

CONTACT INFORMATION	Rice University 6100 Main St, MS-134, Houston TX 77005	Email: <a href="mailto:saumya.sinha@rice.edu">saumya.sinha@rice.edu</a> Website: <a href="https://saumya-sinha.github.io">saumya-sinha.github.io</a>
RESEARCH INTERESTS	Healthcare systems, organ transplantation, optimization under uncertainty, robust optimization, dynamic programming.	
CURRENT AFFILIATION	<b>Postdoctoral Research Associate</b> Rice University, Houston TX Working with Andrew Schaefer on stochastic and dynamic optimization, with a focus on organ transplantation and other healthcare applications.	October 2018 - present
	<b>Visiting Postdoctoral Fellow</b> Houston Methodist Hospital, Houston TX Using operations research (OR) and analytics for risk-benefit assessment of organ transplant patients, and studying strategic implications of the same.	July 2019 - present
EDUCATION	<b>PhD, Applied Mathematics</b> (minor in Advanced Data Science) University of Washington, Seattle WA Dissertation: Robust dynamic optimization: theory and applications Advisor: Archis Ghatge	August 2018
	<b>MS, Applied Mathematics</b> University of Washington, Seattle WA	March 2015
	<b>MS, Mathematics</b> TIFR Centre for Applicable Mathematics, Bangalore, India	July 2013
	<b>BS (Honors), Mathematics</b> St. Stephen's College, University of Delhi, India	June 2011
PUBLICATIONS & PREPRINTS	6. Incentives in outcome-based regulation for solid organ transplantation (D. Mildebrath, <b>S. Sinha</b> , T. Lee, A.J. Schaefer, H.J. Huang, A.O. Gaber) <i>Submitted to Management Science</i> . 5. Relaxations and duality for multiobjective integer programming (A. Dunbar, <b>S. Sinha</b> , A.J. Schaefer) <i>Submitted to Mathematical Programming</i> . <i>Finalist for the INFORMS Undergraduate Operations Research Prize, 2020</i> 4. Approximate policy iteration for robust countable-state Markov decision processes ( <b>S. Sinha</b> , A. Ghatge) <i>Under second review at Operations Research</i> . 3. Characterizing rational transplant program response to outcome-based regulation (D. Mildebrath, T. Lee, <b>S. Sinha</b> , A.J. Schaefer, A.O. Gaber) <i>To appear in Operations Research</i> . 2. Policy iteration for robust nonstationary Markov decision processes ( <b>S. Sinha</b> , A. Ghatge) <i>Optimization Letters</i> , Vol 10(8), 1613-1628 2016. 1. Robust response-guided dosing ( <b>S. Sinha</b> , J. Kotas, A. Ghatge) <i>Operations Research Letters</i> , Vol 44(3), 394-399 2016.	
WORKING PAPERS	3. A robust multi-period Newsvendor model with inventory balance constraints ( <b>S. Sinha</b> , M.R. Wagner, A. Ghatge) <i>In preparation, target journal: Operations Research</i> 2. Leveraging programmatic risk assessment to increase transplant access ( <b>S. Sinha</b> , D. Mildebrath, A.J. Schaefer, H.J. Huang, A.O. Gaber) 1. Duality for countably infinite integer programs (R. Schellenberger, <b>S. Sinha</b> , A.J. Schaefer)	

TEACHING EXPERIENCE	<p><b>Instructor</b>, Rice University, Houston.</p> <ul style="list-style-type: none"> <li>- Developing a new Masters course on OR in healthcare - <i>Spring 2022 (planned)</i></li> </ul> <p><b>Instructor</b>, University of Washington, Seattle.</p> <ul style="list-style-type: none"> <li>- Applied linear algebra and numerical analysis - <i>Summer 2018 &amp; Summer 2017</i></li> <li>- Introduction to differential equations and applications - <i>Spring 2018</i></li> <li>- Partial differential equations and waves - <i>Spring 2017</i></li> </ul> <p><b>Teaching Assistant</b>, University of Washington, Seattle.</p> <ul style="list-style-type: none"> <li>- Vector calculus and complex variables - <i>Fall 2017 &amp; Fall 2015</i></li> <li>- Computational methods for data analysis - <i>Winter 2017</i></li> <li>- Methods for partial differential equations - <i>Spring 2016</i></li> <li>- Introduction to continuous mathematical modeling - <i>Summer &amp; Winter 2015</i></li> <li>- Applied linear algebra and numerical analysis - <i>Summer 2015</i></li> <li>- Introduction to differential equations and applications - <i>Summer 2015</i></li> <li>- Advanced methods for partial differential equations - <i>Spring 2015</i></li> <li>- Algebra with applications - <i>Fall &amp; Winter 2014</i></li> <li>- Calculus with analytic geometry II - <i>Fall 2013</i></li> </ul>
RESEARCH MENTORSHIP	<p><b>Student supervision</b>, Rice University, Houston <span style="float: right;">Since November 2018</span></p> <p>Working with undergraduate students on individual research projects.</p> <p><b>Graduate mentor</b>, University of Washington, Seattle <span style="float: right;">Spring 2018</span></p> <p>Independently supervised an undergraduate student in a reading course as part of the ‘Women in Applied Math Mentorship’ Program.</p> <p><i>Topic:</i> Choice modeling and its application to airline network management</p> <p><b>Undergraduate Research Mentor</b>, TIFR CAM, Bangalore, India <span style="float: right;">May 2013</span></p> <p>Supervised 20 undergraduate students in a Summer research program; assisted with designing models for optimal town-planning using network structure.</p>
GRANT DEVELOPMENT	<p>Played a central role in developing the following research grants:</p> <ul style="list-style-type: none"> <li>- National Science Foundation, CMMI-1933373: Stochastic and Dynamic Chemotherapy Planning and Dosing</li> <li>- Office of Naval Research: A Neural Network Approach for Integer Programming Duality</li> <li>- National Institutes of Health, 1R01CA257814-01: SCH: Personalized Rescheduling of Adaptive Radiation Therapy for Head &amp; Neck Cancer</li> </ul>
PROFESSIONAL SERVICE & OUTREACH	<p><b>Officer</b> for the INFORMS Forum for Women in OR &amp; Management Sciences (WORMS)</p> <ul style="list-style-type: none"> <li>- Secretary, 2020</li> <li>- Vice-President of Communications, 2021-2022</li> </ul> <p><b>Session Chair</b> at INFORMS Annual Meetings</p> <ul style="list-style-type: none"> <li>- OR Methods for Health Policy Design, Anaheim 2021</li> <li>- Robust and Dynamic Stochastic Optimization, Phoenix 2018</li> <li>- Statistics- and Information-based Approaches to Stochastic Optimization, Houston 2017</li> </ul> <p><b>Mentor</b></p> <ul style="list-style-type: none"> <li>- WORMS Mentorship Program, 2018 and 2021</li> <li>- ‘Women in Applied Math Mentorship’ Program, University of Washington, 2018</li> </ul> <p><b>Panelist</b> on a ‘Careers in Mathematics’ panel for undergraduate students in mathematical sciences, Rice University, December 2020</p>

