




## Faculty Details proforma for DU Web-site

<b>Title</b>	<b>Prof. (Dr.)</b>	First Name	<b>PANKAJ</b>	Last Name	<b>GUPTA</b>	<b>Photograph</b>
Designation		<b>Professor</b>				
Address		<b>Department of Operational Research  Faculty of Mathematical Sciences  North Campus, University of Delhi  Delhi-110007</b>				
Phone No	Office	91-11-27666672				
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Web-Page						
<b>Educational Qualifications</b>						
<b>Degree</b>		<b>Institution</b>			<b>Year</b>	
Ph.D.		University of Delhi			2000	
M.Phil.		University of Delhi			1994	
M.Sc.		University of Delhi			1992	
<b>Career Profile</b>						
<b>Professor: 2009 – Till date, Department of Operational Research, University of Delhi</b> <b>Associate Professor: 2007-2009, Department of Operational Research, University of Delhi</b> <b>Associate Professor: 2006-2007, Deen Dayal Upadhyaya College, University of Delhi</b> <b>Reader: 2003-2006, Deen Dayal Upadhyaya College, University of Delhi</b> <b>Senior Lecturer: 1999-2003, Deen Dayal Upadhyaya College, University of Delhi</b> <b>Lecturer: 1993-1999, Deen Dayal Upadhyaya College, University of Delhi</b>						
<b>Administrative Assignments</b>						
Teacher-In Charge: Department of Mathematics, Deen Dayal Upadhyaya College, University of Delhi, 2000-2002  As assigned by the Department from time to time						
<b>Areas of Interest / Specialization</b>						
Optimization Theory and Applications; Fuzzy Optimization; Portfolio Optimization						
<b>Subjects Taught</b>						
M.Sc. (OR): Mathematical Programming, Scheduling Techniques, Applied Statistics, Portfolio Management, Advanced Mathematical Programming, Multicriteria Decision Models, C++, Linear Programming, Networks, Industrial Project						

M.A./M.Sc. (AOR): Mathematical Programming, Multicriteria Decision Models, Industrial Project

M.Phil./Pre-Ph.D. (OR): Mathematical Programming , Network Analysis

M.A./M.Sc. (Maths): Optimization Techniques and Control Theory

M.C.A./M.Sc. (Computer Science): Optimization Algorithms, Combinatorial Optimization

B.Sc.(H)/B.Sc.(G)/B.A.(H)/B.A.(P): Numerical Analysis, Differential Equations, Calculus, Algebra, Computer Mathematics, Linear Programming, Boolean Algebra, Analysis, Statistics, Optimization, Operational Research Techniques, Discrete Mathematics

#### Research Guidance

##### **Supervision of Doctoral Thesis, awarded-05**

1. Mukesh Kumar Mehlawat. On fuzzy optimization and its applications in portfolio selection
2. Shilpi Verma. Mathematical programming approaches for component selection of modular software systems
3. Garima Mittal. A study of multiobjective portfolio optimization models and their solutions using soft computing approaches
4. Rishi Ranjan Sahay. A study of global strict minimizers in mathematical programming problems involving higher order strong invexity
5. Pooja Arora. Some contributions to generalized convexity and variants of solution concepts in mathematical programming

##### **Supervision of Doctoral Thesis, under progress-02**

##### **Supervision of M.Phil. Dissertations, awarded-10**

1. Anirban Bhattacharjee. Optimization models for the vendor selection in a supply chain
2. Shilpa Gupta. Fuzzy linear programming duality and fuzzy matrix games
3. Santosh Kumar. Some aspects of linear fractional programming with applications
4. Usha Aggarwal. On transportation problems: a fuzzy approach
5. Naveen Gahlot. On first order and second order symmetric duality in mathematical programming
6. Amita Sharma. Some solution procedures for fuzzy multiobjective optimization with applications
7. Sakshi Goel. Some aspects of linear complementarity problem and its generalizations
8. Manisha Khurana. A study of hybrid optimization models for portfolio selection
9. Nishta Grover. A study of mathematical programming problems under intuitionistic fuzzy environment
10. Ritika Khurana. A study of optimization models for commercial off-the-shelf (COTS) products selection

