Amitabh Sinha   August 13, 2017

Amazon

Principal Scientist, Modeling and Optimization   (August 2017 – present)

Stephen M. Ross School of Business
University of Michigan
amitabh@umich.edu

Associate Professor of Technology and Operations   (2012 – present)
(On leave, August 2017 – present)

Ford Motor Co. Co-Director of the
Tauber Institute for Global Operations   (July 2015 – June 2017)

Assistant Professor   (2004 – 2012)

RESEARCH INTERESTS:
Ecommerce (particularly logistics of Ecommerce); Data science for business; Supply
chain management; logistics.

EDUCATION:

- August 1999 – May 2004: Ph.D. in Algorithms, Combinatorics and Optimization, Tepper School of Business (formerly GSIA), Carnegie Mellon University.

- July 1994 – May 1999: M.S. in Mathematics and Computer Applications, Indian Institute of Technology, Delhi.

JOURNAL PUBLICATIONS:

1. Y. Lei, S. Jasin, and A. Sinha, Joint dynamic pricing and order fulfillment for e-commerce retailers, *Manufacturing and Services Operations Management*, forthcoming, accepted 2017.

2. S. Devalkar, R. Anupindi and A. Sinha, Dynamic risk management of commodity operations: Model and analysis, *Manufacturing and Services Operations Management*, forthcoming, accepted 2017.

3. A. Qi, H.-S. Ahn, and A. Sinha, Capacity investment with demand learning, *Operations Research*, 65(1):145–164, 2017.

4. S. Jasin and A. Sinha, An LP-based correlated rounding scheme for multi-item ecommerce order fulfillment, *Operations Research*, 63(6):1336–1351, 2015.

5. A. Qi, H.-S. Ahn, and A. Sinha, Investing in a shared supplier in a competitive market: stochastic capacity case, *Production and Operations Management*, 24(10):1537–1551, 2015.

6. A. Gupta, M. Pál, R. Ravi and A. Sinha, Sampling and cost-sharing: Approximation algorithms for stochastic optimization problems, *SIAM Journal on Computing*, 40(5):1361–1401, 2011.

7. S. Devalkar, R. Anupindi and A. Sinha, Integrated optimization of procurement, processing and trade of commodities, *Operations Research*, 59(6):1369–1381, 2011.

8. W. Lovejoy and A. Sinha, Efficient structures for innovative social networks, *Management Science*, 56(7):1127–1145, 2010.

9. R. Ravi and A. Sinha, Approximation algorithms for multicommodity facility location problems, *SIAM Journal on Discrete Mathematics*, 24(2):538–551, 2010.

10. R. Chen, S. AhmadBeygi, D. Beil, A. Cohn and A. Sinha, Solving truckload procurement auctions over an exponential number of bundles, *Transportation Science*, 43(4):493–510, 2009.

11. J. Chuzhoy, A. Gupta, J. Naor and A. Sinha, On the approximability of some network design problems, *ACM Transactions on Algorithms*, 4(2):23, 2008.

12. R. Ravi and A. Sinha, Approximating k-cuts using network strength as a Lagrangean relaxation, *European Journal of Operational Research*, 186:77–90, 2008.

13. A. Gupta, R. Ravi and A. Sinha, LP rounding approximation algorithms for stochastic network design, *Mathematics of Operations Research*, 32(2):345–364, 2007.

14. S. Chawla, U. Rajan, R. Ravi and A. Sinha, Min-max payoffs in a two-player location game, *Operations Research Letters*, 34(5):499–507, 2006.

15. R. Ravi and A. Sinha, Hedging uncertainty: Approximation algorithms for stochastic optimization problems, *Mathematical Programming A*, 108(1):97–114, 2006.

16. R. Ravi and A. Sinha, Approximation algorithms for problems combining facility location and network design, *Operations Research*, 54(1):73–81, 2006.

17. G. Even, N. Garg, J. Könemann, R. Ravi and A. Sinha, Min-max tree covers of graphs, *Operations Research Letters* 32(4):309–315, 2004.

18. J. Könemann, A. Levin and A. Sinha, Approximating the degree-bounded minimum-diameter spanning tree problem, *Algorithmica*, 41(2):117–129, 2004.

19. N. Bansal, K. Dhamdhere, J. Könemann and A. Sinha, Non-clairvoyant scheduling for minimizing mean slowdown, *Algorithmica*, 40(4):305–318, 2004.

20. J. Könemann, Y. Li, O. Parekh and A. Sinha, An approximation algorithm for the edge-dilation k-center problem, *Operations Research Letters* 32(5):491–495, 2004.

21. J. Könemann, G. Konjevod, O. Parekh and A. Sinha, Improved approximations for tour and tree covers, *Algorithmica* 38(3):441–449, 2004.