**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 Moves, Pacific Science Center, Seattle, *March 2016*
- 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

#### TALKS

- Incentives in outcome-based regulation for solid organ transplantation  
INFORMS Annual Meeting, October 2021, Anaheim (*Sessions: SD22, VWD10*)
- Relaxation and duality for multiobjective integer programming  
INFORMS Annual Meeting, November 2020 (Virtual)
- Patient Selection for lung transplantation: a transplant program perspective  
Rising Stars 2020, October 2020 (Virtual)
- Robust countable-state Markov decision processes  
INFORMS Annual Meeting, November 2018, Phoenix  
INFORMS Annual Meeting, October 2017, Houston  
INFORMS Applied Probability Society Conference, July 2017, Evanston  
SIAM Conference on Optimization, May 2017, Vancouver, Canada
- A robust multi-period Newsvendor model with inventory balance constraints  
INFORMS Annual Meeting, November 2018, Phoenix  
Applied Mathematics Seminar, December 2017, University of Washington, Seattle
- Policy iteration for robust nonstationary Markov decision processes  
INFORMS Annual Meeting, November 2015, Philadelphia

#### WORKSHOPS & VISITS

- Rising Stars 2020 at University of Texas, Austin - *October 2020 (Virtual)*
- Industrial Mathematics Workshop 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

##### SOCIETIES

- |                                                                     |                |
|---------------------------------------------------------------------|----------------|
| Member of:                                                          |                |
| • Institute for Operations Research & Management Sciences (INFORMS) | 2015 - present |
| • INFORMS Forum for Women in OR/MS (WORMS)                          | 2016 - present |
| • Society for Industrial & Applied Mathematics (SIAM)               | 2013 - 2019    |
| • University of Washington Student Chapter of SIAM                  | 2013 - 2018    |

SELECTED COURSEWORK	- Optimization in System Sciences	- Machine Learning
	- Mathematical Programming	- Computational Methods for Data Analysis
	- Network Optimization	- Econometrics
	- Integer Programming	- Data Visualization
SELECTED COURSE PROJECTS	• Mapping dengue vulnerability in Peru, <i>Data Visualization</i> , Spring 2018	
	• Airline revenue management using mixed-integer programming, <i>Integer Programming</i> , Winter 2017	
	• Binary classification using Stochastic Dual Coordinate Ascent, <i>Machine Learning</i> , Fall 2016	
	• Influence of food access and poverty on obesity, <i>Introduction to Data Science</i> , Fall 2015	
REFERENCES	<b>Andrew Schaefer</b> (Postdoctoral advisor)	
	Noah Harding Chair and Professor of Computational and Applied Mathematics, Rice University, Houston. Email: <a href="mailto:andrew.schaefer@rice.edu">andrew.schaefer@rice.edu</a>	
	<b>Archis Ghate</b> (PhD advisor)	
	Professor and Associate Chair, Industrial and Systems Engineering, University of Washington, Seattle. Email: <a href="mailto:archis@uw.edu">archis@uw.edu</a>	
	<b>Michael R. Wagner</b> (Doctoral committee member, co-author)	
	Associate Professor of Operations Management, Foster School of Business, University of Washington, Seattle. Email: <a href="mailto:mrwagner@uw.edu">mrwagner@uw.edu</a>	
	<b>Taewoo Lee</b> (Co-author)	
	Assistant Professor, Industrial Engineering, University of Houston, Houston. Email: <a href="mailto:tlee6@uh.edu">tlee6@uh.edu</a>	

Last updated on October 19, 2021.