##### **Supervision of M.Phil. Dissertations, under progress-01**

## Publications Profile

### ***Books/Monographs (Authored/Edited)***

1. **Pankaj Gupta**, Mukesh Kumar Mehlawat, Masahiro Inuiguchi & Suresh Chandra (2014). Fuzzy Portfolio Optimization: Advances in Hybrid Multi-criteria Methodologies, **Studies in Fuzziness and Soft Computing**, Vol. 316, Springer, Heidelberg, Germany (ISBN: 978-3-642-54651-8).
2. Rita Malhotra, C.S. Lalitha, **Pankaj Gupta**, Aparna Mehra & Sonia (Eds.) (2007). Combinatorial Optimization: Some Aspects, **Narosa Publishing House, New Delhi, India** (ISBN: 13:978-81-7319-815-1).

### ***Research papers published in Refereed/Peer Reviewed Journals***

1. Mukesh Kumar Mehlawat & **Pankaj Gupta** (2015). A new fuzzy group multi-criteria decision making method with an application to the critical path selection. **International Journal of Advanced Manufacturing Technology**. DOI: 10.1007/s00170-015-7610-4 (Springer) (2014 SCI Impact Factor: 1.458, SNIP: 1.965, SJR: 1.474).
2. Mukesh Kumar Mehlawat & **Pankaj Gupta** (2015). COTS products selection using fuzzy chance-constrained multiobjective programming. **Applied Intelligence**. DOI: 10.1007/s10489-015-0673-y (Springer) (2012 SCI Impact Factor: 1.853, 2014 SNIP: 1.965, SJR: 1.474).
3. Mukesh Kumar Mehlawat & **Pankaj Gupta** (2015). Multiobjective credibilistic model for COTS products selection of modular software systems under uncertainty. **Applied Intelligence**. 42 (2): 353-368 (Springer) (2012 SCI Impact Factor: 1.853, 2014 SNIP: 1.965, SJR: 1.474).
4. Mukesh Kumar Mehlawat & **Pankaj Gupta** (2014). Fuzzy chance-constrained multiobjective portfolio selection model. **IEEE Transactions on Fuzzy Systems**. 22 (3): 653-671 (IEEE Computational Intelligence Society) (2014 SCI Impact Factor: 8.746, SNIP: 4.853, SJR: 5.150).
5. Mukesh Kumar Mehlawat & **Pankaj Gupta** (2014). Credibility-based fuzzy mathematical programming model for portfolio selection under uncertainty. **International Journal of Information Technology & Decision Making**. 13 (1): 101-135 (World Scientific Publishing Company) (2014 SCI Impact Factor: 1.406, SNIP: 1.126, SJR: 1.203).
6. **Pankaj Gupta** & Mukesh Kumar Mehlawat (2014). A new possibilistic programming approach for solving fuzzy multiobjective assignment problem. **IEEE Transactions on Fuzzy Systems**. 22 (1): 16-34 (IEEE Computational Intelligence Society) (2014 SCI Impact Factor: 8.746, SNIP: 4.853, SJR: 5.150).
7. **Pankaj Gupta**, Garima Mittal & Mukesh Kumar Mehlawat (2014). A multicriteria optimization model of portfolio rebalancing with transaction costs in fuzzy environment. **Memetic Computing**. 6 (1): 61-74 (Springer) (2014 SCI Impact Factor: 1.000, SNIP: 1.682, SJR: 0.839).
8. **Pankaj Gupta**, Mukesh Kumar Mehlawat & Anand Saxena (2013). Hybrid optimization models of portfolio selection involving financial and ethical considerations. **Knowledge-Based Systems**. 37: 318-337 (Elsevier) (2014 SCI Impact Factor: 2.947, SNIP: 2.757, SJR: 2.190).
9. **Pankaj Gupta**, Masahiro Inuiguchi, Mukesh Kumar Mehlawat & Garima Mittal (2013). Multiobjective credibilistic portfolio selection model with fuzzy chance-constraints. **Information Sciences**. 229: 1-17 (Elsevier) (2014 SCI Impact Factor: 4.038, SNIP: 3.242, SJR: 3.286).

