

Curriculum Vitae

Saumya Sinha

CONTACT INFORMATION	Rice University 6100 Main St, Houston TX 77005	Email: saumya.sinha@rice.edu Website: saumya-sinha.github.io
RESEARCH INTERESTS	Operations research in organ transplantation and other healthcare applications, optimization under uncertainty, dynamic programming, data-driven optimization.	
CURRENT AFFILIATION	Postdoctoral Research Associate Rice University, Houston TX Working with Andrew Schaefer on stochastic, dynamic and mixed-integer optimization, with a focus on organ transplantation and other healthcare applications. Visiting Postdoctoral Fellow Houston Methodist Hospital, Houston TX Using operations research methodology for risk-benefit assessment of organ transplant patients, and studying strategic implications of the same.	October 2018 - present July 2019 - present
EDUCATION	PhD, Applied Mathematics (minor in Advanced Data Science) University of Washington, Seattle WA Dissertation: Robust dynamic optimization: theory and applications Advisor: Archis Ghatge MS, Applied Mathematics University of Washington, Seattle WA MS, Mathematics TIFR Centre for Applicable Mathematics, Bangalore, India BS (Honors), Mathematics St. Stephen's College, University of Delhi, India	August 2018 March 2015 July 2013 June 2011
PUBLICATIONS	<ol style="list-style-type: none">6. Relaxations and duality for multiobjective integer programming (A. Dunbar, S. Sinha, A.J. Schaefer.) <i>Submitted to Mathematical Programming.</i> <i>Finalist for the INFORMS Undergraduate Operations Research Prize, 2020</i>5. A robust multi-period newsvendor model with inventory balance constraints (S. Sinha, M.R. Wagner, A. Ghatge.) <i>Submitted to Management Science.</i>4. Approximate policy iteration for robust countable-state Markov decision processes (S. Sinha, A. Ghatge) <i>In preparation.</i>3. Optimizing lung transplantation waitlist composition from the transplant program's perspective (D. Mildebrath, T. Lee, S. Sinha, A.J. Schaefer, A.O. Gaber) <i>Under second review at Operations Research.</i>2. Policy iteration for robust nonstationary Markov decision processes (S. Sinha, A. Ghatge.) <i>Optimization Letters</i>, Vol 10(8), 1613-1628 2016.1. Robust response-guided dosing (S. Sinha, J. Kotas, A. Ghatge) <i>Operations Research Letters</i>, Vol 44(3), 394-399 2016.	

TEACHING EXPERIENCE	Graduate Instructor , University of Washington, Seattle.	
	<ul style="list-style-type: none"> - Applied Linear Algebra And Numerical Analysis - <i>Summer 2018</i> and <i>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.	
	<ul style="list-style-type: none"> - Vector Calculus and Complex Variables - <i>Fall 2017</i> and <i>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</i> and <i>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</i> and <i>Winter 2014</i> - Calculus with Analytic Geometry II - <i>Fall 2013</i> 	
MENTORSHIP	Student supervision , Rice University, Houston	Since November 2018
	Working with undergraduate students on individual research projects.	
	Graduate mentor , University of Washington, Seattle	Spring 2018
	Independently supervised an undergraduate student in a reading course as part of the ‘Women in Applied Math Mentorship’ Program.	
	<i>Topic</i> : 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	Elected board-member for the INFORMS Forum for Women in Operations Research and Management Sciences (WORMS), since 2020.	
	<ul style="list-style-type: none"> - Secretary, 2020 - Vice-President of Communications, 2021-2022 	
	Session Chair , INFORMS Annual Meeting, 2018	
	Title: Robust and Dynamic Stochastic Optimization	
	Session Chair , INFORMS Annual Meeting, 2017	
	Title: Statistics- and Information-based Approaches to Stochastic Optimization	
	Volunteer for multiple community outreach events – conducted math-based games and activities for K-12 students, served as judge for student competitions.	
	<ul style="list-style-type: none"> - Science and Engineering Fair of Houston, <i>February 2020 & 2021</i> - University of Washington Math Fair, <i>March 2014 & December 2013</i> - Julia Robinson Math Festival, <i>March 2014 & April 2015</i> - Math Hour Olympiad, <i>June 2014 & June 2015</i> - Mathcounts, <i>February 2015</i> - Math Moves, Pacific Science Center, Seattle, <i>March 2016</i> - Math Olympiad, Seattle, <i>May 2016</i> 	

Co-organizer, Student Seminar Series at TIFR-CAM

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

AWARDS & RECOGNITION	<ul style="list-style-type: none">• ‘Rising Stars in Computational and 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 and Training, India, 2006	
TALKS	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• Rising Stars 2020 at University of Texas, Austin - <i>October 2020 (Virtual)</i>• Industrial Mathematics Workshop at Institute for Mathematics and its Applications, Minneapolis - <i>July 2017</i>• Visiting student at International Centre for Theoretical Sciences, India - <i>September 2016</i> Studied theoretical and numerical aspects of matrix completion problems.• SAMSI Optimization Summer School at Statistical & Applied Mathematical Sciences Institute - <i>August 2016</i>• Software Carpentry Workshop at University of Washington - <i>January 2015</i>	
SELECTED COURSEWORK	<ul style="list-style-type: none">- Optimization in System Sciences- Mathematical Programming- Network Optimization- Integer Programming	<ul style="list-style-type: none">- Machine Learning- Computational Methods for Data Analysis- Econometrics- Data Visualization
SEMINARS & PROJECTS	<ul style="list-style-type: none">• Mapping dengue vulnerability in Peru <i>Final course project, Data Visualization, Spring 2018</i>	

- Airline revenue management using mixed-integer programming
Final course project, Integer Programming, Winter 2017
- Binary classification using Stochastic Dual Coordinate Ascent
Final course project, Machine Learning, Fall 2016
- Influence of food access and poverty on obesity
Final course project, Introduction to Data Science, Fall 2015
- Adaptive mesh refinement for 1-D hyperbolic partial differential equations
Final course project, Conservation Laws and Finite Volume Methods, Winter 2015
- Approximate solution of weakly-coupled Markov decision processes: application to allocation problems
Final Seminar, Reading Course, Autumn 2013
- Stability and bifurcation behavior in non-linear dynamical systems: logistic map
Final course project, Numerical Analysis and Scientific Computing, Autumn 2012
- Hausdorff dimension of the Cantor set
Final course project, Measure Theory, Winter 2012
- Web-search algorithms: Google PageRank
Final course project, Linear Algebra, Autumn 2011
- Isomorphism in groups of infinite cardinality
Final course project, Abstract Algebra II, March 2011
- Optimization algorithms: theory of the simplex method.
Final course project, Linear Programming & Game Theory, March 2011

Last updated on March 15, 2021.