

Sonia

Professor +91-522-2736629 (O)
Decision Sciences Group +91-522-2736513 (R)
Indian Institute of Management +91-9935194727 (M)
Prabandh Nagar, Off Sitapur Road sonia@iiml.ac.in
Lucknow-226013, INDIA sonia@iitdalumni.com

ACADEMIC POSITIONS

Professor - Indian Institute of Management Lucknow Jul 2019 – Present
Associate Professor - Indian Institute of Management Lucknow Dec 2013 – Jun 2019
Visiting Associate Professor - Nanyang Technological University Singapore Jul 2017 – Jul 2018
Assistant Professor - Indian Institute of Management Lucknow May 2005 – Dec 2013
Research Scholar - Indian Institute of Technology Delhi Jul 1999 – Oct 2004

EDUCATION

Indian Institute of Technology Delhi, India Jul 1999 – Aug 2005
Ph.D. in Operations Research CGPA - 9.2/10
Two Stage Optimization in Transportation and Assignment Problems
Indian Institute of Technology Roorkee, India 1997-1999
M.Sc. in Applied Mathematics 79.90%

RESEARCH ACTIVITIES

Published Research Articles:

- Sonia and Shalabh Singh (2018) **Bi-Criteria Transportation Problem with Multiple Parameters** *Annals of Operations Research* 269 (1–2): 667–692
- Shalabh Singh and Sonia (2017) **Multi-choice programming: an overview of theories and applications** *Optimization* 66 (10): 1713-1738.
- Bhawesh Sah, Rohit Titiyal and Sonia (2017) **A goal programming and simulation based study for overall process improvement in an Indian hospital** *Journal of Services and Operations Management* 27 (4): 439-456. (accepted Dec 2015).
- Sonia and Ankit Khandelwal (2017) **Pseudo Paradox in Minimum Cost Network Flow Problem** *International journal of operational research* 30 (2): 220-232. (accepted Feb 2015).
- Sonia (2012) **Flow Constrained Minimum Cost Flow Problem** *OPSEARCH* 49 (2): 154-168.
- Sonia, Ankit Khandelwal and M C Puri (2008) **Bilevel Time Minimizing Transportation Problem** *Discrete Optimization* 5: 714-723.
- Sonia and M C Puri (2008) **Two Stage Time Minimizing Assignment Problem** *Omega* 36: 730-740.
- Sonia and M C Puri (2006) **On critical capacity of arcs in a directed network** *Applied Mathematics and Computation* 181: 1568-1576.
- Sonia and M C Puri (2006) **Bilevel Time Minimizing Assignment Problem** *Applied Mathematics and Computation* 183: 990-999.
- Sonia and M C Puri (2006) **Max-Min Sum Minimization Transportation Problem** *Annals of OR* (143): 265-275.
- Sonia and M C Puri (2004) **Two Level Hierarchical Time Minimizing Transportation Problem** *TOP* 12(2): 301-330.
- Sonia, Rita Malhotra and M C Puri (2004) **Two Stage Interval Time Minimizing Transportation Problem** *ASOR Bulletin* 23(1): 2-14.

- Sonia and Rita Malhotra (2002) **A Polynomial Algorithm for a Two-Stage Time Minimizing Transportation Problem** *OPSEARCH* 39 (5&6): 251-166.

Articles in Progress:

- Shalabh Singh, Sonia and Ankit Khandelwal, **Decision-Making in a Multi-Choice Environment: A Study of Shipping Carriers in US** (*submitted*)
- Shalabh Singh and Sonia, **Optimizing Trade-Off Decisions in a Multi-Choice Scenario** (*submitted*)
- Sonia and A Punnen, **Survey of Bottleneck Optimization Problems**
- Shalabh Singh and Sonia, **Computational comparison in Multi-Choice Assignment Problems**

Research Collaboration:

- Visited Simon Fraser University, Surrey, Canada for a month in May 2014 to work with Prof Abraham Punnen on bottleneck optimization problems.
- Active collaboration with Ankit Khandelwal, Regional Head – Analytics and Optimization Solutions at FICO Singapore on network flow problems and Analytics.