10. V. Charles & **Pankaj Gupta (2013)**. Optimization of chance constraint programming with sum-of-fractional objectives-An application to assembled printed circuit board problem. **Applied Mathematical Modelling**. 37 (5): 3564-3574 (Elsevier) **(2014 SCI Impact Factor: 2.251, SNIP: 1.816, SJR: 1.283)**.
11. **Pankaj Gupta**, Hoang Pham, Mukesh Kumar Mehlawat & Shilpi Verma **(2013)**. A fuzzy optimization framework for COTS products selection of modular software systems. **International Journal of Fuzzy Systems**. 15 (2): 91-109 (Springer) **(2014 SCI Impact Factor: 1.095, SNIP: 1.126, SJR: 0.629)**.
12. **Pankaj Gupta**, Garima Mittal & Mukesh Kumar Mehlawat **(2013)**. Expected value multiobjective portfolio rebalancing model with fuzzy parameters. **Insurance: Mathematics and Economics**. 52 (2): 190-203 (Elsevier) **(2014 SCI Impact Factor: 1.128, SNIP: 1.466, SJR: 0.951)**.
13. **Pankaj Gupta**, Garima Mittal & Mukesh Kumar Mehlawat **(2013)**. Multiobjective expected value model for portfolio selection in fuzzy environment. **Optimization Letters**. 7 (8): 1765-1791 (Springer) **(2014 SCI Impact Factor: 0.934, SNIP: 0.924, SJR: 0.701)**.
14. **Pankaj Gupta**, Mukesh Kumar Mehlawat & Garima Mittal **(2013)**. A fuzzy approach to multicriteria assignment problem using exponential membership functions. **International Journal of Machine Learning and Cybernetics**. 4(6): 647-657 (Springer) **(2014 SNIP: 2.271, SJR: 1.446)**.
15. **Pankaj Gupta**, Mukesh Kumar Mehlawat & Shilpi Verma **(2012)**. COTS selection using fuzzy interactive approach. **Optimization Letters**. 6 (2): 273-289 (Springer) **(2014 SCI Impact Factor: 0.934, SNIP: 0.924, SJR: 0.701)**.
16. **Pankaj Gupta**, Mukesh Kumar Mehlawat & Garima Mittal **(2012)**. Asset portfolio optimization using support vector machines and real coded genetic algorithm. **Journal of Global Optimization**. 53 (2): 297-315 (Springer) **(2014 SCI Impact Factor: 1.287, SNIP: 1.221, SJR: 1.064)**.
17. **Pankaj Gupta**, Garima Mittal & Mukesh Kumar Mehlawat **(2012)**. Multicriteria credibilistic portfolio rebalancing problem with fuzzy chance-constraint. **Advances in Intelligent and Soft Computing**. 130: 997-1010 (Springer) **(2013 SNIP: 0.516, SJR: 0.310)**.
18. **Pankaj Gupta**, Shilpi Verma & Mukesh Kumar Mehlawat **(2012)**. Optimization model of COTS selection based on cohesion and coupling for modular software systems under multiple applications environment. **Lecture Notes in Computer Science**. 7335: 87-102 (Springer) **(2014 SNIP: 0.460, SJR: 0.339)**.
19. **Pankaj Gupta**, Shilpi Verma & Mukesh Kumar Mehlawat **(2012)**. Fuzzy COTS selection for modular software systems based on cohesion and coupling under multiple applications environment. **International Journal of Applied Evolutionary Computation**. 3 (4): 1-18 (IGI Global Publication).
20. **Pankaj Gupta**, Masahiro Inuiguchi & Mukesh Kumar Mehlawat **(2011)**. A hybrid approach for constructing suitable and optimal portfolios. **Expert Systems with Applications**. 38 (5): 5620-5632 (Elsevier) **(2014 SCI Impact Factor: 2.240, SNIP: 2.534, SJR: 1.996)**.
21. **Pankaj Gupta**, Shilpi Verma & Mukesh Kumar Mehlawat **(2011)**. A membership function approach for cost-reliability trade-off of COTS selection in fuzzy environment. **International Journal of Reliability, Quality and Safety Engineering**. 18 (6): 573-595 (World Scientific Publishing Company) **(2014 SNIP: 0.494, SJR: 0.352)**.

