

CONTACT INFORMATION	University of Minnesota Room 175 ShepLab, 0771D, Minneapolis, MN 55455	Email: saumya@umn.edu Website: saumya-sinha.github.io
RESEARCH INTERESTS	Optimization under uncertainty, sequential decision-making, robust optimization, healthcare operations, clinical decision-making, health policy.	
CURRENT AFFILIATION	Assistant Professor Industrial & Systems Engineering, University of Minnesota, Minneapolis, MN	August 2022 - present
PAST EMPLOYMENT	Postdoctoral Research Associate Computational Applied Mathematics & Operations Research, Rice University, Houston TX Worked with Andrew Schaefer on multiobjective, stochastic, and dynamic optimization problems, with a focus on organ transplantation and other healthcare applications.	October 2018 - August 2022
	Visiting Postdoctoral Fellow Department of Surgery, Houston Methodist Hospital, Houston TX Used operations research (OR) and analytics for risk-benefit assessment of organ transplant patients, and studying strategic implications of the same.	July 2019 - June 2022
EDUCATION	PhD, Applied Mathematics (Advanced Data Science option) University of Washington, Seattle WA Dissertation: Robust dynamic optimization: theory and applications Advisor: Archis Ghatge	August 2018
	MS, Applied Mathematics University of Washington, Seattle WA	March 2015
	MS, Mathematics TIFR Centre for Applicable Mathematics, Bangalore, India	July 2013
	BS (Honors), Mathematics St. Stephen's College, University of Delhi, India	June 2011
PUBLICATIONS & PREPRINTS	<p>4. Relaxations and duality for multiobjective integer programming (A. Dunbar*, S. Sinha, A.J. Schaefer) <i>Under review</i>. Available on Optimization Online <i>Finalist for the INFORMS Undergraduate Operations Research Prize, 2020</i></p> <p>3. Characterizing rational transplant program response to outcome-based regulation (D. Mildebrath**, T. Lee, S. Sinha, A.J. Schaefer, A.O. Gaber)</p>	

* denotes an undergraduate student I supervised.

** denotes a graduate student in my postdoc research group

	<i>To appear in Operations Research.</i>	
	2. Policy iteration for robust nonstationary Markov decision processes (S. Sinha , A. Ghate) <i>Optimization Letters</i> , Vol 10(8), 1613-1628 2016.	
	1. Robust response-guided dosing (S. Sinha , J. Kotas, A. Ghate) <i>Operations Research Letters</i> , Vol 44(3), 394-399 2016.	
WORKING PAPERS	5. A robust multi-period Newsvendor model with inventory balance constraints (S. Sinha , M.R. Wagner, A. Ghate) 4. Approximate policy iteration for robust countable-state Markov decision processes (S. Sinha , A. Ghate) <i>Under major revision for Operations Research</i> . 3. On the strength of Lagrangian duality for multiobjective integer programming (M. Brun*, T. Perini, S. Sinha , A.J. Schaefer) <i>Finalist for the INFORMS Undergraduate Operations Research Prize, 2022</i> 2. Incentives in outcome-based regulation for solid organ transplantation (D. Mildebrath**, S. Sinha , T. Lee, A.J. Schaefer, H.J. Huang, A.O. Gaber) 1. Duality for countably infinite integer programs (R. Schellenberger*, S. Sinha , A.J. Schaefer)	
TEACHING EXPERIENCE	Instructor , Rice University, Houston. - Stochastic processes and simulation (INDE 572) - <i>Spring 2022</i> Guest Lecturer , Rice University, Houston. - Applied discrete optimization (INDE 597) - <i>Spring 2019</i> Instructor , University of Washington, Seattle. - Applied linear algebra & numerical analysis - <i>Summer 2018 & Summer 2017</i> - Introduction to differential equations and applications - <i>Spring 2018</i> - Partial differential equations and waves - <i>Spring 2017</i> Teaching Assistant , University of Washington, Seattle. - Vector calculus and complex variables - <i>Fall 2017 & Fall 2015</i> - Computational methods for data analysis - <i>Winter 2017</i> - Methods for partial differential equations - <i>Spring 2016</i> - Introduction to continuous mathematical modeling - <i>Summer & Winter 2015</i> - Applied linear algebra and numerical analysis - <i>Summer 2015</i> - Introduction to differential equations and applications - <i>Summer 2015</i> - Advanced methods for partial differential equations - <i>Spring 2015</i> - Algebra with applications - <i>Fall & Winter 2014</i> - Calculus with analytic geometry II - <i>Fall 2013</i>	
RESEARCH MENTORSHIP	Student supervision , Rice University, Houston	Since November 2018
	Supervising undergraduate students on individual research projects.	