WORKING PAPERS, WHITE PAPERS, TRADE PUBLICATIONS:

1. A. Govindarajan, A. Sinha, and J. Uichanco, Inventory Optimization for Fulfillment Integration in Omnichannel Retailing, 2017.

2. K. Siebrecht, A. Sinha, S. Johanson and V. Rajeevan, Dynamic Warehousing Strategies: On-demand Warehousing for eCommerce, Tauber Institute White Paper, 2016.

   Also published as:

   The Uberization of Warehousing, Supply Chain Management Review, November 2016.

3. Y. Lei, S. Jasin, and A. Sinha, Near-optimal bisection search for bonparametric dynamic pricing with inventory constraint, 2015.

4. A. Sinha and P. Weitzel, ECommerce Supply Chain Insights in Groceries and Consumer Packaged Goods in the United States, Tauber Institute White Paper, 2015.

RESEARCH PRESENTATIONS:

1. Inventory optimization for fulfillment integration in omnichannel retailing, CORS South Western Operations Research Day, Waterloo, Canada, 2017.

2. Dynamic warehousing strategies for ecommerce fulfillment, Consortium for Operational Excellence in Retailing, Philadelphia PA, 2016.

3. Ecommerce supply chain insights in groceries, Consortium for Operational Excellence in Retailing, Cambridge MA, 2015.

4. To share or not to share? Capacity investments in a shared supplier, MSOM Annual Conference, Fontainebleau, France, 2013.

5. Dynamic risk management of commodity operations: Model and analysis, University of Michigan Industrial and Operations Engineering, 2011.

6. A stochastic multicommodity flow approach to combinatorial truckload auctions, INFORMS Midwestern Regional Conference, Columbus, 2011.

7. Dynamic risk management of commodity operations: Model and analysis, POMS Annual Meeting, Reno, 2011.

8. A stochastic multicommodity flow approach to combinatorial truckload auctions, POMS Annual Meeting, Reno, 2011.

9. Efficient structures for innovative social networks, Tepper School of Business, Carnegie Mellon University, 2011.

10. Efficient structures for innovative social networks, INSNA Sunbelt XXXI, Tampa, 2011.

11. Efficient structures for innovative social networks, INFORMS Annual meeting, Austin, 2010.

12. Efficient structures for innovative social networks, Hosmer luncheon, Ross School of Business, University of Michigan, 2010.

13. Efficient structures for innovative social networks, MSOM Annual Conference, Haifa, Israel, 2010.

14. Equilibria in a Hotelling model: First-mover advantage? Marketing Science Annual Conference, Ann Arbor, 2009.

15. First mover (dis)advantage in duopolistic location/pricing games, INFORMS Annual meeting, Seattle, 2007.

16. Integrated optimization of the procurement, processing and trade of commodities, School of Business Administration, University of Miami, 2007.

17. Is there really a first-mover advantage when entering a new market?, Hosmer luncheon, Ross School of Business, University of Michigan, 2005.

18. Stochastic network design, INFORMS Annual meeting, Denver, 2004.

19. Stochastic network design, 10th International conference on stochastic optimization, Tucson, 2004.

20. Boosted sampling: Approximation algorithms for stochastic optimization, Ross School of Business, University of Michigan, 2004.

21. Boosted sampling: Approximation algorithms for stochastic optimization, Stern School of Business, New York University, 2004.

22. Boosted sampling: Approximation algorithms for stochastic optimization, Kenan-Flagler Business School, University of North Carolina, 2004.

23. Boosted sampling: Approximation algorithms for stochastic optimization, Graduate School of Business, University of Chicago, 2004.

24. Approximation algorithms for stochastic network optimization, INFORMS Annual meeting, Atlanta, 2003.

25. Min-max payoffs of a location game, Workshop on Algorithmic Game Theory and the Internet, Dagstuhl, Germany, 2003.

26. Approximating the multiple source-sink network design problem, Singapore/ Pittsburgh Logistics and Operations Workshop, Carnegie Bosch Institute, Pittsburgh, 2002.

27. Integrated logistics: Approximation algorithms combining facility location and network design, Max Planck Institüt für Informatik, Saarbrücken, Germany, 2002.

TEACHING:

- DS 120 X, *Introduction to Data Analytics for Managers*, MOOC on edX.org, first offering May 2017.

- Executive Education: Multiple programs and sessions, typically focusing on Data Analytics, Big Data, Machine Learning, and Artificial Intelligence, 2016 onwards.

- TO 701, *Topics in Global Operations*, Tauber Institute survey class (MBAs and graduate engineers), 2016.

- TO 640, *Big Data Management Tools and Techniques*, MBA elective, 2015–2017.

- TO 502, *Business Statistics*, MBA core, 2007–2016.

- EMBA 603, *Business Analytics and Statistics for Executives*, EMBA, 2012–2016.

- TO 621, *Logistics*, MSCM core/MBA elective, 2009–2015.