22. **Pankaj Gupta** & Mukesh Kumar Mehlawat (2011). Duality in fuzzy linear fractional programming. **International Journal of Optimization: Theory, Methods and Applications**. 3 (1): 21-44 (Global Information Publisher).
23. Sanjeet Singh, **Pankaj Gupta** & Milan Vlach (2011). On multiparametric analysis in generalized transportation problems. **Lecture Notes in Computer Science**. 6784: 300-315 (Springer) (2014 SNIP: 0.460, SJR: 0.339).
24. **Pankaj Gupta** & Mukesh Kumar Mehlawat (2011). An application of the modified subgradient method for solving fuzzy linear fractional programming problem. **Topics in Nonconvex Optimization: Theory & Applications, Springer Optimization and Its Applications**. 50: 115-131 (Springer).
25. **Pankaj Gupta**, Mukesh Kumar Mehlawat & Anand Saxena (2010). A hybrid approach to asset allocation with simultaneous consideration of suitability and optimality. **Information Sciences**. 180 (11): 2264-2285 (Elsevier) (2014 SCI Impact Factor: 4.038, SNIP: 3.242, SJR: 3.286).
26. Sanjeet Singh & **Pankaj Gupta** (2010). On multiparametric analysis in sum-of-ratios programming. **Lecture Notes in Engineering and Computer Science**. 2182 (3): 2004-2009 (Newswood Limited).
27. **Pankaj Gupta** & Mukesh Kumar Mehlawat (2009). Bector-Chandra type duality in fuzzy linear programming with exponential membership functions. **Fuzzy Sets and Systems**. 160 (22): 3290-3308 (Elsevier) (2014 SCI Impact Factor: 1.986, SNIP: 2.225, SJR: 1.891).
28. **Pankaj Gupta**, Mukesh Kumar Mehlawat, Garima Mittal & Shilpi Verma (2009). A hybrid approach for selecting optimal COTS products. **Lecture Notes in Computer Science**. 5592: 949-962 (Springer) (2014 SNIP: 0.460, SJR: 0.339).
29. **Pankaj Gupta** & Mukesh Kumar Mehlawat (2009). Duality for a convex fractional programming under fuzzy environment. **International Journal of Optimization: Theory, Methods and Applications**. 1 (3): 291-301 (Global Information Publisher).
30. **Pankaj Gupta**, Mukesh Kumar Mehlawat & Anand Saxena (2008). Asset portfolio optimization using fuzzy mathematical programming. **Information Sciences**. 178 (6): 1734-1755 (Elsevier) (2014 SCI Impact Factor: 4.038, SNIP: 3.242, SJR: 3.286).
31. T.Q. Bao, **Pankaj Gupta** & Boris S. Mordukhovich (2008). Suboptimality conditions for mathematical programs with equilibrium constraints. **Taiwanese Journal of Mathematics**. 12 (9): 2569-2592 (Mathematical Society of the Republic of China) (2014 SCI Impact Factor: 0.621, SNIP: 0.868, SJR: 0.547).
32. T.Q. Bao, **Pankaj Gupta** & Boris S. Mordukhovich (2007). Necessary conditions in multi-objective optimization with equilibrium constraints. **Journal of Optimization Theory and Applications**. 135 (2): 179-203 (Springer) (2014 SCI Impact Factor: 1.509, SNIP: 1.360, SJR: 1.147).
33. **Pankaj Gupta** & Mukesh Kumar Mehlawat (2007). An algorithm for a fuzzy transportation problem to select a new type of coal for a steel manufacturing unit. **TOP**. 15 (1): 114-137 (Springer) (2014 SCI Impact Factor: 0.831, SNIP: 0.807, SJR: 0.589).
34. **Pankaj Gupta** & Sanjeet Singh (2006). Approximate multiparametric sensitivity analysis of the constraint matrix in programming problems with linear-plus-linear fractional objective function. **Applied Mathematics and Computation**. 179 (2): 662-671 (Elsevier) (2014 SCI Impact Factor: 1.551, SNIP: 1.378, SJR: 0.958).