- Stormi Allen-Knight: Discrete-event simulation for single versus bilateral lung transplantation (REU Data Science, Summer 2022)
- Matthew Brun: Lagrangian duality for multiobjective IPs (Fall 2021-Spring 2022)
- Robert Schellenberger: Duality for countably infinite IPs (Spring 2020-Spring 2022)
- Alex Dunbar: Relaxations and duality for multiobjective IPs (Fall 2018-Summer 2020)
- Oren Pazgal: Simulation for transplant patient selection (Summer 2019)
- Carlos Linares: Simulation in Python (Summer 2019)

Graduate mentor, University of Washington, Seattle Spring 2018
Supervised an undergraduate student for the ‘Women in Applied Math Mentorship’ Program. *Topic*: Choice modeling and its application to airline network management

Undergraduate Research Mentor, TIFR CAM, Bangalore, India May 2013
Supervised 20 undergraduate students in a Summer research program; assisted with designing models for optimal town-planning using network structure.

PROFESSIONAL
SERVICE &
OUTREACH

Officer for the INFORMS Forum for Women in OR & Management Sciences (WORMS)

- Secretary, 2020
- Vice-President of Communications, 2021-2022

Session Chair at INFORMS Annual Meetings

- Policy Design in Healthcare, Indianapolis 2022 (planned)
- OR Methods for Health Policy Design, Anaheim 2021
- Robust and Dynamic Stochastic Optimization, Phoenix 2018
- Statistics- and Information-based Approaches to Stochastic Optimization, Houston 2017

Mentor

- WORMS Mentorship Program – 2018, 2021, 2022
- ‘Women in Applied Math Mentorship’ Program, University of Washington, 2018

Guest Speaker at the AWM Abstract Math Summer Program for non male-identifying high-school students at Rice University, July 2022

Panelist on a ‘Careers in Mathematics’ panel for undergraduate students in mathematical sciences, Rice University, December 2020

Volunteer for multiple community outreach events – conducted math-based games and activities for K-12 students, served as judge for student competitions.

- Science and Engineering Fair of Houston, *February 2020 & 2021*
- Math Olympiad, Seattle, *May 2016*

- Math Moves, Pacific Science Center, Seattle, *March 2016*
- Mathcounts, *February 2015*
- Math Hour Olympiad, *June 2014 & June 2015*
- Julia Robinson Math Festival, *March 2014 & April 2015*
- University of Washington Math Fair, *March 2014 & December 2013*

Co-organizer, Student Seminar Series at TIFR-CAM, 2012-2013

Coordinated weekly campus talks on math-related topics by graduate students.

AWARDS & RECOGNITION

- ‘Rising Stars in Computational & Data Sciences’ Workshop, University of Texas, Austin, 2020
- INFORMS Doctoral Student Colloquium, 2017
- William and Marilyn Conner Endowed Fellowship, University of Washington, 2014
- INSPIRE Scholarship, Department of Science & Technology, Government of India, 2008
- National Talent Search Scholarship, National Council for Educational Research & Training, India, 2006

INVITED TALKS

- Mixed-integer Programming Workshop, May 2023, Los Angeles (planned)
- Texas A&M University, AMS Student Chapter Seminar, November 2022 (planned)
- INFORMS Annual Meeting, October 2022, Indianapolis (planned)
- Indian Institute of Science Education and Research, Bhopal, India, March 2022
- Virginia Tech, February 2022
- Beedie School of Business, Simon Fraser University, February 2022
- University of Minnesota, February 2022
- Ohio State University, January 2022
- Colorado School of Mines, January 2022
- Indian Institute of Management, Bangalore, India, December 2021
- Tippie College of Business, University of Iowa, December 2021
- Indian School of Business, December 2021
- INFORMS Annual Meeting, October 2021, Anaheim
- INFORMS Annual Meeting, November 2020 (Virtual)
- Rising Stars 2020, October 2020 (Virtual)
- INFORMS Annual Meeting, November 2018, Phoenix
- INFORMS Annual Meeting, October 2017, Houston
- Applied Mathematics Seminar, December 2017, University of Washington, Seattle
- INFORMS Applied Probability Society Conference, July 2017, Evanston

- SIAM Conference on Optimization, May 2017, Vancouver, Canada
- INFORMS Annual Meeting, November 2015, Philadelphia

WORKSHOPS & VISITS

- Mixed-integer Programming Workshop at University of Southern California, Los Angeles - *May 2023 (planned)*
- Rising Stars 2020 at University of Texas, Austin - *October 2020 (virtual)*
- Industrial Mathematics Worksoop at Institute for Mathematics and its Applications, Minneapolis - *July 2017*
- Visiting student at International Centre for Theoretical Sciences, India - *September 2016*
Studied theoretical and numerical aspects of matrix completion problems.
- Statistical & Applied Mathematical Sciences Institute (SAMSI) Optimization Summer School - *August 2016*
- Software Carpentry Workshop at University of Washington - *January 2015*

PROFESSIONAL MEMBERSHIPS

- Institute for Operations Research & Management Sciences (INFORMS)
- INFORMS Forum for Women in OR/MS (WORMS)
- Society for Industrial & Applied Mathematics (SIAM)

Last updated on October 14, 2022.