- TO 301, *Business Analytics and Statistics*, BBA core, 2014.

- OMS 618, *Supply Chain Analytics*, MSCM core/MBA elective.

- OMS 301, *Business Statistics and Management Science*, BBA core, 2005–2006.

- OMS 320, *Logistics and Supply Chain Management*, BBA elective, 2006–2008.

- OMS 885, *Research Topics in OMS: Logistics Networks: Theory and Applications*, PhD.

- BA 553, *Multi-disciplinary Action Projects*, MBA core, 2005.

- Case authored: Grainger: Re-engineering an International Supply Chain, with G. Scalzitti, WDI GlobaLens Case 1-429-084, 2010.

AWARDS & HONORS:

- Victor L. Bernard Teaching Leadership Award, Ross School of Business, 2017.

- NSF Award CMMI-1561791 for $246,263, Joint Optimization of Pricing, Assortment, and Fulfillment in Omnichannel Retail, co-PI, with PI Stefanus Jasin and co-PI Joline Uichanco, June 2016 – May 2019.

- Sponsored research grant from Flexe.com, $3,000, Flexible warehousing capacity for ecommerce, March 2016 – June 2016.

- Sponsored research grant from Proctor and Gamble, $36,893, Ecommerce Distribution Logistics, June 2014 – June 2015.

- Tauber Institute Case Writing Award, 2010.

- NSF Award DMI-0620153 for $159,114, Simplified Bidding and Solution Structures for Combinatorial Procurement Auctions, co-PI, with PI Amy Cohn and co-PI Damian Beil, September 2006 – August 2009.

- Gerald. L. Thomson Doctoral Dissertation Award in Management Science, Tepper School of Business, CMU, 2004.

- Best Student Teacher Award by the Department of Economics at the Tepper School of Business, CMU, for the class *Quantitative Economic Analysis* taught in Spring 2004.

- Carnegie Bosch Institute Ph.D. Fellowship, 2002-2003.

- William Larimer Mellon Fellowship, Tepper School of Business, 1999-2002.

SERVICE AND OTHER PROFESSIONAL ACTIVITIES:

- Ad-hoc reviewer for (among others) Discrete Applied Mathematics, European Journal on Operational Research, Journal of Algorithms, Journal of the ACM, Management Science, Manufacturing and Service Operations Management, MSOM Annual Conference, MSOM Student Paper Competition, Marketing Science, Mathematics of Operations Research, Naval Research Logistics, Operations Research, Production and Operations Management, SIAM Journal on Computing, Transportation Science.

- MSOM Committee on PhD programs, 2014.

- MSOM 2011 Conference Organizing Committee, 2011.

- NSF Panelist, 2007.

- Reviewer for AMS Mathematical Reviews, 2008 – 2010.

- Co-advisor for student teams for the Tauber Institute of Global Operations, May–August 2005–2015. Companies advised: Amazon, Ametek, BorgWarner, Chrysler, Cisco, ConAgra, General Electric, General Mills, Grainger, Honeywell, Pepsico, Ryder, Target, UPS, Verizon.

- External consulting for Flexe.com, 2016.

- External consulting for Unilever, 2015.

- External consulting for Starboard Solutions Corp., 2015.

- External consulting for P3 North America, 2012.

- TO department PhD program co-ordinator, 2012–2015.

- OMS departmental web-page designer and administrator, 2005–2008.

- OMS departmental seminar co-ordinator, 2008–2009, 2011–2012.

- INFORMS member, 2003–present.

- CSCMP member, 2005–present.

STUDENTS SUPERVISED:

1. Manqi (Maggie) Li (2015–present), co-chair of doctoral committee, with Y. Huang.

2. Aravind Govindarajan (2014–present), co-chair of doctoral committee, with J. Uichanco.

3. Yanzhe (Murray) Lei (2012–present), co-chair of doctoral committee, with S. Jasin.

4. Anyan Qi (2008–2014), co-chair of doctoral committee, with H.S. Ahn.

5. Sripad Devalkar (2005–2011), co-chair of doctoral committee, with R. Anupindi.

6. Member of doctoral committee for (graduating year in parentheses): Young-Chae Hong (2017), Yuhui Shi (2017), Chate Eamrungroj (2017), Arleigh Waring (2012), Eren Cetinkaya (2011), Richard Chen (2010), Tara Terry (2009), Jooyong Jun (2009), Shervin AhmadBeygi (2008), Sarah Root (2007), Kurt deMaagd (2006).

7. Undergraduate Research Opportunity Program: Sophie Partington (2016), Connor Tullis (2016), Megan Graham (2015), Sujay Shetty (2015), Madeline Stroin (2014), Connor Hawley (2014), Aditi Padmanabhan (2013), Michael Werley (2013), Hershel Perlmutter (2012), Santosh Kantharaj (2007), Yong-Ming Jeffrey Woo (2006).