35. **Pankaj Gupta**, Aparna Mehra, Shiraishi Shunsuke & Kazunori Yokoyama (2006). Epsilon-optimality for minimax programming problems. **Journal of Nonlinear and Convex Analysis**. 7 (2): 277-288 (Yokohama Publishers) (2014 SCI Impact Factor: 0.655, SNIP: 0.579, SJR: 0.411).
36. Sanjeet Singh, **Pankaj Gupta** & Davinder Bhatia (2005). Multiparametric sensitivity analysis in programming problem with linear-plus-linear fractional objective function. **European Journal of Operational Research**. 160 (1): 232-241 (Elsevier) (2014 SCI Impact Factor: 2.358, SNIP: 2.335, SJR: 2.368).
37. Sanjeet Singh, **Pankaj Gupta** & Davinder Bhatia (2005). Multiparametric sensitivity analysis of the constraint matrix in programming problems with linear-plus-linear fractional objective function. **Applied Mathematics and Computation**. 170 (2): 1243-1260 (Elsevier) (2014 SCI Impact Factor: 1.551, SNIP: 1.378, SJR: 0.958).
38. **Pankaj Gupta**, Shiraishi Shunsuke & Kazunori Yokoyama (2005). Epsilon-optimality without constraint qualification for multiobjective fractional program. **Journal of Nonlinear and Convex Analysis**. 6 (2): 347-357 (Yokohama Publishers) (2014 SCI Impact Factor: 0.655, SNIP: 0.579, SJR: 0.411).
39. Sanjeet Singh, **Pankaj Gupta** & Davinder Bhatia (2005). On multiparametric sensitivity analysis in minimum cost network flow problem. **Lecture Notes in Computer Science**. 3483: 1190-1202 (Springer) (2014 SNIP: 0.460, SJR: 0.339).
40. **Pankaj Gupta**, Milan Vlach & Davinder Bhatia (2004). Fuzzy approximation to an infeasible generalized linear complementarity problem. **Fuzzy Sets and Systems**. 146 (2): 221-233 (Elsevier) (2014 SCI Impact Factor: 1.986, SNIP: 2.070, SJR: 1.558).
41. Sanjeet Singh, **Pankaj Gupta** & Davinder Bhatia (2004). On Multiparametric analysis in network linear programming problem. **Opsearch**. 41(4): 237-249 (Springer).
42. **Pankaj Gupta** & Davinder Bhatia (2001). Sensitivity analysis in fuzzy multiobjective linear fractional programming problem. **Fuzzy Sets and Systems**. 122 (2): 229-236 (Elsevier) (2014 SCI Impact Factor: 1.880, SNIP: 2.225, SJR: 1.891).
43. **Pankaj Gupta** & Davinder Bhatia (2001). Duality for fractional minmax programming problem involving arcwise and generalized arcwise connected functions. **Lecture Notes in Economics and Mathematical Systems**. 502: 218-230 (Springer) (2014 SNIP: 0.171, SJR: 0.180).
44. **Pankaj Gupta** & Davinder Bhatia (2000). Multiparametric analysis of the maximum tolerance in quadratic programming problems. **Opsearch**. 37(1): 36-46 (Springer) (2014 SNIP: 0.399, SJR: 0.225).
45. **Pankaj Gupta** & Davinder Bhatia (1999). Multiparametric analysis of the maximum tolerance in linear fractional programming problem. **Indian Journal of Pure and Applied Mathematics**. 30 (6): 611-626 (Springer) (2014 SCI Impact Factor: 0.224, SNIP: 0.428, SJR: 0.173).
46. Davinder Bhatia & **Pankaj Gupta** (1999). Generalized linear complementarity problem and multi-objective programming problem. **Optimization**. 46 (2) : 199-214 (Taylor & Francis) (2014 SCI Impact Factor: 0.936, SNIP: 0.882, SJR: 0.752).
47. R.N. Kaul, Davinder Bhatia & **Pankaj Gupta** (1999). Tolerance approach to sensitivity analysis in quadratic programming problems. **Opsearch**. 36 (1): 1-9 (Springer) (2014 SNIP: 0.399, SJR: 0.225).

***Other publications (Edited works, Book reviews, Festschrift volumes, etc.)***

1. **Pankaj Gupta & Juan-Enrique Martínez-Legaz (2014)**. Special issue on recent advances in optimization modelling and applications on the occasion of the International Conference on Optimization Modelling and Applications-OPTIMA-2012. **Optimization**. 63 (10): 1445-1447 (Taylor & Francis) **(2014 SCI Impact Factor: 0.936, SNIP: 0.882, SJR: 0.752)**.
2. Wei Chen, Wei-Guo Zhang & **Pankaj Gupta (2014)**. Mathematical Modelling and Algorithms in Finance. **Mathematical Problems in Engineering**. Article ID 186547, 2 pages (Hindawi Publishing Corporation) **(2014 SCI Impact Factor: 0.762, SNIP: 0.972, SJR: 0.616)**.
3. T.Q. Bao, **Pankaj Gupta & Boris S. Mordukhovich (2005)**. Necessary conditions for the minimax programming problem with mathematical constraints. Research Report, Department of Mathematics, Wayne State University, Detroit, MI, prepared under BOYSCAST Fellowship of D.S.T.
4. **Panka Gupta**, Goutam Dutta & Sanjeet Singh **(2002)**. Multiparametric sensitivity analysis in linear fractional programming problem for an integrated steel plant. Research Report, Department of Production and Quantitative Management, IIM, Ahmedabad, India, prepared under DRS (SAP) programme of U.G.C.