Book Edited:

- “**Combinatorial Optimization - Some Aspects**” edited by Dr. Rita Malhotra, Dr. C S Lalitha, Dr. Pankaj Gupta, Dr. Aparna Mehra and **Dr. Sonia**, Narosa publishing house (2007)

Review Activities:

- Member of the Editorial Board of “Metamorphosis – A Journal of Management Research” published by Sage publishing in association with Indian Institute of Management, Lucknow
- Involved in reviewing research articles for various conferences and journals including EJOR, OPSEARCH, APJOR, Applied Mathematics & Computation, Optimization

Conference Presentations:

- Participated in International Conference on Recent Advances in Optimization Theory and Applications (RAOTA 2016) held at University of Delhi, India during Jan 30-31, 2016
- APORS -2009 held at Jaipur, India during Dec 6 - 9, 2009
- *23rd European Conference on Operational Research* held at Bonn, Germany during July 5 - 8, 2009
- *41st Annual Convention of ORSI* held at Tirupati (AP) India during December 15-17, 2008.
- *International Conference on Nonconvex Programming: Local and Global Approaches (Theory, Algorithms and Applications)* at National Institute for Applied Sciences- Rouen, France held during December 17-21, 2007.
- 40th Annual Convention of ORSI held at Department of Science and Technology, New Delhi, India during December 4-6, 2007.
- Participated in a National Symposium on Recent Advances in Optimization Theory and Applications held at University of Delhi, India during October 27-28, 2006.
- 38th Annual Convention of ORSI held at IISc Bangalore, India during Dec 27-29, 2005.
- National Conference on Tools and Techniques for Quality and Productivity Improvement held at ISI Delhi, India during Feb 8-9, 2005.
- An international conference: ORSI 2005 held at Ahmedabad, India during Jan 8-11, 2005.
- APORS 2003 held at Hotel Grand Inter-Continental, New Delhi, India during Dec 8-11, 2003.
- 35th Annual Convention of ORSI: International Conference on Operational Research and Development (ICORD 2002) held at Anna University, Chennai during Dec 26-29, 2002.
- National Conference on Transport Systems held at Indian Institute of Technology, Delhi during Apr 24-26, 2002.
- 34th Annual Convention of ORSI held in Kolkata during Dec 27-29, 2001.
- International Conference on Mathematical Modeling held at the IIT Roorkee during Jan 27-29, 2001.
- 33rd Annual Convention of ORSI held at the IIM Ahmedabad during Dec 14-16, 2000.

TEACHING EXPERIENCE

Course Instructor (NTU Singapore)

- **MSc Courses**
 - Quantitative Methods for Supply Chain and Logistics
 - Manufacturing and Service Operations Management

Tutorial Instructor (NTU Singapore)

- **Undergraduate Course**
 - Basic Engineering Mathematics

Course Instructor (IIM Lucknow)

- **PGP (Post Graduate) Courses**
 - Quantitative Analysis for Management - I (Basic Probability, Statistics & Linear Programming)
 - Quantitative Analysis for Management - III (Advanced Operations Research)
 - Preparatory Mathematics
 - Game Theory & Applications
- **FPM (Doctoral) Courses**
 - Advanced Linear Programming & Bottleneck Optimization
 - Non-Linear Programming
 - Network Optimization in Business
 - Optimization Techniques for Managers
- **MDP (Executive) Sessions**
 - Quantitative Techniques for Defence Officers
 - Decision Making under Uncertainty for various industries
 - Transportation & Assignment Problems for various industries
 - Game Theory for various industries
 - Statistics and Linear Programming for various industries

Tutorial Instructor (IIT Delhi)

- **Undergraduate Courses**
 - Basic Engineering Mathematics
 - Introduction to Operations Research and Applications
 - Introduction to Linear Algebra and Mathematical Modeling
 - Probability and Statistics

