symposium*, Poster presentation, Arizona State University, Tempe, AZ.

- Adams, K.; Moss, J.; Vieregge, E.; Eshaq, M.; Pozehl, W.; Cohn, A. (2016). A model to schedule shifts for a dermatology residency program. *Summer Research Opportunity Program Symposium*, Poster presentation, University of Michigan, Ann Arbor, MI.

Industry Experience

Graduate Intern in Manufacturing   **March 2019 – August 2019**
Intel Corporation – Chandler, AZ
Optimization Modeling for Manufacturing Processes

- Developed Python scripts to select, clean and preprocess input data for optimization models
- Developed mixed-integer programming formulations for proof-of-concept models
- Duplicated multiobjective approaches in existing research papers to consider tradeoffs between competing objectives

Industrial Engineering Graduate Intern   **May 2018 – August 2018**
Intel Corporation – Hillsboro, OR
Capacity Modeling for Board Development Lab

- Reviewed the literature on scheduling models that could be employed in high-mix/low-volume manufacturing environments
- Developed a tailored model based on the Dual-Resource Constrained Flexible Job-shop Scheduling Problem formulation
- Model decides the job sequencing and worker/machine assignment for each operation such that the makespan to complete the jobs is minimized
- Tested model with hypothetical data and generated Gantt charts with operation start and completion times, as well as machine and worker assignments

Industrial Engineering Intern   **August 2017 – May 2018**
Mayo Clinic – Phoenix, AZ
Data Visualization for Department of Radiology

- Conducted a year-long senior project focused on documentation, data analysis and data visualization
- Created Tableau dashboards to display metrics of interest for management of operations, such as room utilization, outpatient overall length of stay, radiologist time during a procedure, and recovery time

Leadership and Service

Bonder Scholars – Session Chair   2023
INFORMS Annual Meeting – Phoenix, AZ

- Exclusive session for those who have been previously awarded with the *Bonder Scholarship for Applied Operations Research in Health Services* or their students (advisees)

Healthcare Analytics and Sequential Decision Making – Session Co-Chair   2023
INFORMS Annual Meeting – Phoenix, AZ

- Session covering relevant topics in health care and public health

Growth of Student Research Through Executive Functions Lenses – Session Co-Chair 2023
INFORMS Annual Meeting – Phoenix, AZ

- One of three sessions composing the "Promising Tomorrow" theme, which takes a student-focused approach to develop collaborative and inclusive learning in OR/MS communities
- This panel discussed informative and compassionate mentoring guidelines to support neuro-divergent individuals in the workplace

Treasurer of UW-Madison INFORMS Student Chapter   August 2021 – May 2023
University of Wisconsin-Madison – Madison, WI

- Created guide for writing proofs to be shared with future incoming PhD students to support students with engineering backgrounds
- Organized a volunteer event at a local non-profit that addresses food insecurity in Madison by turning food excess into meals sold in a "pay-what-you-can" basis. Little John's served over 37,000 meals in January 2022 alone
- Opened a new bank account for our student organization

Vice-President of Brazilian Club at ASU   August 2016 – December 2017
Arizona State University – Tempe, AZ

- Strengthened the club's leadership to bring new members to our organization and promote cultural exchange
- Organized meetings to discuss Brazilian culture and teach basic sentences and idiomatic expressions in Portuguese
- Established partnerships with several student organizations to promote the Brazilian Day at ASU event, which included live music, performances, and Brazilian food

Teaching Mathematics and Physics   March 2013 – July 2014
Federal University of São Carlos – Sorocaba, SP, Brazil

- Motivated students from low-income families to pursue a college education, particularly those interested in Science, Technology, Engineering and Mathematics (STEM)
- Introduced Math and Physics concepts to students by relating them to daily life examples
- Held weekly classes for two groups of students, totaling approximately 70 people
- Selected and assigned weekly homework assignments with optional challenge questions

Professional References

- **Arkajyoti Roy**: Assistant Professor in the Department of Management Science and Statistics at the University of Texas at San Antonio (contact: arkajyoti.roy@utsa.edu)

- **Justin Boutilier**: Assistant Professor at the Telfer School of Management at the University of

Ottawa (contact: boutilier@telfer.uOttawa.ca)

- **Yonatan Mintz:** Assistant Professor in the Department of Industrial and Systems Engineering at the University of Wisconsin-Madison (contact: ymintz@wisc.edu)

- **Sarang Deo:** Professor of Operations Management, Deputy Dean of Faculty and Research, and Executive Director at the Max Institute of Healthcare Management in the Indian School of Business (contact: sarang_deo@isb.edu)

- **Bob Batt:** Proctor & Gamble - Bascom Professor and Associate Professor in the Department of Operations and Information Management at the University of Wisconsin-Madison (contact: bob.batt@wisc.edu)

- **Amanda Smith:** Assistant Teaching Professor and Associate Chair for Undergraduate Affairs in the Department of Industrial and Systems Engineering at the University of Wisconsin-Madison (contact: amanda.smith@wisc.edu)

Technical Skills and Certifications

- **Programming Languages:** Python, C/C++, C#, Java, SQL, AMPL, Scheme, VBA, OPL, LaTeX.

- **Software Skills:** MS Office (Word, Excel, PowerPoint, Visio, Access, Project), Tableau, Arena Simulation, SPSS, SQLPathfinder.

- **Languages:** Portuguese, English, Spanish (proficient) and French (elementary).

- **Miscellaneous courses:** The Discussion Project (discussion pedagogy skill development), Completed March 2024, University of Wisconsin-Madison; Plant-Based Nutrition Certificate, Completed February, 2021, T. Colin Campbell Center for Nutrition Studies and eCornell.