**Conference Organization/ Presentations (in the last five years)**

***Organization of a Conference***

1. Member, Local Organizing Committee, UNESCO-CIMPA-INDIA Research School on Generalized Nash Equilibrium Problems, Bilevel Programming and MPEC, Department of Mathematics, November 25- December 06, 2013, University of Delhi, Delhi.
2. Coordinator, Training Programme on Optimization and Its Applications, November 26-December 01, 2012, University of Delhi, Delhi.
3. Convenor, International Conference on Optimization Modelling and Applications, November 29-December 01, 2012, University of Delhi, Delhi.
4. Co-coordinator, Training Programme on Optimization Theory and Applications, February 10-14, 2010, University of Delhi, Delhi.
5. Member, Organizing Committee, International Conference on Optimization and Its Applications, February 16-18, 2010, Banaras Hindu University, Varanasi.
6. Member, Organizing Committee, Workshop on Optimization, March 22-26, 2009, Banaras Hindu University, Varanasi.
7. Member, Organizing Committee, Workshop on Mathematical Modelling and Related Optimization Techniques, December 14-17, 2009, University of Delhi, Delhi.
8. Co-Chair, Organizing Committee, 4th International Conference on Quality, Reliability and Infocom Technology, December 18-20, 2009, University of Delhi, Delhi.

***Invited Talks/Session Chair***

1. Invited talk, "Fuzzy Optimization using Possibility Theory" in the Conference on Optimization Modelling and Machine Learning Techniques organized by Department of Mathematics, Panjab University, Chandigarh, India, 20th March, 2015.

2. Invited talk, "Multiple Criteria Optimization using Analytic Hierarchy Process" in the Refresher Course in Mathematics organized by Department of Mathematics, Panjab University, Chandigarh, India, 20th March, 2015.
3. Invited talk, "Possibilistic Optimization" in the International Conference on Optimization, Computing and Business Analysis for Sustainable Development organized by Department of Mathematics, Central University of Rajasthan, Ajmer, India, 22nd February, 2015.
4. Invited talk, "Portfolio Optimization: Some Recent Advances" in the Workshop on Applied Optimization Models and Computation organized by Indian Statistical Institute, Delhi Centre, New Delhi, India, 30th January, 2015.
5. Invited talk, "Multiple Criteria Decision Making using AHP" in the National Seminar on Optimization and Its Applications organized by Department of Mathematics, Lakshmi Bai College, University of Delhi, India, 16th January, 2015.
6. Invited talk, "Linear and Nonlinear Optimization" in the Training Program on Advanced Optimization Techniques for Engineers and Professionals organized by Maulana Azad National Institute of Technology, Bhopal, India, 21st December, 2013.
7. Invited talk, "Portfolio Optimization" in the International Conference on Recent Trends in Materials and Devices-2013 organized by Amity Institute of Applied Sciences, Amity University, Noida, India, 31st October, 2013.
8. Invited talk, "Introduction to AHP" in the Refresher Course on Mathematics organized by Department of Mathematics, Panjab University, Chandigarh, India, 5th April, 2013.
9. Invited talk, "Fuzzy Optimization" in the Refresher Course on Mathematics organized by Department of Mathematics, Panjab University, Chandigarh, India, 5th April, 2013.
10. Invited talk, "Optimization" in the Department of Mathematics, Panjab University, Chandigarh, India, 25th January, 2013.
11. Invited talk, "Introduction to Optimization Problems including Combinatorial Optimization Problems" in the Training Program on Optimization Techniques and their Applications organized by UIET, Panjab University, Chandigarh, India, 25th January, 2013.
12. Invited talk, "Behavioral Portfolio Selection Models Based on Financial and Ethical Considerations" in the International Symposium on Applied Optimization and Game-Theoretic Models organized by Indian Statistical Institute, Delhi Centre, India, 10th January, 2013.
13. Invited talk, "Optimization-I" in the Refresher Course on Mathematical Sciences organized by CPDHE, University of Delhi, India, 16th January, 2013.
14. Invited talk, "Optimization-II" in the Refresher Course on Mathematical Sciences organized by CPDHE, University of Delhi, India, 16th January, 2013.
15. Invited talk, "Optimization" in the Symposium on Mathematics organized by Department of Mathematics, Panjab University, Chandigarh, India, 8th February, 2012.
16. Invited talk, "Optimality Conditions in Nonlinear Programming-I" in the Refresher Course on Mathematical Sciences organized by CPDHE, University of Delhi, India, 16th December, 2011.