STUDENT SUPERVISION

Indian Institute of Management Lucknow

- **EFPM Guidance (PhD Programme for Executives):**
 - Mohit Bhatnagar: *Analytics driven Career Decision and Planning Model*, Graduated: Mar 2019
Joint advisor with Dr Gaurav Garg
- **FPM (PhD) Guidance:**
 - Shalabh Singh: *Multi-choice Bi-criteria Allocation Problems*, Graduated: Mar 2019
 - Ankit Sharma: *Essays on Coopetitive Network Design Decisions in Aviation Industry*, Expected Graduation in Mar 2021, Joint advisor with Dr. Suresh Jakhar
- **Dissertation:**
 - Shalabh Singh: *Survey on Multi Choice Programming*, April 2016
 - Mangesh Joshi: *Optimization Analytics*, ongoing
- **Courses of Independent Studies (Term Project):**
 - Shalabh Singh: *Multi Choice Programming in Transportation Problems*, Dec 2015
 - Shekhar Shukla: *Retail Assortment Optimization*, Dec 2014
 - Shikhar Goyal: *Credit Scoring to Improve Risk Management as well as Profitability*, Dec 2013
 - Rohit Kumar: *Price of Anarchy*, Dec 2011
 - Mahima Gupta: *Sensitivity Analysis in Network Flow Problems*, Mar 2011

[CURRICULUM VITAE]

- Subramanian Chidambaran: *Paradoxical situations in flow allocation problems*, Feb 2011
- Tarun Gupta: *Credit Scoring*, Feb 2011
- Abhishek Agrawal: *Study of Game Theory and Its Applications*, Feb 2009
- Faiz Hamid: *Capacitated Bottleneck Transportation Problems*, Sep 2008

ADMINISTRATIVE EXPERIENCE

Indian Institute of Management Lucknow

- Former Chairperson of the Sexual Harassment Committee
- Member of the FPM (Fellow Program in Management) Committee
- Former Chairman's Nominee for the Central School, IIM
- Chairperson of the Fellow Program in Management (doctoral program) during Apr 2015 - Apr 2016
- Chairperson of the House Allotment Committee during Apr 2013 - Apr 2015
- Member of the Students Affairs Committee during Apr 2014 - Apr 2016
- Member of the Alumni Committee during Apr 2014 - Apr 2016
- Member of the 'UMANG – the student activity centre' committee.
- Area Chairperson of the Decision Sciences Group during Aug 2007 – Jan 2010.
- Member of the PGP Committee during Aug 2007 – Jan 2010.
- Member of the CAT Admission Committee during 2009 – 2011.
- Involved in conducting CAT interviews since 2006.
- Coordinated a few MDPs/GMPs as Program Director at IIM Lucknow.

Indian Institute of Technology Delhi

Vice-President of the Mathematics Society during 2003-04.

AWARDS AND RECOGNITIONS

- Qualified **GATE-99** in Mathematical Sciences with percentile 89.21.
- Awarded the **Ashesh Memorial Medal** for obtaining the highest marks in M.Sc. (Maths) in second year examination for the year 1999 at University of Roorkee (now known as IIT Roorkee).
- Awarded the **G. Pande Medal** for obtaining the highest marks in all M.Sc. (Maths) in second year examination for the year 1999 at University of Roorkee.
- **Winner of the Mathematical Colloquium Quiz** held during 1999 in Department of Mathematics, at University of Roorkee.
- Qualified **CSIR-UGC-NET** in Mathematical Sciences for lecturer ship in Jun 2000.
- Received the **C.L. Chandana Award** for the Ph.D. Students for the year 2000.
- Received the **B.G. Raghavendra Memorial Award** (The Best Student paper Presentation Award) in 34th Annual Convention of ORSI: International Conference on Operational Research and National Development held in Kolkata during Dec 27-29, 2001.
- Received an **Appreciation Award** in APORS 2003: Sixth International Conference of the Association of Asia-Pacific Operational Research Societies.
- Received the **Best Decision Science Elective Award** by student council at IIM Lucknow for 2018-19
- Holding the life membership of Operational Research Society of India.

PERSONAL DETAILS

Nationality: Indian

Marital Status: Married with two kids

Languages Known: Hindi, English, Punjabi

DOB: 13 July 1978