Curriculum Vitae — Saumya Sinha

Contact Information

University of Washington
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Interests

Optimization under uncertainty, applications in operations research, dynamic programming, mathematical modeling.

Education

Ph.D., Applied Mathematics (Minor in Advanced Data Science)
University of Washington, Seattle, WA, USA. Sep, 2013 - present.
Advisor: Archis Ghate

M.S., Applied Mathematics
University of Washington, Seattle, WA, USA. March, 2015. *Cumulative GPA*: 3.85/4.0

M.S., Mathematics
Tata Institute of Fundamental Research, Centre for Applicable Mathematics (TIFR-CAM), Bangalore, India. July, 2013. *Cumulative Grade*: 83.05 %

B.Sc. (Honors), Mathematics
St. Stephen's College, University of Delhi, India. June, 2011. *Cumulative Grade*: 81.75 %

Publications

Robust response-guided dosing (**S. Sinha**, J. Kotas, A. Ghate) *Operations Research Letters*, Vol 44(3), 394-399, 2016.

Policy iteration for robust nonstationary Markov decision processes (**S. Sinha**, A. Ghate.) *Optimization Letters*, Vol 10(8), 1613-1628, 2016.

Approximate policy iteration for robust countable-state Markov decision processes (**S. Sinha**, A. Ghate) *Under revision, available upon request.*

Robust countable-state MDPs with unbounded costs. *In preparation.*

Robust newsvendor model under demand ambiguity. *In preparation.*

Work Experience

Instructor, University of Washington, Seattle.
- Amath 352, Applied Linear Algebra And Numerical Analysis - *Summer 2017*
- Amath 353, Partial Differential Equations and Waves - *Spring 2017*

Teaching Assistant, University of Washington, Seattle.
Delivered lectures/recitations, led group activities, planned and conducted problem-solving sessions, graded homework, quizzes and exams, and held office hours.
- Amath 401/501, Vector Calculus and Complex Variables - *Fall 2015* and *Fall 2017*
- Amath 482/582, Computational Methods for Data Analysis - *Winter 2017*
- Amath 403/503, Methods for Partial Differential Equations - *Spring 2016*
- Amath 383, Introduction to Continuous Mathematical Modeling - *Summer* and *Winter 2015*
- Amath 352, Applied Linear Algebra And Numerical Analysis - *Summer 2015*
- Amath 351, Introduction to Differential Equations and Applications - *Summer 2015*
- Amath 569, Advanced Methods for Partial Differential Equations - *Spring 2015*
- Math 111, Algebra with Applications - *Fall* and *Winter 2014*
- Math 125, Calculus with Analytic Geometry II - *Fall 2013*

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

Conferences & Workshops

INFORMS Annual Meeting - *October 2017, Houston, TX*

Industrial Mathematics Worksop - *July 2017, Institute for Mathematics and its Applications*

INFORMS Applied Probability Society Conference - *July 2017, Evanston, IL*

SIAM Conference on Optimization - *May 2017, Vancouver, BC, Canada*

Visiting student at International Centre for Theoretical Sciences - *September 2016, India*
Studied theoretical and numerical aspects of matrix completion problems in machine learning.

SAMSI Optimization Summer School - *August 2016, Statistical & Applied Mathematical Sciences Institute*

INFORMS Annual Meeting - *November 2015, Philadelphia, PA*

Software Carpentry Workshop - *January 2015, University of Washington*

Seminars & Projects

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

Selected Coursework

- Optimization in System Sciences
- Mathematical Programming
- Network Optimization
- Integer Programming
- Machine Learning
- Computational Methods for Data Analysis
- Probability & Statistics
- Econometrics

Professional Service & Outreach

Volunteer

- University of Washington Math Fair, *March, 2014 & December, 2013.* Conducted Math-based games and activities for students in third to sixth grade at local elementary schools, along with other graduate students.
- Julia Robinson Math Festival, *March, 2014 & April, 2015.* Led Math-based activity tables at day-long event for 4^{th} to 12^{th} grade students at the University of Washington
- Math Hour Olympiad, *June, 2014 & June, 2015.* Served as a judge for this advanced Math competition for 6^{th} to 10^{th} graders.
- Mathcounts, *February, 2015.* Assisted with scoring for Math-based competition for middle-school students.

- Pacific Science Center, Seattle, *March, 2016.* Led a Math-based activity-table for school-children of varying age-groups as part of the 'Math Moves' program.
- Math Olympiad, Seattle, *May, 2016.* Provided grading/scoring support at the Washington State Middle School Math Olympiad.

Organizing Team, Student Seminar Series at TIFR-CAM.
Co-ordinated weekly campus talks on mathematics/science related topics by graduate students.

Professional Societies

Member of:

Society for Industrial & Applied Mathematics (SIAM)	2013 - present.
University of Washington Student Chapter of SIAM (SIAM UW)	2013 - present.
Association for Women in Mathematics (AWM)	2014 - present.
Institute for Operations Research & Management Sciences (INFORMS)	2015 - present.
American Mathematical Society (AMS)	2015 - present.
University of Washington Student Chapter of AWM	2016 - present.

Awards and Fellowships

William and Marilyn Conner Endowed Fellowship, a top-Scholar award from the University of Washington Graduate School. (Spring, 2014)

INSPIRE Scholarship, a merit-based award by the Department of Science & Technology, Government of India. (2008)

National Talent Search Scholarship (NTSS), awarded to 500 out of over 100,000 applicants on the basis of multiple written and oral tests, by the National Council for Educational Research and Training, India. (2006)

Technical Skills

Proficient with MATLAB. Python and R.
Familiar with AMPL, CPLEX, SQL, MS Excel, Mathematica.