17. Invited talk, "Optimality Conditions in Nonlinear Programming-II" in the Refresher Course on Mathematical Sciences organized by CPDHE, University of Delhi, India, 16th December, 2011.
18. Invited talk, "Portfolio Optimization" in the International Conference on Soft Computing for Problem Solving organized by The Institute of Engineers, IIT Roorkee, Roorkee, India, 20th December, 2011.
19. Invited talk, "Portfolio Rebalancing Model" in the International Conference on Analysis and Its Applications organized by Department of Mathematics, Aligarh Muslim University, Aligarh, India, 21st November, 2011.
20. Chaired two technical sessions in the International Congress on Productivity, Quality, Reliability, Optimization and Modeling organized by ISI, Delhi Center, Quality Council of India and DRDO, New Delhi, India February 07-08, 2011.
21. Invited talk, "Linear Programming-IV" in the Refresher Course on Mathematical Sciences organized by CPDHE, University of Delhi, Delhi, India, 3rd January, 2011.
22. Invited talk, "Linear Programming-III" in the Refresher Course on Mathematical Sciences organized by CPDHE, University of Delhi, Delhi, India, 3rd January, 2011.
23. Invited talk, "Linear Programming-II" in the Refresher Course on Mathematical Sciences organized by CPDHE, University of Delhi, Delhi, India, 27th December, 2010.
24. Invited talk, "Linear Programming-I" in the Refresher Course on Mathematical Sciences organized by CPDHE, University of Delhi, Delhi, India, 27th December, 2010.
25. Invited talk, "Portfolio Optimization with Ethicality Considerations" in the Symposium on Optimization held on the occasion of the Satellite Conference of International Congress of Mathematician (ICM-2010) on Mathematics in Science and Technology organized by International Mathematical Union, India Habitat Center, New Delhi, India, 16th August, 2010.
26. Invited talk, "Nonlinear Optimization" in the National Workshop on Modeling, Optimization and Their Applications organized by Department of Statistics, M. D. University, Rohtak, India, 21st August, 2010.

#### Research Projects (Major Grants/Research Collaboration)

1. Toward the Development of an Integrated Framework for Suitable, Optimal and Ethical Portfolios: **Principal Investigator, DU-DST PURSE-II Grant.** 2014-2018.
2. Advances in Fuzzy Optimization Modelling and Solution Approaches for Commercial Off-The-Shelf (COTS) Products Selection: **Principal Investigator, R & D Research Project sponsored by University of Delhi.** 2014-2015.
3. A Study on the Development of Hybrid Multicriteria Optimization Framework for Portfolio Selection in Fuzzy Environment: **Principal Investigator, UGC Major Research Project.** 2012-2015.
4. Advances in Modeling and Solution Approaches for Portfolio Optimization: **Principal Investigator, R & D Research Project sponsored by University of Delhi.** 2013-2014.

5. Fuzzy Multi-criteria Optimization Framework for Portfolio Selection and Resource Allocation Decisions using Soft Computing Approaches: **Principal Investigator, R & D Research Project sponsored by University of Delhi**. 2012-2013.
6. Fuzzy Multi-criteria Optimization Framework for Portfolio Selection and Distribution Planning Decision using Evolutionary Algorithms: **Principal Investigator, R & D Research Project sponsored by University of Delhi**. 2011-2012.
7. Generalized Optimization Framework using Fuzzy Modeling: **Principal Investigator, R & D Research Project sponsored by University of Delhi**. 2006-2007; 2007-2008; 2008-2009; 2009-2010; 2010-2011.

#### Awards and Distinctions

1. **BOYSCAST Fellowship**-Post Doctoral Work at Department of Mathematics, Wayne State University, Detroit, Michigan, U.S.A. during June-November, 2005.
2. **Indo-Japanese Information Technology Researcher Exchange Programme**-Post Doctoral Work at Japan Advanced Institute of Science & Technology, Kanazawa, Toyama University, and University of Niigata, Japan during February-March, 2002.
3. **ORSI Country Representative to Annual Conference of ORSJ**-Country Paper presented at 3rd International APORS session at Tokyo Institute of Technology and visited Toyama University, Japan during September-October, 2000.
4. **Junior Research Fellowship**, University Grants Commission, New Delhi, 1993-1995.
5. **55th Annual Indian Mathematical Society Scholarship**, 1991-1992.
6. Paper entitled "**Asset portfolio optimization using fuzzy mathematical programming**" included in **Science Direct Top25 Hottest Articles -2008** within the journal Information Sciences under the subject area "Decision Sciences".
7. Paper entitled "**A new possibilistic programming approach for solving fuzzy multiobjective assignment problem**" included in **Top 25 popular articles (March 2014)** within the journal IEEE Transactions on Fuzzy Systems.
8. Paper entitled "**Fuzzy chance-constrained multiobjective portfolio selection model**" included in **Top 25 popular articles (June 2014)** within the journal IEEE Transactions on Fuzzy Systems.

#### Association With Professional Bodies

##### Editorial Service

- **Associate Editor, Information Sciences (Elsevier) (2014 SCI Impact Factor 4.038, SNIP: 3.242, SJR: 3.286).**
- **Associate Editor, IEEE Transactions on Fuzzy Systems (IEEE Computational Intelligence Society) (2014 SCI Impact Factor: 8.746, SNIP: 4.853, SJR: 5.150)**

##### Reviewing (Selected Only)

- Reviewer, Mathematical Reviews
- Reviewer, European Journal of Operational Research
- Reviewer, Fuzzy Sets and Systems
- Reviewer, Information Sciences

- Reviewer, Economic Modeling
- Reviewer, Journal of Applied Mathematical Modeling
- Reviewer, IEEE Transactions on Fuzzy Systems
- Reviewer, Journal of Optimization Theory and Applications
- Reviewer, Optimization

**Advisory (Selected Only)**

- Member, MHRD Committee to develop e-content of Mathematics for the online educational portal “Sakshat” (The National Mission on Education through ICT)
- Member, Empowered Committee to Review and Revise Courses for Restructured B.Sc. Program, University of Delhi, Delhi

**Committees and Boards (Selected Only)**

- Member, Board of Research Studies (Mathematical Sciences), University of Delhi
- Member, Departmental Research Committee, Department of Operational Research, University of Delhi
- Member, M.Phil. Committee, Department of Operational Research, University of Delhi
- Member, Faculty of Mathematical Sciences, University of Delhi
- Member, Faculty of Mathematical Sciences, University of Delhi
- Member, Curriculum Development Committee for Mathematics, Restructured B.Sc. and B.A. Programme, University of Delhi
- Member, Committee to Review and Revise syllabus, B.Sc./B.A.(H) Mathematics, University of Delhi
- Member, Committee to Review and Revise syllabus, B.Sc.(H) Computer Science, University of Delhi
- Member/Convenor, Committees to Review and Revise syllabus, M.Sc.(OR), M.A./M.Sc. (AOR), University of Delhi
- Coordinator, Examination Board, Mathematics papers of B.Sc.(H) Computer Science, University of Delhi
- Member/Convenor of several departmental committees, Department of Operational Research, University of Delhi
- Member/Convenor/Coordinator of several staff council committees, Deen Dayal Upadhyaya College, University of Delhi

**Memberships**

- Senior Life Member, Operational Research Society of India
- Member, International Working Group on Generalized Convexity/ Monotonicity
- Member, Pacific Optimization Group

- Member, INFORMS
- Member, Ramanujan Mathematical Society

**Office Bearer**

- Secretary, Operational Research Society of India, Delhi Chapter (2001-2005)
- Treasurer, Operational Research Society of India, Delhi Chapter (1999-2001)

**Other Activities**